Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-050

REQUEST:

Provide all work papers and supporting documentation used and relied upon by Mr. D'Ascendis in the preparation of his Direct Testimony and exhibits. Provide all spreadsheets in Excel format with cell formulas intact.

RESPONSE:

Please see AG-DR-01-050 Attachment. See also, STAFF-DR-02-016 Attachment.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

Duke Energy Kentucky, Inc.
Index of Workpapers
to Mr. Dylan W. D'Ascendis' Direct Testimony and Exhibit

1. *Federal Power Comm'n v. Hope Natural Gas Co.,* 320 U.S. 591 (1944).

2. *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922).

3. Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. "A New Approach for Estimating the Equity Risk Premium for Public Utilities", The Journal of Regulatory Economics (December 2011), 40:261-278.

4. SBBI-2021 Appendix A Tables: Morningstar Stocks, Bonds, Bills, & Inflation 1926-2020.

5. SBBI-2020, at page 10-22 and 10-23.

6. Robert S. Harris and Felicia C. Marston, *The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts*, Journal of Applied Finance, Vol. 11, No. 1, 2001, at pages 11 to 12.

7. Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management, Spring 1985, at pages 33 to 45.

8. Roger A. Morin, New Regulatory Finance (Public Utility Reports, 2006), at 175-176, 189-191, 321-323, 327-330.

9. Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence," *Journal of Economic Perspectives*, Volume 18, Number 3, Summer 2004.

10. Duff & Phelps Valuation Handbook – U.S. Guide to Cost of Capital, Wiley 2020, at 4-1.

11. Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance (McGraw-Hill Book Company, 1996).

12. Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989).

13. Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, 9th Edition, Thomson/Southwestern, at p. 342.

14. Richard A. Michelfelder, Pauline M. Ahern, Dylan W. D'Ascendis, *The Impact of Decoupling on The Cost of Capital of Public Utilities*, Energy Policy 130 (2019).

Duke Energy Kentucky, Inc.
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15. The Brattle Group, *The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Prepared for the Energy Foundation, March 20, 2014.

16. Michael J. Vilbert, Joseph B. Wharton, Shirley Zhang and James Hall, *Effect on the Cost of Capital of Innovative Ratemaking that Relaxes the Linkage between Revenue and kWh Sales – An Updated Empirical Investigation*, November 2016.

17. Supporting data from Zacks Investment Research.

18. Supporting data from Yahoo! Finance.

19. Supporting data from Eviews.

20. Supporting data from Standard & Poor's Market Intelligence Platform.

21. Supporting data from Value Line Summary and Index.

22. Supporting data from 2021 Duff & Phelps Cost of Capital Navigator.

23. Supporting data from Value Line Standard Edition for Non-Price Regulated Proxy Group.

Supreme Court of the United States
FEDERAL POWER COMMISSION et al.
v.
HOPE NATURAL GAS CO.
CITY OF CLEVELAND
v.
SAME.
Nos. 34 and 35.

Argued Oct. 20, 21, 1943.
Decided Jan. 3, 1944.

Separate proceedings before the Federal Power Commission by such Commission, by the City of Cleveland and the City of Akron, and by Pennsylvania Public Utility Commission wherein the State of West Virginia and its Public Service Commission were permitted to intervene concerning rates charged by Hope Natural Gas Company which were consolidated for hearing. An order fixing rates was reversed and remanded with directions by the Circuit Court of Appeals, 134 F.2d 287, and Federal Power Commission, City of Akron and Pennsylvania Public Utility Commission in one case and the City of Cleveland in another bring certiorari.

Reversed.

Mr. Justice REED, Mr. Justice FRANKFURTER and Mr. Justice JACKSON, dissenting.

On Writs of Certiorari to the United States Circuit Court of Appeals for the Fourth Circuit.

West Headnotes

[1] **Public Utilities 317A 🔑120**

317A Public Utilities
317AII Regulation
317Ak119 Regulation of Charges
317Ak120 k. Nature and Extent in General. Most Cited Cases
(Formerly 317Ak7.1, 317Ak7)
Rate-making is only one species of price-fixing which, like other applications of the police power, may reduce the value of the property regulated, but that does not render the regulation invalid.

[2] **Public Utilities 317A 🔑123**

317A Public Utilities
317AII Regulation
317Ak119 Regulation of Charges
317Ak123 k. Reasonableness of Charges in General. Most Cited Cases
(Formerly 317Ak7.4, 317Ak7)
Rates cannot be made to depend upon fair value, which is the end product of the process of rate-making and not the starting point, when the value of the going enterprise depends on earnings under whatever rates may be anticipated.

[3] **Gas 190 🔑14.3(2)**

190 Gas
190k14 Charges
190k14.3 Administrative Regulation
190k14.3(2) k. Federal Power Commission. Most Cited Cases
(Formerly 190k14(1))
The rate-making function of the Federal Power Commission under the Natural Gas Act involves the making of pragmatic adjustments, and the Commission is not bound to the use of any single formula or combination of formulae in determining rates. Natural Gas Act, § § 4(a), 5(a), 6, 15 U.S.C.A. § § 717c(a), 717d(a), 717e.

[4] **Gas 190 🔑14.5(6)**

190 Gas
190k14 Charges
190k14.5 Judicial Review and Enforcement of Regulations
190k14.5(6) k. Scope of Review and Trial De Novo. Most Cited Cases
(Formerly 190k14(1))
When order of Federal Power Commission fixing natural gas rates is challenged in the courts, the question is whether order viewed in its entirety meets the requirements of the Natural Gas Act. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[5] **Gas 190 🔑14.4(1)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges

(Cite as: 51 P.U.R.(NS) 193, 64 S.Ct. 281)

190k14.4(1) k. In General. Most Cited Cases

(Formerly 190k14(1))

Under the statutory standard that natural gas rates shall be "just and reasonable" it is the result reached and not the method employed that is controlling. Natural Gas Act § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[6] **Gas 190 14.5(6)**

190 Gas
190k14 Charges
190k14.5 Judicial Review and Enforcement of Regulations
190k14.5(6) k. Scope of Review and Trial De Novo. Most Cited Cases

(Formerly 190k14(1))

If the total effect of natural gas rates fixed by Federal Power Commission cannot be said to be unjust and unreasonable, judicial inquiry under the Natural Gas Act is at an end. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[7] **Gas 190 14.5(7)**

190 Gas
190k14 Charges
190k14.5 Judicial Review and Enforcement of Regulations
190k14.5(7) k. Presumptions. Most Cited Cases

(Formerly 190k14(1))

An order of the Federal Power Commission fixing rates for natural gas is the product of expert judgment, which carries a presumption of validity, and one who would upset the rate must make a convincing showing that it is invalid because it is unjust and unreasonable in its consequences. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[8] **Gas 190 14.4(1)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(1) k. In General. Most Cited Cases

(Formerly 190k14(1))

The fixing of just and reasonable rates for natural gas by the Federal Power Commission involves a balancing of the investor and the consumer interests. Natural Gas Act, § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[9] **Gas 190 14.4(9)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(9) k. Depreciation and Depletion. Most Cited Cases

(Formerly 190k14(1))

As respects rates for natural gas, from the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business, which includes service on the debt and dividends on stock, and by such standard the return to the equity owner should be commensurate with the terms on investments in other enterprises having corresponding risks, and such returns should be sufficient to assure confidence in the financial integrity of the enterprise so as to maintain its credit and to attract capital. Natural Gas Act, § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[10] **Gas 190 14.4(9)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(9) k. Depreciation and Depletion. Most Cited Cases

(Formerly 190k14(1))

The fixing by the Federal Power Commission of a rate of return that permitted a natural gas company to earn $2,191,314 annually was supported by substantial evidence. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[11] **Gas 190 14.4(9)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(9) k. Depreciation and Depletion. Most Cited Cases

(Formerly 190k14(1))

Rates which enable a natural gas company to operate successfully, to maintain its financial integrity, to attract capital and to compensate its investors for the risks assumed cannot be condemned as invalid, even though they might produce only a meager return on the so-called "fair value" rate base. Natural Gas Act,

§ § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[12] Gas 190 14.4(4)

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(4) k. Method of Valuation. Most Cited Cases
(Formerly 190k14(1))

A return of only 3 27/100 per cent. on alleged rate base computed on reproduction cost new to natural gas company earning an annual average return of about 9 per cent. on average investment and satisfied with existing gas rates suggests an inflation of the base on which the rate had been computed, and justified Federal Power Commission in rejecting reproduction cost as the measure of the rate base. Natural Gas Act, § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[13] Gas 190 14.4(9)

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(9) k. Depreciation and Depletion. Most Cited Cases
(Formerly 190k14(1))

There is no constitutional requirement that owner who engages in a wasting-asset business of limited life shall receive at the end more than he has put into it, and such rule is applicable to a natural gas company since the ultimate exhaustion of its supply of gas is inevitable. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[14] Gas 190 14.4(9)

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(9) k. Depreciation and Depletion. Most Cited Cases
(Formerly 190k14(1))

In fixing natural gas rate the basing of annual depreciation on cost is proper since by such procedure the utility is made whole and the integrity of its investment is maintained, and no more is required. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[15] Gas 190 14.3(4)

190 Gas
190k14 Charges
190k14.3 Administrative Regulation
190k14.3(4) k. Findings and Orders. Most Cited Cases
(Formerly 190k14(1))

There are no constitutional requirements more exacting than the standards of the Natural Gas Act which are that gas rates shall be just and reasonable, and a rate order which conforms with the act is valid. Natural Gas Act, § § 4(a), 5(a), 6, 19(b), 15 U.S.C.A. § § 717c(a), 717d(a), 717e, 717r(b).

[16] Commerce 83 62.2

83 Commerce
83II Application to Particular Subjects and Methods of Regulation
83II(B) Conduct of Business in General
83k62.2 k. Gas. Most Cited Cases
(Formerly 83k13)

The purpose of the Natural Gas Act was to provide through the exercise of the national power over interstate commerce an agency for regulating the wholesale distribution to public service companies of natural gas moving in interstate commerce not subject to certain types of state regulation, and the act was not intended to take any authority from state commissions or to usurp state regulatory authority. Natural Gas Act, § 1 et seq., 15 U.S.C.A. § 717 et seq.

[17] Mines and Minerals 260 92.5(3)

260 Mines and Minerals
260III Operation of Mines, Quarries, and Wells
260III(A) Statutory and Official Regulations
260k92.5 Federal Law and Regulations
260k92.5(3) k. Oil and Gas. Most Cited Cases
(Formerly 260k92.7, 260k92)

Under the Natural Gas Act, the Federal Power Commission has no authority over the production or gathering of natural gas. Natural Gas Act, § 1(b), 15 U.S.C.A. § 717(b).

[18] Gas 190 14.1(1)

190 Gas
190k14 Charges
190k14.1 In General
190k14.1(1) k. In General; Amount and

Regulation. Most Cited Cases
(Formerly 190k14(1))
The primary aim of the Natural Gas Act was to protect consumers against exploitation at the hands of natural gas companies and holding companies owning a majority of the pipe-line mileage which moved gas in interstate commerce and against which state commissions, independent producers and communities were growing quite helpless. Natural Gas Act, § § 4, 6-10, 14, 15 U.S.C.A. § § 717c, 717e-717i, 717m.

[19] **Gas 190 ⚷14.1(1)**

190 Gas
190k14 Charges
190k14.1 In General
190k14.1(1) k. In General; Amount and Regulation. Most Cited Cases
(Formerly 190k14(1))
Apart from the express exemptions contained in § 7 of the Natural Gas Act considerations of conservation are material where abandonment or extensions of facilities or service by natural gas companies are involved, but exploitation of consumers by private operators through maintenance of high rates cannot be continued because of the indirect benefits derived therefrom by a state containing natural gas deposits. Natural Gas Act, § § 4, 5, and § 7 as amended 15 U.S.C.A. § § 717c, 717d, 717f.

[20] **Commerce 83 ⚷62.2**

83 Commerce
83II Application to Particular Subjects and Methods of Regulation
83II(B) Conduct of Business in General
83k62.2 k. Gas. Most Cited Cases
(Formerly 83k13)
A limitation on the net earnings of a natural gas company from its interstate business is not a limitation on the power of the producing state, either to safeguard its tax revenues from such industry, or to protect the interests of those who sell their gas to the interstate operator, particularly where the return allowed the company by the Federal Power Commission was a net return after all such charges. Natural Gas Act, § § 4, 5, and § 7, as amended, 15 U.S.C.A. § § 717c, 717d, 717f.

[21] **Gas 190 ⚷14.4(1)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(1) k. In General. Most Cited Cases
(Formerly 190k14(1))
The Natural Gas Act granting Federal Power Commission power to fix "just and reasonable rates" does not include the power to fix rates which will disallow or discourage resales for industrial use. Natural Gas Act, § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[22] **Gas 190 ⚷14.4(1)**

190 Gas
190k14 Charges
190k14.4 Reasonableness of Charges
190k14.4(1) k. In General. Most Cited Cases
(Formerly 190k14(1))
The wasting-asset nature of the natural gas industry does not require the maintenance of the level of rates so that natural gas companies can make a greater profit on each unit of gas sold. Natural Gas Act, § § 4(a), 5(a), 15 U.S.C.A. § § 717c(a), 717d(a).

[23] **Federal Courts 170B ⚷452**

170B Federal Courts
170BVII Supreme Court
170BVII(B) Review of Decisions of Courts of Appeals
170Bk452 k. Certiorari in General. Most Cited Cases
(Formerly 106k383(1))
Where the Federal Power Commission made no findings as to any discrimination or unreasonable differences in rates, and its failure was not challenged in the petition to review, and had not been raised or argued by any party, the problem of discrimination was not open to review by the Supreme Court on certiorari. Natural Gas Act, § 4(b), 15 U.S.C.A. § 717c(b).

[24] **Constitutional Law 92 ⚷74**

92 Constitutional Law
92III Distribution of Governmental Powers and Functions
92III(B) Judicial Powers and Functions
92k71 Encroachment on Executive
92k74 k. Powers, Duties, and Acts Under Legislative Authority. Most Cited Cases
(Formerly 15Ak226)
Congress has entrusted the administration of the

(Cite as: 51 P.U.R.(NS) 193, 64 S.Ct. 281)

Natural Gas Act to the Federal Power Commission and not to the courts, and apart from the requirements of judicial review, it is not for the Supreme Court to advise the Commission how to discharge its functions. Natural Gas Act, § § 1 et seq., 19(b), 15 U.S.C.A. § § 717 et seq., 717r(b).

[25] **Gas 190 14.5(3)**

190 Gas
190k14 Charges
190k14.5 Judicial Review and Enforcement of Regulations
190k14.5(3) k. Decisions Reviewable. Most Cited Cases
(Formerly 190k14(1))

Under the Natural Gas Act, where order sought to be reviewed does not of itself adversely affect complainant but only affects his rights adversely on the contingency of future administrative action, the order is not reviewable, and resort to the courts in such situation is either premature or wholly beyond the province of such courts. Natural Gas Act, § 19(b), 15 U.S.C.A. § 717r(b).

[26] **Gas 190 14.5(4)**

190 Gas
190k14 Charges
190k14.5 Judicial Review and Enforcement of Regulations
190k14.5(4) k. Persons Entitled to Relief; Parties. Most Cited Cases
(Formerly 190k14(1))

Findings of the Federal Power Commission on lawfulness of past natural gas rates, which the Commission was without power to enforce, were not reviewable under the Natural Gas Act giving any "party aggrieved" by an order of the Commission the right of review. Natural Gas Act, § 19(b), 15 U.S.C.A. § 717r(b).

****283 *592** Mr. Francis M. Shea, Asst. Atty. Gen., for petitioners Federal Power Com'n and others.
***593** Mr. Spencer W. Reeder, of Cleveland, Ohio, for petitioner City of cleveland.
Mr. William B. Cockley, of Cleveland, Ohio, for respondent.
Mr. M. M. Neeley, of Charleston, W. Va., for State of West Virginia, as amicus curiae by special leave of Court.

Mr. Justice DOUGLAS delivered the opinion of the Court.

The primary issue in these cases concerns the validity under the Natural Gas Act of 1938, 52 Stat. 821, 15 U.S.C. s 717 et seq., 15 U.S.C.A. s 717 et seq., of a rate order issued by the Federal Power Commission reducing the rates chargeable by Hope Natural Gas Co., 44 P.U.R.,N.S., 1. On a petition for review of the order made pursuant to s 19(b) of the Act, the ***594** Circuit Court of Appeals set it aside, one judge dissenting. 4 Cir., 134 F.2d 287. The cases ****284** are here on petitions for writs of certiorari which we granted because of the public importance of the questions presented. City of Cleveland v. Hope Natural Gas Co., 319 U.S. 735, 63 S.Ct. 1165.

Hope is a West Virginia corporation organized in 1898. It is a wholly owned subsidiary of Standard Oil Co. (N.J.). Since the date of its organization, it has been in the business of producing, purchasing and marketing natural gas in that state. [FN1] It sells some of that gas to local consumers in West Virginia. But the great bulk of it goes to five customer companies which receive it at the West Virginia line and distribute it in Ohio and in Pennsylvania. [FN2] In July, 1938, the cities of Cleveland and Akron filed complaints with the Commission charging that the rates collected by Hope from East Ohio Gas Co. (an affiliate of Hope which distributes gas in Ohio) were excessive and unreasonable. Later in 1938 the Commission on its own motion instituted an investigation to determine the reasonableness of all of Hope's interstate rates. In March ***595** 1939 the Public Utility Commission of Pennsylvania filed a complaint with the Commission charging that the rates collected by Hope from Peoples Natural Gas Co. (an affiliate of Hope distributing gas in Pennsylvania) and two non-affiliated companies were unreasonable. The City of Cleveland asked that the challenged rates be declared unlawful and that just and reasonable rates be determined from June 30, 1939 to the date of the Commission's order. The latter finding was requested in aid of state regulation and to afford the Public Utilities Commission of Ohio a proper basic for disposition of a fund collected by East Ohio under bond from Ohio consumers since June 30, 1939. The cases were consolidated and hearings were held.

FN1 Hope produces about one-third of its annual gas requirements and purchases the rest under some 300 contracts.

FN2 These five companies are the East Ohio Gas Co., the Peoples Natural Gas Co., the

River Gas Co., the Fayette County Gas Co., and the Manufacturers Light & Heat Co. The first three of these companies are, like Hope, subsidiaries of Standard Oil Co. (N.J.). East Ohio and River distribute gas in Ohio, the other three in Pennsylvania. Hope's approximate sales in m.c.f. for 1940 may be classified as follows:

Local West Virginia. sales.	11,000,000
East Ohio.	40,000,000
Peoples.	10,000,000
River.	400,000
Fayette.	860,000
Manufacturers.	2,000,000

Local West Virginia

Hope's natural gas is processed by Hope Construction & Refining Co., an affiliate, for the extraction of gasoline and butane. Domestic Coke Corp., another affiliate, sells coke-oven gas to Hope for boiler fuel.

On May 26, 1942, the Commission entered its order and made its findings. Its order required Hope to decrease its future interstate rates so as to reflect a reduction, on an annual basis of not less than $3,609,857 in operating revenues. And it established 'just and reasonable' average rates per m.c.f. for each of the five customer companies. FN3 In response to the prayer of the City of Cleveland the Commission also made findings as to the lawfulness of past rates, although concededly it had no authority under the Act to fix past rates or to award reparations. 44 P.U.R.,U.S., at page 34. It found that the rates collected by Hope from East Ohio were unjust, unreasonable, excessive and therefore unlawful, by $830,892 during 1939, $3,219,551 during 1940, and $2,815,789 on an annual basis since 1940. It further found that just, reasonable, and lawful rates for gas sold by Hope to East Ohio for resale for ultimate public consumption were those required ***596** to produce $11,528,608 for 1939, $11,507,185 for 1940 and $11.910,947 annually since 1940.

FN3 These required minimum reductions of 7¢ per m.c.f. from the 36.5¢ and 35.5¢ rates previously charged East Ohio and Peoples, respectively, and 3¢ per m.c.f. from the 31.5¢ rate previously charged Fayette and Manufacturers.

The Commission established an interstate rate base of $33,712,526 which, it found, represented the 'actual legitimate cost' of the company's interstate property less depletion and depreciation and plus unoperated acreage, working capital and future net capital additions. The Commission, beginning with book cost, made ****285** certain adjustments not necessary to relate here and found the 'actual legitimate cost' of the plant in interstate service to be $51,957,416, as of December 31, 1940. It deducted accrued depletion and depreciation, which it found to be $22,328,016 on an 'economic-service-life' basis. And it added $1,392,021 for future net capital additions, $566,105 for useful unoperated acreage, and $2,125,000 for working capital. It used 1940 as a test year to estimate future revenues and expenses. It allowed over $16,000,000 as annual operating expenses-about $1,300,000 for taxes, $1,460,000 for depletion and depreciation, $600,000 for exploration and development costs, $8,500,000 for gas purchased. The Commission allowed a net increase of $421,160 over 1940 operating expenses, which amount was to take care of future increase in wages, in West Virginia property taxes, and in exploration and development costs. The total amount of deductions allowed from interstate revenues was $13,495,584.

Hope introduced evidence from which it estimated reproduction cost of the property at $97,000,000. It also presented a so-called trended 'original cost' estimate which exceeded $105,000,000. The latter was designed 'to indicate what the original cost of the property would have been if 1938 material and labor prices had prevailed throughout the whole period of the piece-meal construction of the company's property since 1898.' 44 P.U.R.,N.S., at pages 8, 9. Hope estimated by the 'percent condition' method accrued depreciation at about 35% of ***597** reproduction cost new. On that basis Hope contended for a rate base of $66,000,000. The Commission refused to place any reliance on reproduction cost new, saying that it was 'not predicated upon facts' and was 'too conjectural and illusory to be given any weight in these proceedings.' Id., 44 P.U.R.,U.S., at page 8. It likewise refused to give any 'probative value' to trended 'original cost' since it was 'not founded in fact' but was 'basically erroneous' and produced 'irrational results.' Id., 44 P.U.R., N.S., at page 9. In determining the amount of accrued depletion and depreciation the Commission, following Lindheimer v. Illinois Bell

(Cite as: 51 P.U.R.(NS) 193, 64 S.Ct. 281)

Telephone Co., 292 U.S. 151, 167-169, 54 S.Ct. 658, 664-666, 78 L.Ed. 1182; Federal Power Commission v. Natural Gas Pipeline Co., 315 U.S. 575, 592, 593, 62 S.Ct. 736, 745, 746, 86 L.Ed. 1037, based its computation on 'actual legitimate cost'. It found that Hope during the years when its business was not under regulation did not observe 'sound depreciation and depletion practices' but 'actually accumulated an excessive reserve' [FN4] of about $46,000,000. Id., 44 P.U.R.,N.S., at page 18. One member of the Commission thought that the entire amount of the reserve should be deducted from 'actual legitimate cost' in determining the rate base. [FN5] The majority of the ***598** Commission concluded, however, that where, as here, a business is brought under regulation for the first time and where incorrect depreciation and depletion practices have prevailed, the deduction of the reserve requirement (actual existing depreciation and depletion) rather than the excessive reserve should be made so as to ****286** lay 'a sound basis for future regulation and control of rates.' Id., 44 P.U.R.,N.S., at page 18. As we have pointed out, it determined accrued depletion and depreciation to be $22,328,016; and it allowed approximately $1,460,000 as the annual operating expense for depletion and depreciation. [FN6]

FN4 The book reserve for interstate plant amounted at the end of 1938 to about $18,000,000 more than the amount determined by the Commission as the proper reserve requirement. The Commission also noted that 'twice in the past the company has transferred amounts aggregating $7,500,000 from the depreciation and depletion reserve to surplus. When these latter adjustments are taken into account, the excess becomes $25,500,000, which has been exacted from the ratepayers over and above the amount required to cover the consumption of property in the service rendered and thus to keep the investment unimpaired.' 44 P.U.R.,N.S., at page 22.

FN5 That contention was based on the fact that 'every single dollar in the depreciation and depletion reserves' was taken 'from gross operating revenues whose only source was the amounts charged customers in the past for natural gas. It is, therefore, a fact that the depreciation and depletion reserves have been contributed by the customers and do not represent any investment by Hope.' Id., 44 P.U.R.,N.S., at page 40. And see Railroad Commission v. Cumberland Tel. & T. Co., 212 U.S. 414, 424, 425, 29 S.Ct. 357, 361, 362, 53 L.Ed. 577; 2 Bonbright, Valuation of Property (1937), p. 1139.

FN6 The Commission noted that the case was 'free from the usual complexities involved in the estimate of gas reserves because the geologists for the company and the Commission presented estimates of the remaining recoverable gas reserves which were about one per cent apart.' 44 P.U.R.,N.S., at pages 19, 20.

The Commission utilized the 'straight-line-basis' for determining the depreciation and depletion reserve requirements. It used estimates of the average service lives of the property by classes based in part on an inspection of the physical condition of the property. And studies were made of Hope's retirement experience and maintenance policies over the years. The average service lives of the various classes of property were converted into depreciation rates and then applied to the cost of the property to ascertain the portion of the cost which had expired in rendering the service.

The record in the present case shows that Hope is on the lookout for new sources of supply of natural gas and is contemplating an extension of its pipe line into Louisiana for that purpose. The Commission recognized in fixing the rates of depreciation that much material may be used again when various present sources of gas supply are exhausted, thus giving that property more than scrap value at the end of its present use.

Hope's estimate of original cost was about $69,735,000-approximately $17,000,000 more than the amount found by the Commission. The item of $17,000,000 was made up largely of expenditures which prior to December 31, 1938, were charged to operating expenses. Chief among those expenditures was some $12,600,000 expended ***599** in well-drilling prior to 1923. Most of that sum was expended by Hope for labor, use of drilling-rigs, hauling, and similar costs of well-drilling. Prior to 1923 Hope followed the general practice of the natural gas industry and charged the cost of drilling wells to operating expenses. Hope continued that practice until the Public Service Commission of West Virginia in 1923 required it to capitalize such expenditures, as does the Commission under its present Uniform System of Accounts. [FN7] The Commission refused to add such items to the rate base stating that 'No greater injustice to consumers could be done than to allow items as operating expenses and at a later date include them in the rate base, thereby placing multiple charges upon the consumers.' Id., 44 P.U.R.,N.S., at page 12. For the same reason the Commission excluded from the rate base about $1,600,000 of expenditures on properties which Hope acquired from other utilities, the latter having charged those payments to operating expenses. The Commission disallowed certain other overhead items amounting to over $3,000,000 which also had been previously charged to operating expenses. And it refused to add some $632,000 as interest during construction since no interest was in fact paid.

FN7 See Uniform System of Accounts prescribed for Natural Gas Companies effective January 1, 1940, Account No. 332.1.

Hope contended that it should be allowed a return of not less than 8%. The Commission found that an 8% return would be unreasonable but that 6 1/2% was a fair rate of return. That rate of return, applied to the rate base of $33,712,526, would produce $2,191,314 annually, as compared with the present income of not less than $5,801,171.

The Circuit Court of Appeals set aside the order of the Commission for the following reasons. (1) It held that the rate base should reflect the 'present fair value' of the ***600** property, that the Commission in determining the 'value' should have considered reproduction cost and trended original cost, and that 'actual legitimate cost' (prudent investment) was not the proper measure of 'fair value' where price levels had changed since the investment. (2) It concluded that the well-drilling costs and overhead items in the amount of some $17,000,000 should have been included in the rate base. (3) It held that accrued depletion and depreciation and the annual allowance for that expense should be computed on the basis of 'present fair value' of the property not on the basis of 'actual legitimate cost'.

****287** The Circuit Court of Appeals also held that the Commission had no power to make findings as to past rates in aid of state regulation. But it concluded that those findings were proper as a step in the process of fixing future rates. Viewed in that light, however, the findings were deemed to be invalidated by the same errors which vitiated the findings on which the rate order was based.

Order Reducing Rates. Congress has provided in s 4(a) of the Natural Gas Act that all natural gas rates subject to the jurisdiction of the Commission 'shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.' Sec. 5(a) gives the Commission the power, after hearing, to determine the 'just and reasonable rate' to be thereafter observed and to fix the rate by order. Sec. 5(a) also empowers the Commission to order a 'decrease where existing rates are unjust * * * unlawful, or are not the lowest reasonable rates.' And Congress has provided in s 19(b) that on review of these rate orders the 'finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive.' Congress, however, has provided no formula by which the 'just and reasonable' rate is to be determined. It has not filled in the ***601** details of the general prescription [FN8] of s 4(a) and s 5(a). It has not expressed in a specific rule the fixed principle of 'just and reasonable'.

FN8. Sec. 6 of the Act comes the closest to supplying any definite criteria for rate making. It provides in subsection (a) that, 'The Commission may investigate the ascertain the actual legitimate cost of the property of every natural-gas company, the depreciation therein, and, when found necessary for rate-making purposes, other facts which bear on the determination of such cost or depreciation and the fair value of such property.' Subsection (b) provides that every natural-gas company on request shall file with the Commission a statement of the 'original cost' of its property and shall keep the Commission informed regarding the 'cost' of all additions, etc.

[1] [2] When we sustained the constitutionality of the Natural Gas Act in the Natural Gas Pipeline Co. case, we stated that the 'authority of Congress to regulate the prices of commodities in interstate commerce is at least as great under the Fifth Amendment as is that of the states under the Fourteenth to regulate the prices of commodities in intrastate commerce.' 315 U.S. at page 582, 62 S.Ct. at page 741, 86 L.Ed. 1037. Rate-making is indeed but one species of price-fixing. Munn v. Illinois, 94 U.S. 113, 134, 24 L.Ed. 77. The fixing of prices, like other applications of the police power, may reduce the value of the property which is being regulated. But the fact that the value is reduced does not mean that the regulation is invalid. Block v. Hirsh, 256 U.S. 135, 155-157, 41 S.Ct. 458, 459, 460, 65 L.Ed. 865, 16 A.L.R. 165; Nebbia v. New York, 291 U.S. 502, 523-539, 54 S.Ct. 505, 509-517, 78 L.Ed. 940, 89 A.L.R. 1469, and cases cited. It does, however, indicate that 'fair value' is the end product of the process of rate-making not the starting point as the Circuit Court of Appeals held. The heart of the matter is that rates cannot be made to depend upon 'fair value' when the value of the going enterprise depends on earnings under whatever rates may be anticipated. [FN9]

FN9 We recently stated that the meaning of the word 'value' is to be gathered 'from the purpose for which a valuation is being made. Thus the question in a valuation for rate making is how much a utility will be allowed to earn. The basic question in a valuation for reorganization purposes is how much the enterprise in all probability can earn.' Institutional Investors v. Chicago, M., St. P. & P.R. Co., 318 U.S. 523, 540, 63 S.Ct. 727, 738.

***602** [3] [4] [5] [6] [7] We held in Federal Power Commission v. Natural Gas Pipeline Co., supra, that the Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its rate-making function, moreover, involves the making of 'pragmatic adjustments.' Id., 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. And when the Commission's order is challenged in the courts, the question is whether that order 'viewed in its entirety' meets the requirements of the Act. Id., 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling. Cf. ****288**Los Angeles Gas & Electric Corp. v. Railroad Commission, 289 U.S. 287, 304, 305, 314, 53 S.Ct. 637, 643, 644, 647, 77 L.Ed. 1180; West Ohio Gas Co. v. Public Utilities Commission (No. 1), 294 U.S. 63, 70, 55 S.Ct. 316, 320, 79 L.Ed. 761; West v. Chesapeake & Potomac Tel. Co., 295 U.S. 662, 692, 693, 55 S.Ct. 894, 906, 907, 79 L.Ed. 1640 (dissenting opinion). It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important. Moreover, the Commission's order does not become suspect by reason of the fact that it is challenged. It is the product of expert judgment which carries a presumption of validity. And he who would upset the rate order under the Act carries the heavy burden of making a convincing showing that it is invalid because it is unjust and unreasonable in its consequences. Cf. Railroad Commission v. Cumberland Tel. & T. Co., 212 U.S. 414, 29 S.Ct. 357, 53 L.Ed. 577; Lindheimer v. Illinois Bell Tel. Co., supra, 292 U.S. at pages 164, 169, 54 S.Ct. at pages 663, 665, 78 L.Ed. 1182; Railroad Commission v. Pacific Gas & E. Co., 302 U.S. 388, 401, 58 S.Ct. 334, 341, 82 L.Ed. 319.

***603** [8] [9] The rate-making process under the Act, i.e., the fixing of 'just and reasonable' rates, involves a balancing of the investor and the consumer interests. Thus we stated in the Natural Gas Pipeline Co. case that 'regulation does not insure that the business shall produce net revenues.' 315 U.S. at page 590, 62 S.Ct. at page 745, 86 L.Ed. 1037. But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. Cf. Chicago & Grand Trunk R. Co. v. Wellman, 143 U.S. 339, 345, 346, 12 S.Ct. 400, 402, 36 L.Ed. 176. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. See State of Missouri ex rel. South-western Bell Tel. Co. v. Public Service Commission, 262 U.S. 276, 291, 43 S.Ct. 544, 547, 67 L.Ed. 981, 31 A.L.R. 807 (Mr. Justice Brandeis concurring). The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust and unreasonable from the investor or company viewpoint.

We have already noted that Hope is a wholly owned subsidiary of the Standard Oil Co. (N.J.). It has no securities outstanding except stock. All of that stock has been owned by Standard since 1908. The par amount presently outstanding is approximately $28,000,000 as compared with the rate base of $33,712,526 established by ***604** the Commission. Of the total outstanding stock $11,000,000 was issued in stock dividends. The balance, or about $17,000,000, was issued for cash or other assets. During the four decades of its operations Hope has paid over $97,000,000 in cash dividends. It had, moreover, accumulated by 1940 an earned surplus of about $8,000,000. It had thus earned the total investment in the company nearly seven times. Down to 1940 it earned over 20% per year on the average annual amount of its capital stock issued for cash or other assets. On an average invested capital of some $23,000,000 Hope's average earnings have been about 12% a year. And during this period it had accumulated in addition reserves for depletion and depreciation of about $46,000,000. Furthermore, during 1939, 1940 and 1941, Hope paid dividends of 10% on its stock. And in the year 1942, during about half of which the lower rates were in effect, it paid dividends of 7 1/2%. From 1939-1942 its earned surplus increased from $5,250,000 to about $13,700,000, i.e., to almost half the par value of its outstanding stock.

As we have noted, the Commission fixed a rate of return which permits Hope to earn $2,191,314 annually. In determining that amount it stressed the importance of maintaining the financial integrity of the ****289** company. It considered the financial history of Hope and a vast

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array of data bearing on the natural gas industry, related businesses, and general economic conditions. It noted that the yields on better issues of bonds of natural gas companies sold in the last few years were 'close to 3 per cent', 44 P.U.R.,N.S., at page 33. It stated that the company was a 'seasoned enterprise whose risks have been minimized' by adequate provisions for depletion and depreciation (past and present) with 'concurrent high profits', by 'protected established markets, through affiliated distribution companies, in populous and industralized areas', and by a supply of gas locally to meet all requirements,***605** 'except on certain peak days in the winter, which it is feasible to supplement in the future with gas from other sources.' Id., 44 P.U.R.,N.S., at page 33. The Commission concluded, 'The company's efficient management, established markets, financial record, affiliations, and its prospective business place it in a strong position to attract capital upon favorable terms when it is required.' Id., 44 P.U.R.,N.S., at page 33.

[10] [11] [12] In view of these various considerations we cannot say that an annual return of $2,191,314 is not 'just and reasonable' within the meaning of the Act. Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called 'fair value' rate base. In that connection it will be recalled that Hope contended for a rate base of $66,000,000 computed on reproduction cost new. The Commission points out that if that rate base were accepted, Hope's average rate of return for the four-year period from 1937-1940 would amount to 3.27%. During that period Hope earned an annual average return of about 9% on the average investment. It asked for no rate increases. Its properties were well maintained and operated. As the Commission says such a modest rate of 3.27% suggests an 'inflation of the base on which the rate has been computed.' Dayton Power & Light Co. v. Public Utilities Commission, 292 U.S. 290, 312, 54 S.Ct. 647, 657, 78 L.Ed. 1267. Cf. Lindheimer v. Illinois Bell Tel. Co., supra, 292 U.S. at page 164, 54 S.Ct. at page 663, 78 L.Ed. 1182. The incongruity between the actual operations and the return computed on the basis of reproduction cost suggests that the Commission was wholly justified in rejecting the latter as the measure of the rate base.

In view of this disposition of the controversy we need not stop to inquire whether the failure of the Commission to add the $17,000,000 of well-drilling and other costs to ***606** the rate base was consistent with the prudent investment theory as developed and applied in particular cases.

[13] [14] [15] Only a word need be added respecting depletion and depreciation. We held in the Natural Gas Pipeline Co. case that there was no constitutional requirement 'that the owner who embarks in a wasting-asset business of limited life shall receive at the end more than he has put into it.' 315 U.S. at page 593, 62 S.C. at page 746, 86 L.Ed. 1037. The Circuit Court of Appeals did not think that that rule was applicable here because Hope was a utility required to continue its service to the public and not scheduled to end its business on a day certain as was stipulated to be true of the Natural Gas Pipeline Co. But that distinction is quite immaterial. The ultimate exhaustion of the supply is inevitable in the case of all natural gas companies. Moreover, this Court recognized in Lindheimer v. Illinois Bell Tel. Co., supra, the propriety of basing annual depreciation on cost. [FN10] By such a procedure the ****290** utility is made whole and the integrity of its investment maintained. [FN11] No more is required. [FN12] We cannot approve the contrary holding ***607** of United Railways & Electric Co. v. West, 280 U.S. 234, 253, 254, 50 S.Ct. 123, 126, 127, 74 L.Ed. 390. Since there are no constitutional requirements more exacting than the standards of the Act, a rate order which conforms to the latter does not run afoul of the former.

FN10 Chief Justice Hughes said in that case (292 U.S. at pages 168, 169, 54 S.Ct. at page 665, 78 L.Ed. 1182): 'If the predictions of service life were entirely accurate and retirements were made when and as these predictions were precisely fulfilled, the depreciation reserve would represent the consumption of capital, on a cost basis, according to the method which spreads that loss over the respective service periods. But if the amounts charged to operating expenses and credited to the account for depreciation reserve are excessive, to that extent subscribers for the telephone service are required to provide, in effect, capital contributions, not to make good losses incurred by the utility in the service rendered and thus to keep its investment unimpaired, but to secure additional plant and equipment upon which the utility expects a return.'

FN11 See Mr. Justice Brandeis (dissenting) in United Railways & Electric Co. v. West, 280 U.S. 234, 259-288, 50 S.Ct. 123, 128-138, 74 L.Ed. 390, for an extended analysis of the problem.

FN12 It should be noted that the Act provides no specific rule governing depletion and depreciation. Sec. 9(a) merely states that the

Commission 'may from time to time ascertain and determine, and by order fix, the proper and adequate rates of depreciation and amortization of the several classes of property of each natural-gas company used or useful in the production, transportation, or sale of natural gas.'

The Position of West Virginia. The State of West Virginia, as well as its Public Service Commission, intervened in the proceedings before the Commission and participated in the hearings before it. They have also filed a brief amicus curiae here and have participated in the argument at the bar. Their contention is that the result achieved by the rate order 'brings consequences which are unjust to West Virginia and its citizens' and which 'unfairly depress the value of gas, gas lands and gas leaseholds, unduly restrict development of their natural resources, and arbitrarily transfer their properties to the residents of other states without just compensation therefor.'

West Virginia points out that the Hope Natural Gas Co. holds a large number of leases on both producing and unoperated properties. The owner or grantor receives from the operator or grantee delay rentals as compensation for postponed drilling. When a producing well is successfully brought in, the gas lease customarily continues indefinitely for the life of the field. In that case the operator pays a stipulated gas-well rental or in some cases a gas royalty equivalent to one-eighth of the gas marketed. [FN13] Both the owner and operator have valuable property interests in the gas which are separately taxable under West Virginia law. The contention is that the reversionary interests in the leaseholds should be represented in the rate proceedings since it is their gas which is being sold in interstate ***608** commerce. It is argued, moreover, that the owners of the reversionary interests should have the benefit of the 'discovery value' of the gas leaseholds, not the interstate consumers. Furthermore, West Virginia contends that the Commission in fixing a rate for natural gas produced in that State should consider the effect of the rate order on the economy of West Virginia. It is pointed out that gas is a wasting asset with a rapidly diminishing supply. As a result West Virginia's gas deposits are becoming increasingly valuable. Nevertheless the rate fixed by the Commission reduces that value. And that reduction, it is said, has severe repercussions on the economy of the State. It is argued in the first place that as a result of this rate reduction Hope's West Virginia property taxes may be decreased in view of the relevance which earnings have under West Virginia law in the assessment of property for tax purposes. [FN14] Secondly, it is pointed out that West Virginia has a production tax [FN15] on the 'value' of the gas exported from the State. And we are told that for purposes of that tax 'value' becomes under West Virginia law 'practically the substantial equivalent of market value.' Thus West Virginia argues that undervaluation of Hope's gas leaseholds will cost the State many thousands of dollars in taxes. The effect, it is urged, is to impair West Virginia's tax structure for the benefit of Ohio and Pennsylvania consumers. West Virginia emphasizes, moreover, its deep interest in the conservation of its natural resources including its natural gas. It says that a reduction of the value of these leasehold values will jeopardize these conservation policies in three respects: (1) ****291** exploratory development of new fields will be discouraged; (2) abandonment of lowyield high-cost marginal wells will be hastened; and (3) secondary recovery of oil will be hampered. ***609** Furthermore, West Virginia contends that the reduced valuation will harm one of the great industries of the State and that harm to that industry must inevitably affect the welfare of the citizens of the State. It is also pointed out that West Virginia has a large interest in coal and oil as well as in gas and that these forms of fuel are competitive. When the price of gas is materially cheapened, consumers turn to that fuel in preference to the others. As a result this lowering of the price of natural gas will have the effect of depreciating the price of West Virginia coal and oil.

FN13 See Simonton, The Nature of the Interest of the Grantee Under an Oil and Gas Lease (1918), 25 W.Va.L.Quar. 295.

FN14 West Penn Power Co. v. Board of Review, 112 W.Va. 442, 164 S.E. 862.

FN15 W.Va.Rev.Code of 1943, ch. 11. Art. 13, ss 2a, 3a.

West Virginia insists that in neglecting this aspect of the problem the Commission failed to perform the function which Congress entrusted to it and that the case should be remanded to the Commission for a modification of its order. [FN16]

FN16 West Virginia suggests as a possible solution (1) that a 'going concern value' of the company's tangible assets be included in the rate base and (2) that the fair market value of gas delivered to customers be added to the outlay for operating expenses and taxes.

We have considered these contentions at length in view of the earnestness with which they have been urged upon us. We have searched the legislative history of the Natural

Gas Act for any indication that Congress entrusted to the Commission the various considerations which West Virginia has advanced here. And our conclusion is that Congress did not.

[16] [17] We pointed out in Illinois Natural Gas Co. v. Central Illinois Public Service Co., 314 U.S. 498, 506, 62 S.Ct. 384, 387, 86 L.Ed. 371, that the purpose of the Natural Gas Act was to provide, 'through the exercise of the national power over interstate commerce, an agency for regulating the wholesale distribution to public service companies of natural gas moving interstate, which this Court had declared to be interstate commerce not subject to certain types of state regulation.' As stated in the House Report the 'basic purpose' of this legislation was 'to occupy' the field in which such cases as ***610**State of Missouri v. Kansas Natural Gas Co., 265 U.S. 298, 44 S.Ct. 544, 68 L.Ed. 1027, and Public Utilities Commission v. Attleboro Steam & Electric Co., 273 U.S. 83, 47 S.Ct. 294, 71 L.Ed. 549, had held the States might not act. H.Rep. No. 709, 75th Cong., 1st Sess., p. 2. In accomplishing that purpose the bill was designed to take 'no authority from State commissions' and was 'so drawn as to complement and in no manner usurp State regulatory authority.' Id., p. 2. And the Federal Power Commission was given no authority over the 'production or gathering of natural gas.' s 1(b).

[18] The primary aim of this legislation was to protect consumers against exploitation at the lands of natural gas companies. Due to the hiatus in regulation which resulted from the Kansas Natural Gas Co. case and related decisions state commissions found it difficult or impossible to discover what it cost interstate pipe-line companies to deliver gas within the consuming states; and thus they were thwarted in local regulation. H.Rep., No. 709, supra, p. 3. Moreover, the investigations of the Federal Trade Commission had disclosed that the majority of the pipe-line mileage in the country used to transport natural gas, together with an increasing percentage of the natural gas supply for pipe-line transportation, had been acquired by a handful of holding companies. [FN17] State commissions, independent producers, and communities having or seeking the service were growing quite helpless against these combinations. [FN18] These were the types of problems with which those participating in the hearings were pre-occupied. [FN19] Congress addressed itself to those specific evils.

FN17 S.Doc. 92, Pt. 84-A, ch. XII, Final Report, Federal Trade Commission to the Senate pursuant to S.Res.No. 83, 70th Cong., 1st Sess.

FN18 S.Doc. 92, Pt. 84-A, chs. XII, XIII, op. cit., supra, note 17.

FN19 See Hearings on H.R. 11662, Subcommittee of House Committee on Interstate & Foreign Commerce, 74th Cong., 2d Sess.; Hearings on H.R. 4008, House Committee on Interstate & Foreign Commerce, 75th Cong., 1st Sess.

611** The Federal Power Commission was given*292** broad powers of regulation. The fixing of 'just and reasonable' rates (s 4) with the powers attendant thereto [FN20] was the heart of the new regulatory system. Moreover, the Commission was given certain authority by s 7(a), on a finding that the action was necessary or desirable 'in the public interest,' to require natural gas companies to extend or improve their transportation facilities and to sell gas to any authorized local distributor. By s 7(b) it was given control over the abandonment of facilities or of service. And by s 7(c), as originally enacted, no natural gas company could undertake the construction or extension of any facilities for the transportation of natural gas to a market in which natural gas was already being served by another company, or sell any natural gas in such a market, without obtaining a certificate of public convenience and necessity from the Commission. In passing on such applications for certificates of convenience and necessity the Commission was told by s 7(c), as originally enacted, that it was 'the intention of Congress that natural gas shall be sold in interstate commerce for resale for ultimate public consumption for domestic, commercial, industrial, or any other use at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.' The latter provision was deleted from s 7(c) when that subsection was amended by the Act of February 7, 1942, 56 Stat. 83. By that amendment limited grandfather rights were granted companies desiring to extend their facilities and services over the routes or within the area which they were already serving. Moreover, s 7(c) was broadened so as to require certificates***612** of public convenience and necessity not only where the extensions were being made to markets in which natural gas was already being sold by another company but in other situations as well.

FN20 The power to investigate and ascertain the 'actual legitimate cost' of property (s 6), the requirement as to books and records (s 8), control over rates of depreciation (s 9), the requirements for periodic and special reports (s 10), the broad powers of investigation (s 14) are among the chief powers supporting the rate making function.

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[19] These provisions were plainly designed to protect the consumer interests against exploitation at the hands of private natural gas companies. When it comes to cases of abandonment or of extensions of facilities or service, we may assume that, apart from the express exemptions [FN21] contained in s 7, considerations of conservation are material to the issuance of certificates of public convenience and necessity. But the Commission was not asked here for a certificate of public convenience and necessity under s 7 for any proposed construction or extension. It was faced with a determination of the amount which a private operator should be allowed to earn from the sale of natural gas across state lines through an established distribution system. Secs. 4 and 5, not s 7, provide the standards for that determination. We cannot find in the words of the Act or in its history the slightest intimation or suggestion that the exploitation of consumers by private operators through the maintenance of high rates should be allowed to continue provided the producing states obtain indirect benefits from it. That apparently was the Commission's view of the matter, for the same arguments advanced here were presented to the Commission and not adopted by it.

> FN21 Apart from the grandfather clause contained in s 7(c), there is the provision of s 7(f) that a natural gas company may enlarge or extend its facilities with the ‘service area’ determined by the Commission without any further authorization.

We do not mean to suggest that Congress was unmindful of the interests of the producing states in their natural gas supplies when it drafted the Natural Gas Act. As we have said, the Act does not intrude on the domain traditionally reserved for control by state commissions; and the Federal Power Commission was given no authority over***613** ‘the production or gathering of natural gas.’ s 1(b). In addition, Congress recognized the legitimate interests of the States in the conservation of natural gas. By s 11 Congress instructed the Commission to make reports on compacts between two or more States dealing with the conservation, production and transportation of natural gas. [FN22] The Commission was also ****293** directed to recommend further legislation appropriate or necessary to carry out any proposed compact and ‘to aid in the conservation of natural-gas resources within the United States and in the orderly, equitable, and economic production, transportation, and distribution of natural gas.’ s 11(a). Thus Congress was quite aware of the interests of the producing states in their natural gas supplies. [FN23] But it left the protection of ***614** those interests to measures other than the maintenance of high rates to private companies. If the Commission is to be compelled to let the stockholders of natural gas companies have a feast so that the producing states may receive crumbs from that table, the present Act must be redesigned. Such a project raises questions of policy which go beyond our province.

> FN22 See P.L. 117, approved July 7, 1943, 57 Stat. 383 containing an ‘Interstate Compact to Conserve Oil and Gas' between Oklahoma, Texas, New Mexico, Illinois, Colorado, and Kansas.

> FN23 As we have pointed out, s 7(c) was amended by the Act of February 7, 1942, 56 Stat. 83, so as to require certificates of public convenience and necessity not only where the extensions were being made to markets in which natural gas was already being sold by another company but to other situations as well. Considerations of conservation entered into the proposal to give the Act that broader scope. H.Rep.No. 1290, 77th Cong. 1st Sess., pp. 2, 3. And see Annual Report, Federal Power Commission (1940) pp. 79, 80; Baum, The Federal Power Commission and State Utility Regulation (1942), p. 261.

The bill amending s 7(c) originally contained a subsection (h) reading as follows: ‘Nothing contained in this section shall be construed to affect the authority of a State within which natural gas is produced to authorize or require the construction or extension of facilities for the transportation and sale of such gas within such State: Provided, however, That the Commission, after a hearing upon complaint or upon its own motion, may by order forbid any intrastate construction or extension by any natural-gas company which it shall find will prevent such company from rendering adequate service to its customers in interstate or foreign commerce in territory already being served.’ See Hearings on H.R. 5249, House Committee on Interstate & Foreign Commerce, 77th Cong., 1st Sess., pp. 7, 11, 21, 29, 32, 33. In explanation of its deletion the House Committee Report stated, pp. 4, 5: ‘The increasingly important problems raised by the desire of several States to regulate the use of the natural gas produced therein in the interest of consumers within such States, as against the Federal power to regulate interstate commerce in the interest of both interstate and intrastate consumers, are deemed by the committee to warrant further intensive study and probably a more retailed and comprehensive plan for the handling thereof than that which would have been provided by the stricken subsection.'

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[20] It is hardly necessary to add that a limitation on the net earnings of a natural gas company from its interstate business is not a limitation on the power of the producing state either to safeguard its tax revenues from that industry [FN24] or to protect the interests of those who sell their gas to the interstate operator. [FN25] The return which ****294** the Commission***615** allowed was the net return after all such charges.

FN24 We have noted that in the annual operating expenses of some $16,000.000 the Commission included West Virginia and federal taxes. And in the net increase of $421,160 over 1940 operating expenses allowed by the Commission was some $80,000 for increased West Virginia property taxes. The adequacy of these amounts has not been challenged here.

FN25 The Commission included in the aggregate annual operating expenses which it allowed some $8,500,000 for gas purchased. It also allowed about $1,400,000 for natural gas production and about $600,000 for exploration and development.

It is suggested, however, that the Commission in ascertaining the cost of Hope's natural gas production plant proceeded contrary to s 1(b) which provides that the Act shall not apply to 'the production or gathering of natural gas'. But such valuation, like the provisions for operating expenses, is essential to the rate-making function as customarily performed in this country. Cf. Smith, The Control of Power Rates in the United States and England (1932), 159 The Annals 101. Indeed s 14(b) of the Act gives the Commission the power to 'determine the propriety and reasonableness of the inclusion in operating expenses, capital, or surplus of all delay rentals or other forms of rental or compensation for unoperated lands and leases.'

It is suggested that the Commission has failed to perform its duty under the Act in that it has not allowed a return for gas production that will be enough to induce private enterprise to perform completely and efficiently its functions for the public. The Commission, however, was not oblivious of those matters. It considered them. It allowed, for example, delay rentals and exploration and development costs in operating expenses. [FN26] No serious attempt has been made here to show that they are inadequate. We certainly cannot say that they are, unless we are to substitute our opinions for the expert judgment of the administrators to whom Congress entrusted the decision. Moreover, if in light of experience they turn out to be inadequate for development of new sources of supply, the doors of the Commission are open for increased allowances. This is not an order for all time. The Act contains machinery for obtaining rate adjustments. s 4.

FN26 See note 25, supra.

[21] [22] But it is said that the Commission placed too low a rate on gas for industrial purposes as compared with gas for domestic purposes and that industrial uses should be discouraged. It should be noted in the first place that the rates which the Commission has fixed are Hope's interstate wholesale rates to distributors not interstate rates to industrial users [FN27] and domestic consumers. We hardly ***616** can assume, in view of the history of the Act and its provisions, that the resales intrastate by the customer companies which distribute the gas to ultimate consumers in Ohio and Pennsylvania are subject to the rate-making powers of the Commission. [FN28] But in any event those rates are not in issue here. Moreover, we fail to find in the power to fix 'just and reasonable' rates the power to fix rates which will disallow or discourage resales for industrial use. The Committee Report stated that the Act provided 'for regulation along recognized and more or less standardized lines' and that there was 'nothing novel in its provisions'. H.Rep.No.709, supra, p. 3. Yet if we are now to tell the Commission to fix the rates so as to discourage particular uses, we would indeed be injecting into a rate case a 'novel' doctrine which has no express statutory sanction. The same would be true if we were to hold that the wasting-asset nature of the industry required the maintenance of the level of rates so that natural gas companies could make a greater profit on each unit of gas sold. Such theories of rate-making for this industry may or may not be desirable. The difficulty is that s 4(a) and s 5(a) contain only the conventional standards of rate-making for natural gas companies. [FN29] The ***617** Act of February 7, 1942, by broadening s 7 gave the Commission some additional authority to deal with the conservation aspects of the problem. [FN30] But s 4(a) and s 5(a) were not changed. If the standard****295** of 'just and reasonable' is to sanction the maintenance of high rates by a natural gas company because they restrict the use of natural gas for certain purposes, the Act must be further amended.

FN27 The Commission has expressed doubts over its power to fix rates on 'direct sales to industries' from interstate pipelines as distinguished from 'sales for resale to the industrial customers of distributing companies.' Annual Report, Federal Power Commission (1940), p. 11.

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FN28. Sec. 1(b) of the Act provides: 'The provisions of this Act shall apply to the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use, and to natural-gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas or to the local distribution of natural gas or to the facilities used for such distribution or to the production or gathering of natural gas.' And see s 2(6), defining a 'natural-gas company', and H.Rep.No. 709, supra, pp. 2, 3.

FN29 The wasting-asset characteristic of the industry was recognized prior to the Act as requiring the inclusion of a depletion allowance among operating expenses. See Columbus Gas & Fuel Co. v. Public Utilities Commission, 292 U.S. 398, 404, 405, 54 S.Ct. 763, 766, 767, 78 L.Ed. 1327, 91 A.L.R. 1403. But no such theory of rate-making for natural gas companies as is now suggested emerged from the cases arising during the earlier period of regulation.

FN30 The Commission has been alert to the problems of conservation in its administration of the Act. It has indeed suggested that it might be wise to restrict the use of natural gas 'by functions rather than by areas.' Annual Report (1940) p. 79.

The Commission stated in that connection that natural gas was particularly adapted to certain industrial uses. But it added that the general use of such gas 'under boilers for the production of steam' is 'under most circumstances of very questionable social economy.' Ibid.

[23] [24] It is finally suggested that the rates charged by Hope are discriminatory as against domestic users and in favor of industrial users. That charge is apparently based on s 4(b) of the Act which forbids natural gas companies from maintaining 'any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.' The power of the Commission to eliminate any such unreasonable differences or discriminations is plain. s 5(a). The Commission, however, made no findings under s 4(b). Its failure in that regard was not challenged in the petition to review. And it has not been raised or argued here by any party. Hence the problem of discrimination has no proper place in the present decision. It will be time enough to pass on that issue when it is presented to us. Congress has entrusted the administration of the Act to the Commission not to the courts. Apart from the requirements of judicial review it is not ***618** for us to advise the Commission how to discharge its functions.

Findings as to the Lawfulness of Past Rates. As we have noted, the Commission made certain findings as to the lawfulness of past rates which Hope had charged its interstate customers. Those findings were made on the complaint of the City of Cleveland and in aid of state regulation. It is conceded that under the Act the Commission has no power to make reparation orders. And its power to fix rates admittedly is limited to those 'to be thereafter observed and in force.' s 5(a). But the Commission maintains that it has the power to make findings as to the lawfulness of past rates even though it has no power to fix those rates. [FN31] However that may be, we do not think that these findings were reviewable under s 19(b) of the Act. That section gives any party 'aggrieved by an order' of the Commission a review 'of such order' in the circuit court of appeals for the circuit where the natural gas company is located or has its principal place of business or in the United States Court of Appeals for the District of Columbia. We do not think that the findings in question fall within that category.

FN31 The argument is that s 4(a) makes 'unlawful' the charging of any rate that is not just and reasonable. And s 14(a) gives the Commission power to investigate any matter 'which it may find necessary or proper in order to determine whether any person has violated' any provision of the Act. Moreover, s 5(b) gives the Commission power to investigate and determine the cost of production or transportation of natural gas in cases where it has 'no authority to establish a rate governing the transportation or sale of such natural gas.' And s 17(c) directs the Commission to 'make available to the several State commissions such information and reports as may be of assistance in State regulation of natural-gas companies.' For a discussion of these points by the Commission see 44 P.U.R.,N.S., at pages 34, 35.

[25] [26] The Court recently summarized the various types of administrative action or determination reviewable as orders under the Urgent Deficiencies Act of October 22, ***619** 1913, 28 U.S.C. ss 45, 47a, 28 U.S.C.A. ss 45, 47a, and kindred statutory provisions. Rochester Tel. Corp. v. United States, 307 U.S. 125, 59 S.Ct. 754, 83 L.Ed. 1147. It was there pointed out that where 'the order sought to be reviewed does not of itself adversely affect complainant but only affects his rights adversely on the contingency of future administrative action', it is not

reviewable. Id., 307 U.S. at page 130, 59 S.Ct. at page 757, 83 L.Ed. 1147. The Court said, 'In view of traditional conceptions of federal judicial power, resort to the courts in these situations is either premature or wholly beyond their province.' ****296**Id., 307 U.S. at page 130, 59 S.Ct. at page 757, 83 L.Ed. 1147. And see United States v. Los Angeles s.l.r. c/o., 273 U.S. 299, 309, 310, 47 S.Ct. 413, 414, 415, 71 L.Ed. 651; Shannahan v. United States, 303 U.S. 596, 58 S.Ct. 732, 82 L.Ed. 1039. These considerations are apposite here. The Commission has no authority to enforce these findings. They are 'the exercise solely of the function of investigation.' United States v. Los Angeles & S.L.R. Co., supra, 273 U.S. at page 310, 47 S.Ct. at page 414, 71 L.Ed. 651. They are only a preliminary, interim step towards possible future action-action not by the Commission but by wholly independent agencies. The outcome of those proceedings may turn on factors other than these findings. These findings may never result in the respondent feeling the pinch of administrative action.

Reversed.

Mr. Justice ROBERTS took no part in the consideration or decision of this case.

Opinion of Mr. Justice BLACK and Mr. Justice MURPHY.

We agree with the Court's opinion and would add nothing to what has been said but for what is patently a wholly gratuitous assertion as to Constitutional law in the dissent of Mr. Justice FRANKFURTER. We refer to the statement that 'Congressional acquiescence to date in the doctrine of Chicago, etc., R. Co. v. Minnesota, supra (134 U.S. 418, 10 S.Ct. 462, 702, 33 L.Ed. 970), may fairly be claimed.' That was the case in which a majority of this Court was finally induced to expand the meaning ***620** of 'due process' so as to give courts power to block efforts of the state and national governments to regulate economic affairs. The present case does not afford a proper occasion to discuss the soundness of that doctrine because, as stated in Mr. Justice FRANKFURTER'S dissent, 'That issue is not here in controversy.' The salutary practice whereby courts do not discuss issues in the abstract applies with peculiar force to Constitutional questions. Since, however, the dissent adverts to a highly controversial due process doctrine and implies its acceptance by Congress, we feel compelled to say that we do not understand that Congress voluntarily has acquiesced in a Constitutional principle of government that courts, rather than legislative bodies, possess final authority over regulation of economic affairs. Even this Court has not always fully embraced that principle, and we wish to repeat that we have never acquiesced in it, and do not now. See Federal Power Commission v. Natural Gas Pipeline Co., 315 U.S. 575, 599-601, 62 S.Ct. 736, 749, 750, 86 L.Ed. 1037.

Mr. Justice REED, dissenting.

This case involves the problem of rate making under the Natural Gas Act. Added importance arises from the obvious fact that the principles stated are generally applicable to all federal agencies which are entrusted with the determination of rates for utilities. Because my views differ somewhat from those of my brethren, it may be of some value to set them out in a summary form.

The Congress may fix utility rates in situations subject to federal control without regard to any standard except the constitutional standards of due process and for taking private property for public use without just compensation. Wilson v. New, 243 U.S. 332, 350, 37 S.Ct. 298, 302, 61 L.Ed. 755, L.R.A.1917E, 938, Ann.Cas.1918A, 1024. A Commission, however, does not have this freedom of action. Its powers are limited not only by the constitutional standards but also by the standards of the delegation. Here the standard added by the Natural Gas Act is that the rate be 'just ***621** and reasonable.' [FN1] Section 6 [FN2] ****297** throws additional light on the meaning of these words.

FN1 Natural Gas Act, s 4(a), 52 Stat. 821, 822, 15 U.S.C. s 717c(a), 15 U.S.C.A. s 717c(a).

FN2 52 Stat. 821, 824, 15 U.S.C. s 717e, 15 U.S.C.A. s 717e:

'(a) The Commission may investigate and ascertain the actual legitimate cost of the property of every natural-gas company, the depreciation therein, and, when found necessary for rate-making purposes, other facts which bear on the determination of such cost or depreciation and the fair value of such property.

'(b) Every natural-gas company upon request shall file with the Commission an inventory of all or any part of its property and a statement of the original cost thereof, and shall keep the Commission informed regarding the cost of all additions, betterments, extensions, and new construction.'

When the phrase was used by Congress to describe allowable rates, it had relation to something ascertainable. The rates were not left to the whim of the Commission. The rates fixed would produce an annual return and that annual return was to be compared with a theoretical just and reasonable return, all risks considered, on the fair value of the property used and useful in the public service at the time of the determination.

Such an abstract test is not precise. The agency charged with its determination has a wide range before it could properly be said by a court that the agency had disregarded statutory standards or had confiscated the property of the utility for public use. Cf. Chicago, M. & St. P.R. Co. v. Minnesota, 134 U.S. 418, 461-466, 10 S.Ct. 462, 702, 703-705, 33 L.Ed. 970, dissent. This is as Congress intends. Rates are left to an experienced agency particularly competent by training to appraise the amount required.

The decision as to a reasonable return had not been a source of great difficulty, for borrowers and lenders reached such agreements daily in a multitude of situations; and although the determination of fair value had been troublesome, its essentials had been worked out in fairness to investor and consumer by the time of the enactment***622** of this Act. Cf. Los Angeles G. & E. Corp. v. Railroad Comm., 289 U.S. 287, 304 et seq., 53 S.Ct. 637, 643 et seq., 77 L.Ed. 1180. The results were well known to Congress and had that body desired to depart from the traditional concepts of fair value and earnings, it would have stated its intention plainly. Helvering v. Griffiths, 318 U.S. 371, 63 S.Ct. 636.

It was already clear that when rates are in dispute, 'earnings produced by rates do not afford a standard for decision.' 289 U.S. at page 305, 53 S.Ct. at page 644, 77 L.Ed. 1180. Historical cost, prudent investment and reproduction cost [FN3] were all relevant factors in determining fair value. Indeed, disregarding the pioneer investor's risk, if prudent investment and reproduction cost were not distorted by changes in price levels or technology, each of them would produce the same result. The realization from the risk of an investment in a speculative field, such as natural gas utilities, should be reflected in the present fair value. [FN4] The amount of evidence to be admitted on any point was of course in the agency's reasonable discretion, and it was free to give its own weight to these or other factors and to determine from all the evidence its own judgment as to the necessary rates.

> FN3 'Reproduction cost' has been variously defined, but for rate making purposes the most useful sense seems to be, the minimum amount necessary to create at the time of the inquiry a modern plant capable of rendering equivalent service. See I Bonbright, Valuation of Property (1937) 152. Reproduction cost as the cost of building a replica of an obsolescent plant is not of real significance.

'Prudent investment' is not defined by the Court. It may mean the sum originally put in the enterprise, either with or without additional amounts from excess earnings reinvested in the business.

> FN4 It is of no more than bookkeeping significance whether the Commission allows a rate of return commensurate with the risk of the original investment or the lower rate based on current risk and a capitalization reflecting the established earning power of a successful company and the probable cost of duplicating its services. Cf. American T. & T. Co. v. United States, 299 U.S. 232, 57 S.Ct. 170, 81 L.Ed. 142. But the latter is the traditional method.

***623** I agree with the Court in not imposing a rule of prudent investment alone in determining the rate base. This leaves the Commission free, as I understand it, to use any available evidence for its finding of fair value, including both prudent investment and the cost of installing at the present time an efficient system for furnishing the needed utility service.

My disagreement with the Court arises primarily from its view that it makes no ****298** difference how the Commission reached the rate fixed so long as the result is fair and reasonable. For me the statutory command to the Commission is more explicit. Entirely aside from the constitutional problem of whether the Congress could validly delegate its rate making power to the Commission, in toto and without standards, it did legislate in the light of the relation of fair and reasonable to fair value and reasonable return. The Commission must therefore make its findings in observance of that relationship.

The Federal Power Commission did not, as I construe their action, disregard its statutory duty. They heard the evidence relating to historical and reproduction cost and to the reasonable rate of return and they appraised its weight. The evidence of reproduction cost was rejected as unpersuasive, but from the other evidence they found a rate base, which is to me a determination of fair value. On that base the earnings allowed seem fair and reasonable. So far as the Commission went in appraising the property employed in the service, I find nothing in the result which indicates confiscation, unfairness or unreasonableness. Good administration of rate making agencies under this method would avoid undue delay and render revaluations unnecessary except after violent fluctuations of price levels. Rate making under this method has been subjected to criticism. But until Congress changes the standards for the agencies, these rate making bodies should continue the conventional theory of rate ***624** making. It will probably be simpler to improve present methods than to devise new ones.

But a major error, I think was committed in the disregard

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by the Commission of the investment in exploratory operations and other recognized capital costs. These were not considered by the Commission because they were charged to operating expenses by the company at a time when it was unregulated. Congress did not direct the Commission in rate making to deduct from the rate base capital investment which had been recovered during the unregulated period through excess earnings. In my view this part of the investment should no more have been disregarded in the rate base than any other capital investment which previously had been recovered and paid out in dividends or placed to surplus. Even if prudent investment throughout the life of the property is accepted as the formula for figuring the rate base, it seems to me illogical to throw out the admittedly prudent cost of part of the property because the earnings in the unregulated period had been sufficient to return the prudent cost to the investors over and above a reasonable return. What would the answer be under the theory of the Commission and the Court, if the only prudent investment in this utility had been the seventeen million capital charges which are now disallowed?

For the reasons heretofore stated, I should affirm the action of the Circuit Court of Appeals in returning the proceeding to the Commission for further consideration and should direct the Commission to accept the disallowed capital investment in determining the fair value for rate making purposes.

Mr. Justice FRANKFURTER, dissenting.
My brother JACKSON has analyzed with particularity the economic and social aspects of natural gas as well as ***625** the difficulties which led to the enactment of the Natural Gas Act, especially those arising out of the abortive attempts of States to regulate natural gas utilities. The Natural Gas Act of 1938 should receive application in the light of this analysis, and Mr. Justice JACKSON has, I believe, drawn relevant inferences regarding the duty of the Federal Power Commission in fixing natural gas rates. His exposition seems to me unanswered, and I shall say only a few words to emphasize my basic agreement with him.

For our society the needs that are met by public utilities are as truly public services as the traditional governmental functions of police and justice. They are not less so when these services are rendered by private enterprise under governmental regulation. Who ultimately determines the ways of regulation, is the decisive aspect in the public supervision of privately-owned utilities. Foreshadowed nearly sixty years ago, Railroad Commission Cases (Stone v. Farmers' Loan & Trust Co.), 116 U.S. 307, 331, 6 S.Ct. 334, 344, 388, 1191, 29 L.Ed. 636, it was decided more than fifty ****299** years ago that the final say under the Constitution lies with the judiciary and not the legislature. Chicago, etc., R. Co. v. Minnesota , 134 U.S. 418, 10 S.Ct. 462, 702, 33 L.Ed. 970.

While legal issues touching the proper distribution of governmental powers under the Constitution may always be raised, Congressional acquiescence to date in the doctrine of Chicago, etc., R. Co. v. Minnesota, supra, may fairly be claimed. But in any event that issue is not here in controversy. As pointed out in the opinions of my brethren, Congress has given only limited authority to the Federal Power Commission and made the exercise of that authority subject to judicial review. The Commission is authorized to fix rates chargeable for natural gas. But the rates that it can fix must be ‘just and reasonable’. s 5 of the Natural Gas Act, 15 U.S.C. s 717d, 15 U.S.C.A. s 717d. Instead of making the Commission's rate determinations final, Congress***626** specifically provided for court review of such orders. To be sure, ‘the finding of the Commission as to the facts, if supported by substantial evidence’ was made ‘conclusive’, s 19 of the Act, 15 U.S.C. s 717r; 15 U.S.C.A. s 717r. But obedience of the requirement of Congress that rates be ‘just and reasonable’ is not an issue of fact of which the Commission's own determination is conclusive. Otherwise, there would be nothing for a court to review except questions of compliance with the procedural provisions of the Natural Gas Act. Congress might have seen fit so to cast its legislation. But it has not done so. It has committed to the administration of the Federal Power Commission the duty of applying standards of fair dealing and of reasonableness relevant to the purposes expressed by the Natural Gas Act. The requirement that rates must be ‘just and reasonable’ means just and reasonable in relation to appropriate standards. Otherwise Congress would have directed the Commission to fix such rates as in the judgment of the Commission are just and reasonable; it would not have also provided that such determinations by the Commission are subject to court review.

To what sources then are the Commission and the courts to go for ascertaining the standards relevant to the regulation of natural gas rates? It is at this point that Mr. Justice JACKSON'S analysis seems to me pertinent. There appear to be two alternatives. Either the fixing of natural gas rates must be left to the unguided discretion of the Commission so long as the rates it fixes do not reveal a glaringly had prophecy of the ability of a regulated utility to continue its service in the future. Or the Commission's rate orders must be founded on due consideration of all the elements of the public interest which the production and distribution of natural gas involve just because it is natural gas. These elements are reflected in the Natural Gas Act, if that Act be applied as

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an entirety. See, for ***627** instance, ss 4(a)(b)(c)(d), 6, and 11, 15 U.S.C. ss 717c(a)(b)(c)(d), 717e, and 717j, 15 U.S.C.A. ss 717c(a-d), 717e, 717j. Of course the statute is not concerned with abstract theories of ratemaking. But its very foundation is the 'public interest', and the public interest is a texture of multiple strands. It includes more than contemporary investors and contemporary consumers. The needs to be served are not restricted to immediacy, and social as well as economic costs must be counted.

It will not do to say that it must all be left to the skill of experts. Expertise is a rational process and a rational process implies expressed reasons for judgment. It will little advance the public interest to substitute for the hodge-podge of the rule in Smyth v. Ames, 169 U.S. 466, 18 S.Ct. 418, 42 L.Ed. 819, an encouragement of conscious obscurity or confusion in reaching a result, on the assumption that so long as the result appears harmless its basis is irrelevant. That may be an appropriate attitude when state action is challenged as unconstitutional. Cf. Driscoll v. Edison Light & Power Co., 307 U.S. 104, 59 S.Ct. 715, 83 L.Ed. 1134. But it is not to be assumed that it was the design of Congress to make the accommodation of the conflicting interests exposed in Mr. Justice JACKSON'S opinion the occasion for a blind clash of forces or a partial assessment of relevant factors, either before the Commission or here.

The objection to the Commission's action is not that the rates it granted were too low but that the range of its vision was too narrow. And since the issues before the Commission involved no less than the ****300** total public interest, the proceedings before it should not be judged by narrow conceptions of common law pleading. And so I conclude that the case should be returned to the Commission. In order to enable this Court to discharge its duty of reviewing the Commission's order, the Commission should set forth with explicitness the criteria by which it is guided ***628** in determining that rates are 'just and reasonable', and it should determine the public interest that is in its keeping in the perspective of the considerations set forth by Mr. Justice JACKSON.

By Mr. Justice JACKSON.

Certainly the theory of the court below that ties rate-making to the fair-value-reproduction-cost formula should be overruled as in conflict with Federal Power Commission v. Natural Gas Pipeline Co. [FN1] But the case should, I think, be the occasion for reconsideration of our rate-making doctrine as applied to natural gas and should be returned to the Commission for further consideration in the light thereof.

FN1 315 U.S. 575, 62 S.Ct. 736, 86 L.Ed. 1037.

The Commission appears to have understood the effect of the two opinions in the Pipeline case to be at least authority and perhaps direction to fix natural gas rates by exclusive application of the 'prudent investment' rate base theory. This has no warrant in the opinion of the Chief Justice for the Court, however, which released the Commission from subservience to 'any single formula or combination of formulas' provided its order, 'viewed in its entirety, produces no arbitrary result.' 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. The minority opinion I understood to advocate the 'prudent investment' theory as a sufficient guide in a natural gas case. The view was expressed in the court below that since this opinion was not expressly controverted it must have been approved. [FN2] I disclaim this imputed***629** approval with some particularity, because I attach importance at the very beginning of federal regulation of the natural gas industry to approaching it as the performance of economic functions, not as the performance of legalistic rituals.

FN2 Judge Dobie, dissenting below, pointed out that the majority opinion in the Pipeline case 'contains no express discussion of the Prudent Investment Theory' and that the concurring opinion contained a clear one, and said, 'It is difficult for me to believe that the majority of the Supreme Court, believing otherwise, would leave such a statement unchallenged.' (134 F.2d 287, 312.) The fact that two other Justices had as matter of record in our books long opposed the reproduction cost theory of rate bases and had commented favorably on the prudent investment theory may have influenced that conclusion. See opinion of Mr. Justice Frankfurter in Driscoll v. Edison Light & Power Co., 307 U.S. 104, 122, 59 S.Ct. 715, 724, 83 L.Ed. 1134, and my brief as Solicitor General in that case. It should be noted, however, that these statements were made, not in a natural gas case, but in an electric power case-a very important distinction, as I shall try to make plain.

I.

Solutions of these cases must consider eccentricities of the industry which gives rise to them and also to the Act of Congress by which they are governed.

The heart of this problem is the elusive, exhaustible, and irreplaceable nature of natural gas itself. Given sufficient money, we can produce any desired amount of railroad,

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bus, or steamship transportation, or communications facilities, or capacity for generation of electric energy, or for the manufacture of gas of a kind. In the service of such utilities one customer has little concern with the amount taken by another, one's waste will not deprive another, a volume of service and be created equal to demand, and today's demands will not exhaust or lessen capacity to serve tomorrow. But the wealth of Midas and the wit of man cannot produce or reproduce a natural gas field. We cannot even reproduce the gas, for our manufactured product has only about half the heating value per unit of nature's own. [FN3]

FN3 Natural gas from the Appalachian field averages about 1050 to 1150 B.T.U. content, while by-product manufactured gas is about 530 to 540. Moody's Manual of Public Utilities (1943) 1350; Youngberg, Natural Gas (1930) 7.

****301** Natural gas in some quantity is produced in twenty-four states. It is consumed in only thirty-five states, and is ***630** available only to about 7,600,000 consumers. [FN4] Its availability has been more localized than that of any other utility service because it has depended more on the caprice of nature.

FN4 Sen.Rep. No. 1162, 75th Cong., 1st Sess., 2.

The supply of the Hope Company is drawn from that old and rich and vanishing field that flanks the Appalachian mountains. Its center of production is Pennsylvania and West Virginia, with a fringe of lesser production in New York, Ohio, Kentucky, Tennessee, and the north end of Alabama. Oil was discovered in commercial quantities at a depth of only 69 1/2 feet near Titusville, Pennsylvania, in 1859. Its value then was about $16 per barrel. [FN5] The oil branch of the petroleum industry went forward at once, and with unprecedented speed. The area productive of oil and gas was roughed out by the drilling of over 19,000 'wildcat' wells, estimated to have cost over $222,000,000. Of these, over 18,000 or 94.9 per cent, were 'dry holes.' About five per cent, or 990 wells, made discoveries of commercial importance, 767 of them resulting chiefly in oil and 223 in gas only. [FN6] Prospecting for many years was a search for oil, and to strike gas was a misfortune. Waste during this period and even later is appalling. Gas was regarded as having no commercial value until about 1882, in which year the total yield was valued only at about $75,000. [FN7] Since then, contrary to oil, which has become cheaper gas in this field has pretty steadily advanced in price.

FN5 Arnold and Kemnitzer, Petroleum in the United States and Possessions (1931) 78.

FN6. Id. at 62-63.

FN7. Id. at 61.

While for many years natural gas had been distributed on a small scale for lighting, [FN8] its acceptance was slow, ***631** facilities for its utilization were primitive, and not until 1885 did it take on the appearance of a substantial industry. [FN9] Soon monopoly of production or markets developed. [FN10] To get gas from the mountain country, where it was largely found, to centers of population, where it was in demand, required very large investment. By ownership of such facilities a few corporate systems, each including several companies, controlled access to markets. Their purchases became the dominating factor in giving a market value to gas produced by many small operators. Hope is the market for over 300 such operators. By 1928 natural gas in the Appalachian field commanded an average price of 21.1 cents per m.c.f. at points of production and was bringing 45.7 cents at points of consumption. [FN11] The companies which controlled markets, however, did not rely on gas purchases alone. They acquired and held in fee or leasehold great acreage in territory proved by 'wildcat' drilling. These large marketing system companies as well as many small independent owners and operators have carried on the commercial development of proved territory. The development risks appear from the estimate that up to 1928, 312,318 proved area wells had been sunk in the Appalachian field of which 48,962, or 15.7 per cent, failed to produce oil or gas in commercial quantity. [FN12]

FN8 At Fredonia, New York, in 1821, natural gas was conveyed from a shallow well to some thirty people. The lighthouse at Barcelona Harbor, near what is now Westfield, New York, was at about that time and for many years afterward lighted by gas that issued from a crevice. Report on Utility Corporations by Federal Trade Commission, Sen.Doc. 92, Pt. 84-A, 70th Cong., 1st Sess., 8-9.

FN9 In that year Pennsylvania enacted 'An Act to provide for the incorporation and regulation of natural gas companies.' Penn.Laws 1885, No. 32, 15 P.S. s 1981 et seq.

FN10 See Steptoe and Hoffheimer's Memorandum for Governor Cornwell of West Virginia (1917) 25 West Virginia Law Quarterly 257; see also Report on Utility Corporations by

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Federal Trade Commission, Sen.Doc. No. 92, Pt. 84-A, 70th Cong., 1st Sess.

FN11 Arnold and Kemnitzer, Petroleum in the United States and Possessions (1931) 73.

FN12. Id. at 63.

***632** With the source of supply thus tapped to serve centers of large demand, like Pittsburgh, Buffalo, Cleveland, Youngstown, Akron, and other industrial communities, the distribution of natural gas fast became big business. Its advantages as a ****302** fuel and its price commended it, and the business yielded a handsome return. All was merry and the goose hung high for consumers and gas companies alike until about the time of the first. World War. Almost unnoticed by the consuming public, the whole Appalachian field passed its peak of production and started to decline. Pennsylvania, which to 1928 had given off about 38 per cent of the natural gas from this field, had its peak in 1905; Ohio, which had produced 14 per cent, had its peak in 1915; and West Virginia, greatest producer of all, with 45 per cent to its credit, reached its peak in 1917. [FN13]

FN13. Id. at 64.

Western New York and Eastern Ohio, on the fringe of the field, had some production but relied heavily on imports from Pennsylvania and West Virginia. Pennsylvania, a producing and exporting state, was a heavy consumer and supplemented her production with imports from West Virginia. West Virginia was a consuming state, but the lion's share of her production was exported. Thus the interest of the states in the North Appalachian supply was in conflict.

Competition among localities to share in the failing supply and the helplessness of state and local authorities in the presence of state lines and corporate complexities is a part of the background of federal intervention in the industry. [FN14] West Virginia took the boldest measure. It legislated a priority in its entire production in favor of its own inhabitants. That was frustrated by an injunction***633** from this Court. [FN15] Throughout the region clashes in the courts and conflicting decisions evidenced public anxiety and confusion. It was held that the New York Public Service Commission did not have power to classify consumers and restrict their use of gas. [FN16] That Commission held that a company could not abandon a part of its territory and still serve the rest. [FN17] Some courts admonished the companies to take action to protect consumers. [FN18] Several courts held that companies, regardless of failing supply, must continue to take on customers, but such compulsory additions were finally held to be within the Public Service Commission's discretion. [FN19] There were attempts to throw up franchises and quit the service, and municipalities resorted to the courts with conflicting results. [FN20] Public service commissions of consuming states were handicapped, for they had no control of the supply. [FN21]

FN14 See Report on Utility Corporations by Federal Trade Commission, Sen.Doc. No. 92, Pt. 84-A, 70th Cong., 1st Sess.

FN15 Commonwealth of Pennsylvania v. West Virginia, 262 U.S. 553, 43 S.Ct. 658, 67 L.Ed. 1117, 32 A.L.R. 300. For conditions there which provoked this legislation, see 25 West Virginia Law Quarterly 257.

FN16 People ex rel. Pavilion Natural Gas Co. v. Public Service Commission, 188 App.Div. 36, 176 N.Y.S. 163.

FN17 Village of Falconer v. Pennsylvania Gas Company, 17 State Department Reports, N.Y., 407.

FN18 See, for example, Public Service Commission v. Iroquois Natural Gas Co., 108 Misc. 696, 178 N.Y.S. 24; Park Abbott Realty Co. v. Iroquois Natural Gas Co., 102 Misc. 266, 168 N.Y.S. 673; Public Service Commission v. Iroquois Natural Gas Co., 189 App.Div. 545, 179 N.Y.S. 230.

FN19 People ex rel. Pennsylvania Gas Co. v. Public Service Commission, 196 App.Div. 514, 189 N.Y.S. 478.

FN20 East Ohio Gas Co. v. Akron, 81 Ohio St. 33, 90 N.E. 40, 26 L.R.A., N.S., 92, 18 Ann.Cas. 332; Village of New-comerstown v. Consolidated Gas Co., 100 Ohio St. 494, 127 N.E. 414; Gress v. Village of Ft. Laramie, 100 Ohio St. 35, 125 N.E. 112, 8 A.L.R. 242; City of Jamestown v. Pennsylvania Gas Co., D.C., 263 F. 437; Id., D.C., 264 F. 1009. See, also, United Fuel Gas Co. v. Railroad Commission, 278 U.S. 300, 308, 49 S.Ct. 150, 152, 73 L.Ed. 390.

FN21 The New York Public Service Commission said: ‘While the transportation of natural gas through pipe lines from one state to another state is interstate commerce * * *, Congress has not taken over the regulation of that particular industry. Indeed, it has expressly excepted it from the operation of the Interstate Commerce Commissions Law (Interstate Commerce Commissions Law, section 1). It is quite clear, therefore, that this Commission can not require a Pennsylvania corporation producing gas in Pennsylvania to transport it and deliver it in the State of New York, and that the Interstate Commerce Commission is likewise powerless. If there exists such a power, and it seems that there does, it is a power vested in Congress and by it not yet exercised. There is no available source of supply for the Crystal City Company at present except through purchasing from the Porter Gas Company. It is possible that this Commission might fix a price at which the Potter Gas Company should sell if it sold at all, but as the Commission can not require it to supply gas in the State of New York, the exercise of such a power to fix the price, if such power exists, would merely say, sell at this price or keep out of the State.' Lane v. Crystal City Gas Co., 8 New York Public Service Comm.Reports, Second District, 210, 212.

****303 *634** Shortages during World War I occasioned the first intervention in the natural gas industry by the Federal Government. Under Proclamation of President Wilson the United States Fuel Administrator took control, stopped extensions, classified consumers and established a priority for domestic over industrial use. [FN22] After the war federal control was abandoned. Some cities once served with natural gas became dependent upon mixed gas of reduced heating value and relatively higher price. [FN23]

FN22 Proclamation by the President of September 16, 1918; Rules and Regulations of H. A. Garfield, Fuel Administrator, September 24, 1918.

FN23 For example, the Iroquois Gas Corporation which formerly served Buffalo, New York, with natural gas ranging from 1050 to 1150 b.t.u. per cu. ft., now mixes a by-product gas of between 530 and 540 b.t.u. in proportions to provide a mixed gas of about 900 b.t.u. per cu. ft. For space heating or water heating its charges range from 65 cents for the first m.c.f. per month to 55 cents for all above 25 m.c.f. per month. Moody's Manual of Public Utilities (1943) 1350.

Utilization of natural gas of highest social as well as economic return is domestic use for cooking and water ***635** heating, followed closely by use for space heating in homes. This is the true public utility aspect of the enterprise, and its preservation should be the first concern of regulation. Gas does the family cooking cheaper than any other fuel. [FN24] But its advantages do not end with dollars and cents cost. It is delivered without interruption at the meter as needed and is paid for after it is used. No money is tied up in a supply, and no space is used for storage. It requires no handling, creates no dust, and leaves no ash. It responds to thermostatic control. It ignites easily and immediately develops its maximum heating capacity. These incidental advantages make domestic life more liveable.

FN24 The United States Fuel Administration made the following cooking value comparisons, based on tests made in the Department of Home Economics of Ohio State University:

Natural gas at 1.12 per M. is equivalent to coal at $6.50 per ton.
Natural gas at 2.00 per M. is equivalent to gasoline at 27¢ per gal.
Natural gas at 2.20 per M. is equivalent to electricity at 3¢ per k.w.h.
Natural gas at 2.40 per M. is equivalent to coal oil at 15¢ per gal.
Use and Conservation of Natural Gas, issued by U.S. Fuel Administration (1918) 5.

Industrial use is induced less by these qualities than by low cost in competition with other fuels. Of the gas exported from West Virginia by the Hope Company a very substantial part is used by industries. This wholesale use speeds exhaustion of supply and displaces other fuels. Coal miners and the coal industry, a large part of whose costs are wages, have complained of unfair competition from low-priced industrial gas produced with relatively little labor cost. [FN25]

FN25 See Brief on Behalf jof Legislation Imposing an Excise Tax on Natural Gas, submitted to N.R.A. by the United Mine Workers of America and the National Coal Association.

Gas rate structures generally have favored industrial users. In 1932, in Ohio, the average yield on gas for domestic consumption was 62.1 cents per m.c.f. and on industrial,***636** 38.7. In Pennsylvania, the figures were 62.9 against 31.7. West Virginia showed the least spread, domestic consumers paying 36.6 cents; and industrial, 27.7. [FN26] Although this spread is less than ****304** in other parts of the United States, [FN27] it can hardly be said to be self-justifying. It certainly is a very great factor in hastening decline of the natural gas supply.

FN26 Brief of National Gas Association and United Mine Workers, supra, note 26, pp. 35, 36, compiled from Bureau of Mines Reports.

FN27 From the source quoted in the preceding note the spread elsewhere is shown to be:

State.	Industrial	Domestic
Illinois.	29.2	1.678
Louisiana.	10.4	59.7
Oklahoma.	11.2	41.5
Texas.	13.1	59.7
Alabama.	17.8	1.227
Georgia.	22.9	1.043

About the time of World War I there were occasional and short-lived efforts by some hard-pressed companies to reverse this discrimination and adopt graduated rates, giving a low rate to quantities adequate for domestic use and graduating it upward to discourage industrial use. FN28 ***637** These rates met opposition from industrial sources, of course, and since diminished revenues from industrial sources tended to increase the domestic price, they met little popular or commission favor. The fact is that neither the gas companies nor the consumers nor local regulatory bodies can be depended upon to conserve gas. Unless federal regulation will take account of conservation, its efforts seem, as in this case, actually to constitute a new threat to the life of the Appalachian supply.

FN28 In Corning, New York, rates were initiated by the Crystal City Gas Company as follows: 70¢ for the first 5,000 cu. ft. per month; 80¢ from 5,000 to 12,000; $1 for all over 12,000. The Public Service Commission rejected these rates and fixed a flat rate of 58¢ per m.c.f. Lane v. Crystal City Gas Co., 8 New York Public Service Comm. Reports, Second District, 210.

The Pennsylvania Gas Company (National Fuel Gas Company group) also attempted a sliding scale rate for New York consumers, net per month as follows: First 5,000 feet, 35¢ ; second 5,000 feet, 45¢ ; third 5,000 feet, 50¢ ; all above 15,000, 55¢ . This was eventually abandoned, however. The company's present scale in Pennsylvania appears to be reversed to the following net monthly rate; first 3 m.c.f., 75¢ ; next 4 m.c.f., 60¢ ; next 8 m.c.f., 55¢ ; over 15 m.c.f., 50¢ . Moody's Manual of Public Utilities (1943) 1350. In New York it now serves a mixed gas.

For a study of effect of sliding scale rates in reducing consumption see 11 Proceedings of Natural Gas Association of America (1919) 287.

II.

Congress in 1938 decided upon federal regulation of the industry. It did so after an exhaustive investigation of all aspects including failing supply and competition for the use of natural gas intensified by growing scarcity. FN29 Pipelines from the Appalachian area to markets were in the control of a handful of holding company systems. FN30 This created a highly concentrated control of the producers' market and of the consumers' supplies. While holding companies dominated both production and distribution they segregated those activities in separate ***638** subsidiaries, FN31 the effect of which, if not the purpose, was to isolate ****305** some end of the business from the reach of any one state commission. The cost of natural gas to consumers moved steadily upwards over the years, out of proportion to prices of oil, which, except for the element of competition, is produced under somewhat comparable conditions. The public came to feel that the companies were exploiting the growing scarcity of local gas. The problems of this region had much to do with creating the demand for federal regulation.

FN29 See Report on Utility Corporations by Federal Trade Commission, Sen. Doc. 92, Pt. 84-A, 70th Cong., 1st Sess.

FN30 Four holding company systems control over 55 per cent of all natural gas transmission lines in the United States. They are Columbia Gas and Electric Corporation, Cities Service Co., Electric Bond and Share Co., and Standard Oil Co. of New Jersey. Columbia alone controls nearly 25 per cent, and fifteen companies account for over 80 per cent of the total. Report on Utility Corporations by Federal Trade Commission, Sen. Doc. 92, Pt. 84-A, 70th Cong., 1st Sess., 28.

In 1915, so it was reported to the Governor of West

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Virginia, 87 per cent of the total gas production of that state was under control of eight companies. Steptoe and Hoffheimer, Legislative Regulation of Natural Gas Supply in West Virginia, 17 West Virginia Law Quarterly 257, 260. Of these, three were subsidiaries of the Columbia system and others were subsidiaries of larger systems. In view of inter-system sales and interlocking interests it may be doubted whether there is much real competition among these companies.

FN31 This pattern with its effects on local regulatory efforts will be observed in our decisions. See United Fuel Gas Co. v. Railroad Commission, 278 U.S. 300, 49 S.Ct. 150, 73 L.Ed. 390; United Fuel Gas Co. v. Public Service Commission, 278 U.S. 322, 49 S.Ct. 157, 73 L.Ed. 402; Dayton Power & Light v. Public Utilities Commission, 292 U.S. 290, 54 S.Ct. 647, 78 L.Ed. 1267; Columbus Gas & Fuel Co. v. Public Utilities Commission, 292 U.S. 398, 54 S.Ct. 763, 78 L.Ed. 1327, 91 A.L.R. 1403, and the present case.

The Natural Gas Act declared the natural gas business to be ‘affected with a public interest,’ and its regulation ‘necessary in the public interest.’ FN32 Originally, and at the time this proceeding was commenced and tried, it also declared ‘the intention of Congress that natural gas shall be sold in interstate commerce for resale for ultimate public consumption for domestic, commercial, industrial, or any other use at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.’ FN33 While this was later dropped, there is nothing to indicate that it was not and is not still an accurate statement of purpose of the Act. Extension or improvement of facilities may be ordered when ‘necessary or desirable in the public interest,’ abandonment of facilities may be ordered when the supply is ‘depleted to the extent that the continuance of service is unwarranted, or that the present or future public convenience or necessity ***639** permit’ abandonment and certain extensions can only be made on finding of ‘the present or future public convenience and necessity.' FN34 The Commission is required to take account of the ultimate use of the gas. Thus it is given power to suspend new schedules as to rates, charges, and classification of services except where the schedules are for the sale of gas ‘for resale for industrial use only,' FN35 which gives the companies greater freedom to increase rates on industrial gas than on domestic gas. More particularly, the Act expressly forbids any undue preference or advantage to any person or ‘any unreasonable difference in rates * * * either as between localities or as between classes of service.' FN36 And the power of the Commission expressly includes that to determine the ‘just and reasonable rate, charge, classification, rule, regulation, practice, or contract to be thereafter observed and in force.' FN37

FN32 15 U.S.C. s 717(a), 15 U.S.C.A. s 717(a). (Italics supplied throughout this paragraph.)

FN33 s 7(c), 52 Stat. 825, 15 U.S.C.A. s 717f(c).

FN34 15 U.S.C. s 717f, 15 U.S.C.A. s 717f.

FN35 Id., s 717c(e).

FN36 Id., s 717c(b).

FN37 Id., s 717d(a).

In view of the Court's opinion that the Commission in administering the Act may ignore discrimination, it is interesting that in reporting this Bill both the Senate and the House Committees on Interstate Commerce pointed out that in 1934, on a nationwide average the price of natural gas per m.c.f. was 74.6 cents for domestic use, 49.6 cents for commercial use, and 16.9 for industrial use. FN38 I am not ready to think that supporters of a bill called attention to the striking fact that householders were being charged five times as much for their gas as industrial users only as a situation which the Bill would do nothing to remedy. On the other hand the Act gave to the Commission what the Court aptly describes as ‘broad powers of regulation.'

FN38 Sen. Rep. No. 1162, 75th Cong., 1st Sess. 2.

***640** III.

This proceeding was initiated by the Cities of Cleveland and Akron. They alleged that the price charged by Hope for natural gas ‘for resale to domestic, commercial and small industrial consumers in Cleveland and elsewhere is excessive, unjust, unreasonable, greatly in excess of the price charged by Hope to nonaffiliated companies at wholesale for resale to domestic, commercial and small industrial consumers, and greatly in excess of the price charged by Hope to East Ohio for resale to certain favored industrial consumers in Ohio, and therefore is further unduly discriminatory between consumers and between classes of service’ (italics supplied). The company answered admitting differences in prices to affiliated and nonaffiliated companies and justifying them by differences in conditions of delivery.****306** As to the allegation that the contract price is ‘greatly in excess of the price charged by Hope to East Ohio for resale to

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certain favored industrial consumers in Ohio,' Hope did not deny a price differential, but alleged that industrial gas was not sold to 'favored consumers' but was sold under contract and schedules filed with and approved by the Public Utilities Commission of Ohio, and that certain conditions of delivery made it not 'unduly discriminatory.'

The record shows that in 1940 Hope delivered for industrial consumption 36,523,792 m.c.f. and for domestic and commercial consumption, 50,343,652 m.c.f. I find no separate figure for domestic consumption. It served 43,767 domestic consumers directly, 511,521 through the East Ohio Gas Company, and 154,043 through the Peoples Natural Gas Company, both affiliates owned by the same parent. Its special contracts for industrial consumption, so far as appear, are confined to about a dozen big industries.

***641** Hope is responsible for discrimination as exists in favor of these few industrial consumers. It controls both the resale price and use of industrial gas by virtue of the very interstate sales contracts over which the Commission is exercising its jurisdiction.

Hope's contract with East Ohio Company is an example. Hope agrees to deliver, and the Ohio Company to take, '(a) all natural gas requisite for the supply of the domestic consumers of the Ohio Company; (b) such amounts of natural gas as may be requisite to fulfill contracts made with the consent and approval of the Hope Company by the Ohio Company, or companies which it supplies with natural gas, for the sale of gas upon special terms and conditions for manufacturing purposes.' The Ohio company is required to read domestic customers' meters once a month and meters of industrial customers daily and to furnish all meter readings to Hope. The Hope Company is to have access to meters of all consumers and to all of the Ohio Company's accounts. The domestic consumers of the Ohio Company are to be fully supplied in preference to consumers purchasing for manufacturing purposes and 'Hope Company can be required to supply gas to be used for manufacturing purposes only where the same is sold under special contracts which have first been submitted to and approved in writing by the Hope Company and which expressly provide that natural gas will be supplied thereunder only in so far as the same is not necessary to meet the requirements of domestic consumers supplied through pipe lines of the Ohio Company.' This basic contract was supplemented from time to time, chiefly as to price. The last amendment was in a letter from Hope to East Ohio in 1937. It contained a special discount on industrial gas and a schedule of special industrial contracts, Hope reserving the right to make eliminations therefrom and agreeing that others might be added from time to ***642** time with its approval in writing. It said, 'It is believed that the price concessions contained in this letter, while not based on our costs, are under certain conditions, to our mutual advantage in maintaining and building up the volumes of gas sold by us (italics supplied).' [FN39]

FN39 The list of East Ohio Gas Company's special industrial contracts thus expressly under Hope's control and their demands are as follows:

****307** The Commission took no note of the charges of discrimination and made no disposition of the issue tendered on this point. It ordered a flat reduction in the price per m.c.f. of all gas delivered by Hope in interstate commerce. It made no limitation, condition, or provision as to what classes of consumers should get the benefit of the reduction. While the cities have accepted and are defending the reduction, it is my view that the discrimination of which they have complained is perpetuated and increased by the order of the Commission and that it violates the Act in so doing.

The Commission's opinion aptly characterizes its entire objective by saying that 'bona fide investment figures now become all-important in the regulation of rates.' It should be noted that the all-importance of this theory is not the result of any instruction from Congress. When the Bill to regulate gas was first before Congress it contained***643** the following: 'In determining just and reasonable rates the Commission shall fix such rate as will allow a fair return upon the actual legitimate prudent cost of the property used and useful for the service in question.' H.R. 5423, 74th Cong., 1st Sess. Title III, s 312(c). Congress rejected this language. See H.R. 5423, s 213 (211(c)), and H.R. Rep. No. 1318, 74th Cong., 1st Sess. 30.

The Commission contends nevertheless that the 'all important' formula for finding a rate base is that of prudent investment. But it excluded from the investment base an amount actually and admittedly invested of some $17,000,000. It did so because it says that the Company recouped these expenditures from customers before the days of regulation from earnings above a fair return. But it would not apply all of such 'excess earnings' to reduce the rate base as one of the Commissioners suggested. The reason for applying excess earnings to reduce the investment base roughly from $69,000,000 to $52,000,000 but refusing to apply them to reduce it from that to some $18,000,000 is not found in a difference in the character of the earnings or in their reinvestment. The reason assigned is a difference in bookkeeping treatment many years before the Company was subject to regulation. The $17,000,000, reinvested chiefly in well drilling, was treated on the books as expense. (The Commission now requires that drilling costs be carried to capital account.) The allowed rate base thus actually was determined by the Company's bookkeeping, not its investment. This attributes a significance to formal classification in account keeping that seems inconsistent with rational rate regulation. FN40 Of ***644** course, the ****308** Commission would not and should not allow a rate base to be inflated by bookkeeping which had improperly capitalized expenses. I have doubts about resting public regulation upon any rule that is to be used or not depending on which side it favors.

FN40 To make a fetish of mere accounting is to shield from examination the deeper causes, forces, movements, and conditions which should govern rates. Even as a recording of current transactions, bookkeeping is hardly an exact science. As a representation of the condition and trend of a business, it uses symbols of certainty to express values that actually are in constant flux. It may be said that in commercial or investment banking or any business extending credit success depends on knowing what not to believe in accounting. Few concerns go into bankruptcy or reorganization whose books do not show them solvent and often even profitable. If one cannot rely on accountancy accurately to disclose past or current conditions of a business, the fallacy of using it as a sole guide to future price policy ought to be apparent. However, our quest for certitude is so ardent that we pay an irrational reverence to a technique which uses symbols of certainty, even though experience again and again warns us that they are delusive. Few writers have ventured to challenge this American idolatry, but see Hamilton, Cost as a standard for Price, 4 Law and Contemporary Problems 321, 323-25. He observes that 'As the apostle would put it, accountancy is all things to all men. * * * Its purpose determines the character of a system of accounts.' He analyzes the hypothetical character of accounting and says 'It was no eternal mold for pecuniary verities handed down from on high. It was-like logic or algebra, or the device of analogy in the law-an ingenious contrivance of the human mind to serve a limited and practical purpose.' 'Accountancy is far from being a pecuniary expression of all that is industrial reality. It is an instrument, highly selective in its application, in the service of the institution of money making.' As to capital account he observes 'In an enterprise in lusty competition with others of its kind, survival is the thing and the system of accounts has its focus in solvency. * * * Accordingly depreciation, obsolescence, and other factors which carry no immediate threat are matters of lesser concern and the capital account is likely to be regarded as a secondary phenomenon. * * * But in an enterprise, such as a public utility, where continued survival seems assured, solvency is likely to be taken for granted. * * * A persistent and ingenious attention is likely to be directed not so much to securing the upkeep of the physical property as to making it certain that capitalization fails in not one whit to give full recognition to every item that should go into the account.'

***645** The Company on the other hand, has not put its gas fields into its calculations on the present-value basis, although that, it contends, is the only lawful rule for finding a rate base. To do so would result in a rate higher than it has charged or proposes as a matter of good business to charge.

The case before us demonstrates the lack of rational relationship between conventional rate-base formulas and natural gas production and the extremities to which regulating bodies are brought by the effort to rationalize them. The Commission and the Company each stands on a different theory, and neither ventures to carry its theory to logical conclusion as applied to gas fields.

IV.

This order is under judicial review not because we interpose constitutional theories between a State and the business it seeks to regulate, but because Congress put upon the federal courts a duty toward administration of a new federal regulatory Act. If we are to hold that a given rate is reasonable just because the Commission has said it was reasonable, review becomes a costly, time-consuming pageant of no practical value to anyone. If on the other hand we are to bring judgment of our own to the task, we should for the guidance of the regulators and the regulated reveal something of the philosophy, be it legal or economic or social, which guides us. We need not be slaves to a formula but unless we can point out a rational way of reaching our conclusions they can only be accepted as resting on intuition or predilection. I must admit that I possess no instinct jby which to know the 'reasonable' from the 'unreasonable' in prices and must seek some conscious design for decision.

The Court sustains this order as reasonable, but what makes it so or what could possibly make it otherwise,

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***646** I cannot learn. It holds that: ‘it is the result reached not the method employed which is controlling’; ‘the fact that the method employed to reach that result may contain infirmities is not then important’ and it is not ‘important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at.’ The Court does lean somewhat on considerations of capitalization and dividend history and requirements for dividends on outstanding stock. But I can give no real weight to that for it is generally and I think deservedly in discredit as any guide in rate cases. FN41

FN41 See 2 Bonbright, Valuation of Property (1937) 1112.

Our books already contain so much talk of methods of rationalizing rates that we must appear ambiguous if we announce results without our working methods. We are confronted with regulation of a unique type of enterprise which I think requires considered rejection of much conventional utility doctrine and adoption of concepts of ‘just and reasonable’ rates and practices and of the ‘public interest’ that will take account of the peculiarities of the business.

The Court rejects the suggestions of this opinion. It says that the Committees in reporting the bill which became the Act said it provided ‘for regulation along recognized and more or less standardized lines' and that there was ‘nothing novel in its provisions.’ So saying it sustains a rate calculated on a novel variation of a rate base theory which itself had at the time of enactment of the legislation been recognized only in dissenting opinions. Our difference seems to be between unconscious innovation, FN42 and the purposeful ****309** and deliberate innovation I ***647** would make to meet the necessities of regulating the industry before us.

FN42 Bonbright says, ‘* * * the vice of traditional law lies, not in its adoption of excessively rigid concepts of value and rules of valuation, but rather in its tendency to permit shifts in meaning that are inept, or else that are ill-defined because the judges that make them will not openly admit that they are doing so.’ Id., 1170.

Hope's business has two components of quite divergent character. One, while not a conventional common-carrier undertaking, is essentially a transportation enterprise consisting of conveying gas from where it is produced to point of delivery to the buyer. This is a relatively routine operation not differing substantially from many other utility operations. The service is produced by an investment in compression and transmission facilities. Its risks are those of investing in a tested means of conveying a discovered supply of gas to a known market. A rate base calculated on the prudent investment formula would seem a reasonably satisfactory measure for fixing a return from that branch of the business whose service is roughly proportionate to the capital invested. But it has other consequences which must not be overlooked. It gives marketability and hence ‘value’ to gas owned by the company and gives the pipeline company a large power over the marketability and hence ‘value’ of the production of others.

The other part of the business-to reduce to possession an adequate supply of natural gas-is of opposite character, being more erratic and irregular and unpredictable in relation to investment than any phase of any other utility business. A thousand feet of gas captured and severed from real estate for delivery to consumers is recognized under our law as property of much the same nature as a ton of coal, a barrel of oil, or a yard of sand. The value to be allowed for it is the real battleground between the investor and consumer. It is from this part of the business that the chief difference between the parties as to a proper rate base arises.

It is necessary to a ‘reasonable’ price for gas that it be anchored to a rate base of any kind? Why did courts in the first place begin valuing ‘rate bases' in order to ‘value’ something else? The method came into vogue ***648** in fixing rates for transportation service which the public obtained from common carriers. The public received none of the carriers' physical property but did make some use of it. The carriage was often a monopoly so there were no open market criteria as to reasonableness. The ‘value’ or ‘cost’ of what was put to use in the service by the carrier was not a remote or irrelevant consideration in making such rates. Moreover the difficulty of appraising an intangible service was thought to be simplified if it could be related to physical property which was visible and measurable and the items of which might have market value. The court hoped to reason from the known to the unknown. But gas fields turn this method topsy turvy. Gas itself is tangible, possessible, and does have a market and a price in the field. The value of the rate base is more elusive than that of gas. It consists of intangibles-leaseholds and freeholds-operated and unoperated-of little use in themselves except as rights to reach and capture gas. Their value lies almost wholly in predictions of discovery, and of price of gas when captured, and bears little relation to cost of tools and supplies and labor to develop it. Gas is what Hope sells and it can be directly priced more reasonably and easily and accurately than the components of a rate base can be valued. Hence the reason for resort to a roundabout way of rate base price fixing does not exist in the case of gas in the field.

But if found, and by whatever method found, a rate base is little help in determining reasonableness of the price of gas. Appraisal of present value of these intangible rights to pursue fugitive gas depends on the value assigned to the gas when captured. The 'present fair value' rate base, generally in ill repute, [FN43] is not even **310 urged by the gas company for valuing its fields.

FN43 'The attempt to regulate rates by reference to a periodic or occasional reappraisal of the properties has now been tested long enough to confirm the worst fears of its critics. Unless its place is taken by some more promising scheme of rate control, the days of private ownership under government regulation may be numbered.' 2 Bonbright, Valuation of Property (1937) 1190.

***649** The prudent investment theory has relative merits in fixing rates for a utility which creates its service merely by its investment. The amount and quality of service rendered by the usual utility will, at least roughly, be measured by the amount of capital it puts into the enterprise. But it has no rational application where there is no such relationship between investment and capacity to serve. There is no such relationship between investment and amount of gas produced. Let us assume that Doe and Roe each produces in West Virginia for delivery to Cleveland the same quantity of natural gas per day. Doe, however, through luck or foresight or whatever it takes, gets his gas from investing $50,000 in leases and drilling. Roe drilled poorer territory, got smaller wells, and has invested $250,000. Does anybody imagine that Roe can get or ought to get for his gas five times as much as Doe because he has spent five times as much? The service one renders to society in the gas business is measured by what he gets out of the ground, not by what he puts into it, and there is little more relation between the investment and the results than in a game of poker.

Two-thirds of the gas Hope handles it buys from about 340 independent producers. It is obvious that the principle of rate-making applied to Hope's own gas cannot be applied, and has not been applied, to the bulk of the gas Hope delivers. It is not probable that the investment of any two of these producers will bear the same ratio to their investments. The gas, however, all goes to the same use, has the same utilization value and the same ultimate price.

To regulate such an enterprise by undiscriminatingly transplanting any body of rate doctrine conceived and ***650** adapted to the ordinary utility business can serve the 'public interest' as the Natural Gas Act requires, if at all, only by accident. Mr. Justice Brandeis, the pioneer juristic advocate of the prudent investment theory for man-made utilities, never, so far as I am able to discover, proposed its application to a natural gas case. On the other hand, dissenting in Commonwealth of Pennsylvania v. West Virginia, he reviewed the problems of gas supply and said, 'In no other field of public service regulation is the controlling body confronted with factors so baffling as in the natural gas industry, and in none is continuous supervision and control required in so high a degree.' 262 U.S. 553, 621, 43 S.Ct. 658, 674, 67 L.Ed. 1117, 32 A.L.R. 300. If natural gas rates are intelligently to be regulated we must fit our legal principles to the economy of the industry and not try to fit the industry to our books.

As our decisions stand the Commission was justified in believing that it was required to proceed by the rate base method even as to gas in the field. For this reason the Court may not merely wash its hands of the method and rationale of rate making. The fact is that this Court, with no discussion of its fitness, simply transferred the rate base method to the natural gas industry. It happened in Newark Natural Gas & Fuel Co. v. City of Newark, Ohio, 1917, 242 U.S. 405, 37 S.Ct. 156, 157, 61 L.Ed. 393, Ann.Cas.1917B, 1025, in which the company wanted 25 cents per m.c.f., and under the Fourteenth Amendment challenged the reduction to 18 cents by ordinance. This Court sustained the reduction because the court below 'gave careful consideration to the questions of the value of the property * * * at the time of the inquiry,' and whether the rate 'would be sufficient to provide a fair return on the value of the property.' The Court said this method was 'based upon principles thoroughly established by repeated secisions of this court,' citing many cases, not one of which involved natural gas or a comparable wasting natural resource. Then came issues as to state power to ***651** regulate as affected by the commerce clause. Public Utilities Commission v. Landon, 1919, 249 U.S. 236, 39 S.Ct. 268, 63 L.Ed. 577; Pennsylvania Gas Co. v. Public Service Commission, 1920, 252 U.S. 23, 40 S.Ct. 279, 64 L.Ed. 434. These questions settled, the Court again was called upon in natural gas cases to consider state rate-making claimed to be invalid under the Fourteenth Amendment. United Fuel Gas Co. v. Railroad Commission of Kentucky, 1929, 278 U.S. 300, 49 S.Ct. 150, 73 L.Ed. 390; United Fuel Gas Company v. Public Service Commission of West Virginia, 1929, 278 U.S. 322, 49 S.Ct. 157, 73 L.Ed. 402. Then, as now, the differences were 'due **311 chiefly to the difference in value ascribed by each to the gas rights and leaseholds.' 278 U.S. 300, 311, 49 S.Ct. 150, 153, 73 L.Ed. 390. No one seems to have questioned that the rate base method must be pursued and the controversy was at what rate base must be used. Later the 'value' of gas in the field was questioned in determining the amount a regulated company should be allowed to pay an affiliate therefor-a state determination also reviewed under the Fourteenth Amendment. Dayton Power & Light Co. v. Public Utilities Commission of Ohio, 1934, 292 U.S. 290, 54 S.Ct. 647, 78 L.Ed. 1267; Columbus Gas & Fuel Co. v. Public Utilities Commission of Ohio, 1934, 292 U.S. 398, 54 S.Ct. 763, 78 L.Ed. 1327, 91 A.L.R. 1403. In both cases, one of which sustained, and one of which struck down a fixed rate the Court assumed the rate base method, as the legal way of testing reasonableness of natural gas prices fixed by public authority, without examining its real relevancy to the inquiry.

Under the weight of such precedents we cannot expect the Commission to initiate economically intelligent methods of fixing gas prices. But the Court now faces a new plan of federal regulation based on the power to fix the price at which gas shall be allowed to move in interstate commerce. I should now consider whether these rules devised under the Fourteenth Amendment are the exclusive tests of a just and reasonable rate under the federal statute, inviting reargument directed to that point ***652** if necessary. As I see it now I would be prepared to hold that these rules do not apply to a natural gas case arising under the Natural Gas Act.

Such a holding would leave the Commission to fix the price of gas in the field as one would fix maximum prices of oil or milk or coal, or any other commodity. Such a price is not calculated to produce a fair return on the synthetic value of a rate base of any individual producer, and would not undertake to assure a fair return to any producer. The emphasis would shift from the producer to the product, which would be regulated with an eye to average or typical producing conditions in the field.

Such a price fixing process on economic lines would offer little temptation to the judiciary to become back seat drivers of the price fixing machine. The unfortunate effect of judicial intervention in this field is to divert the attention of those engaged in the process from what is economically wise to what is legally permissible. It is probable that price reductions would reach economically unwise and self-defeating limits before they would reach constitutional ones. Any constitutional problems growing out of price fixing are quite different than those that have heretofore been considered to inhere in rate making. A producer would have difficulty showing the invalidity of such a fixed price so long as he voluntarily continued to sell his product in interstate commerce. Should he withdraw and other authority be invoked to compel him to part with his property, a different problem would be presented.

Allowance in a rate to compensate for gas removed from gas lands, whether fixed as of point of production or as of point of delivery, probably best can be measured by a functional test applied to the whole industry. For good or ill we depend upon private enterprise to exploit these natural resources for public consumption. The function which an allowance for gas in the field should perform ***653** for society in such circumstances is to be enough and no more than enough to induce private enterprise completely and efficiently to utilize gas resources, to acquire for public service any available gas or gas rights and to deliver gas at a rate and for uses which will be in the future as well as in the present public interest.

The Court fears that 'if we are now to tell the Commission to fix the rates so as to discourage particular uses, we would indeed be injecting into a rate case a 'novel' doctrine * * *.' With due deference I suggest that there is nothing novel in the idea that any change in price of a service or commodity reacts to encourage or discourage its use. The question is not whether such consequences will or will not follow; the question is whether effects must be suffered blindly or may be intelligently selected, whether price control shall have targets at which it deliberately aims or shall be handled like a gun in the hands of one who does not know it is loaded.

We should recognize 'price' for what it is-a tool, a means, an expedient. In public****312** hands it has much the same economic effects as in private hands. Hope knew that a concession in industrial price would tend to build up its volume of sales. It used price as an expedient to that end. The Commission makes another cut in that same price but the Court thinks we should ignore the effect that it will have on exhaustion of supply. The fact is that in natural gas regulation price must be used to reconcile the private property right society has permitted to vest in an important natural resource with the claims of society upon it-price must draw a balance between wealth and welfare.

To carry this into techniques of inquiry is the task of the Commissioner rather than of the judge, and it certainly is no task to be solved by mere bookkeeping but requires the best economic talent available. There would doubtless be inquiry into the price gas is bringing in the ***654** field, how far that price is established by arms' length bargaining and how far it may be influenced by agreements in restraint of trade or monopolistic influences. What must Hope really pay to get and to replace gas it delivers under this order? If it should get more or less than that for its own, how much and why? How far are such prices influenced by pipe line access to markets and if the consumers pay returns on the pipe lines how far should the increment they cause go to gas producers? East Ohio is itself a producer in Ohio. FN44 What do Ohio authorities require Ohio consumers to pay for gas in the field? Perhaps these are reasons why the Federal Government should put West Virginia gas at lower or at higher rates. If so what are they? Should East Ohio be required to exploit its half million acres of unoperated reserve in Ohio before West Virginia resources shall be supplied on a devalued basis of which that State complains and for which she threatens measures of self keep? What is gas worth in terms of other fuels it displaces?

FN44 East Ohio itself owns natural gas rights in 550,600 acres, 518,526 of which are reserved and 32,074 operated, by 375 wells. Moody's Manual of Public Utilities (1943) 5.

A price cannot be fixed without considering its effect on the production of gas. Is it an incentive to continue to exploit vast unoperated reserves? Is it conducive to deep drilling tests the result of which we may know only after trial? Will it induce bringing gas from afar to supplement or even to substitute for Appalachian gas? FN45 Can it be had from distant fields as cheap or cheaper? If so, that competitive potentiality is certainly a relevant consideration. Wise regulation must also consider, as a private buyer would, what alternatives the producer has ***655** if the price is not acceptable. Hope has intrastate business and domestic and industrial customers. What can it do by way of diverting its supply to intrastate sales? What can it do by way of disposing of its operated or reserve acreage to industrial concerns or other buyers? What can West Virginia do by way of conservation laws, severance or other taxation, if the regulated rate offends? It must be borne in mind that while West Virginia was prohibited from giving her own inhabitants a priority that discriminated against interstate commerce, we have never yet held that a good faith conservation act, applicable to her own, as well as to others, is not valid. In considering alternatives, it must be noted that federal regulation is very incomplete, expressly excluding regulation of ‘production or gathering of natural gas,’ and that the only present way to get the gas seems to be to call it forth by price inducements. It is plain that there is a downward economic limit on a safe and wise price.

FN45 Hope has asked a certificate of convenience and necessity to lay 1140 miles of 22-inch pipeline from Hugoton gas fields in southwest Kansas to West Virginia to carry 285 million cu. ft. of natural gas per day. The cost was estimated at $51,000,000. Moody's Manual of Public Utilities (1943) 1760.

But there is nothing in the law which compels a commission to fix a price at that ‘value’ which a company might give to its product by taking advantage of scarcity, or monopoly of supply. The very purpose of fixing maximum prices is to take away from the seller his opportunity to get all that otherwise the market would award him for his goods. This is a constitutional use of the power to fix maximum prices, ****313**Block v. Hirsh, 256 U.S. 135, 41 S.Ct. 458, 65 L.Ed. 865, 16 A.L.R. 165; Marcus Brown Holding Co. v. Feldman, 256 U.S. 170, 41 S.Ct. 465, 65 L.Ed. 877; International Harvester Co. v. Kentucky, 234 U.S. 216, 34 S.Ct. 853, 58 L.Ed. 1284; Highland v. Russell Car & Snow Plow Co., 279 U.S. 253, 49 S.Ct. 314, 73 L.Ed. 688, just as the fixing of minimum prices of goods in interstate commerce is constitutional although it takes away from the buyer the advantage in bargaining which market conditions would give him. United States v. Darby, 312 U.S. 100, 657, 61 S.Ct. 451, 85 L.Ed. 609, 132 A.L.R. 1430; Mulford v. Smith, 307 U.S. 38, 59 S.Ct. 648, 83 L.Ed. 1092; United States v. Rock Royal Co-operative, Inc., 307 U.S. 533, 59 S.Ct. 993, 83 L.Ed. 1446; Sunshine Anthracite Coal Co. v. Adkins, 310 U.S. 381, 60 S.Ct. 907, 84 L.Ed. 1263. The Commission has power to fix ***656** a price that will be both maximum and minimum and it has the incidental right, and I think the duty, to choose the economic consequences it will promote or retard in production and also more importantly in consumption, to which I now turn.

If we assume that the reduction in company revenues is warranted we then come to the question of translating the allowed return into rates for consumers or classes of consumers. Here the Commission fixed a single rate for all gas delivered irrespective of its use despite the fact that Hope has established what amounts to two rates-a high one for domestic use and a lower one for industrial contracts. FN46 The Commission can fix two prices for interstate gas as readily as one-a price for resale to domestic users and another for resale to industrial users. This is the pattern Hope itself has established in the very contracts over which the Commission is expressly given jurisdiction. Certainly the Act is broad enough to permit two prices to be fixed instead of one, if the concept of the ‘public interest’ is not unduly narrowed.

FN46 I find little information as to the rates for industries in the record and none at all in such usual sources as Moody's Manual.

The Commission's concept of the public interest in natural

(Cite as: 51 P.U.R.(NS) 193, 64 S.Ct. 281)

gas cases which is carried today into the Court's opinion was first announced in the opinion of the minority in the Pipeline case. It enumerated only two 'phases of the public interest: (1) the investor interest; (2) the consumer interest,' which it emphasized to the exclusion of all others. 315 U.S. 575, 606, 62 S.Ct. 736, 753, 86 L.Ed. 1037. This will do well enough in dealing with railroads or utilities supplying manufactured gas, electric, power, a communications service or transportation, where utilization of facilities does not impair their future usefulness. Limitation of supply, however, brings into a natural gas case another phase of the public interest that to my mind overrides both the owner ***657** and the consumer of that interest. Both producers and industrial consumers have served their immediate private interests at the expense of the long-range public interest. The public interest, of course, requires stopping unjust enrichment of the owner. But it also requires stopping unjust impoverishment of future generations. The public interest in the use by Hope's half million domestic consumers is quite a different one from the public interest in use by a baker's dozen of industries.

Prudent price fixing it seems to me must at the very threshold determine whether any part of an allowed return shall be permitted to be realized from sales of gas for resale for industrial use. Such use does tend to level out daily and seasonal peaks of domestic demand and to some extent permits a lower charge for domestic service. But is that a wise way of making gas cheaper when, in comparison with any substitute, gas is already a cheap fuel? The interstate sales contracts provide that at times when demand is so great that there is not enough gas to go around domestic users shall first be served. Should the operation of this preference await the day of actual shortage? Since the propriety of a preference seems conceded, should it not operate to prevent the coming of a shortage as well as to mitigate its effects? Should industrial use jeopardize tomorrow's service to householders any more than today's? If, however, it is decided to cheapen domestic use by resort to industrial sales, should they be limited to the few uses ****314** for which gas has special values or extend also to those who use it only because it is cheaper than competitive fuels? [FN47] And how much cheaper should industrial***658** gas sell than domestic gas, and how much advantage should it have over competitive fuels? If industrial gas is to contribute at all to lowering domestic rates, should it not be made to contribute the very maximum of which it is capable, that is, should not its price be the highest at which the desired volume of sales can be realized?

FN47 The Federal Power Commission has touched upon the problem of conservation in connection with an application for a certificate permitting construction of a 1500-mile pipeline from southern Texas to New York City and says: 'The Natural Gas Act as presently drafted does not enable the Commission to treat fully the serious implications of such a problem. The question should be raised as to whether the proposed use of natural gas would not result in displacing a less valuable fuel and create hardships in the industry already supplying the market, while at the same time rapidly depleting the country's natural-gas reserves. Although, for a period of perhaps 20 years, the natural gas could be so priced as to appear to offer an apparent saving in fuel costs, this would mean simply that social costs which must eventually be paid had been ignored.

'Careful study of the entire problem may lead to the conclusion that use of natural gas should be restricted by functions rather than by areas. Thus, it is especially adapted to space and water heating in urban homes and other buildings and to the various industrial heat processes which require concentration of heat, flexibility of control, and uniformity of results. Industrial uses to which it appears particularly adapted include the treating and annealing of metals, the operation of kilns in the ceramic, cement, and lime industries, the manufacture of glass in its various forms, and use as a raw material in the chemical industry. General use of natural gas under boilers for the production of steam is, however, under most circumstances of very questionable social economy.' Twentieth Annual Report of the Federal Power Commission (1940) 79.

If I were to answer I should say that the household rate should be the lowest that can be fixed under commercial conditions that will conserve the supply for that use. The lowest probable rate for that purpose is not likely to speed exhaustion much, for it still will be high enough to induce economy, and use for that purpose has more nearly reached the saturation point. On the other hand the demand for industrial gas at present rates already appears to be increasing. To lower further the industrial rate is merely further to subsidize industrial consumption and speed depletion. The impact of the flat reduction ***659** of rates ordered here admittedly will be to increase the industrial advantages of gas over competing fuels and to increase its use. I think this is not, and there is no finding by the Commission that it is, in the public interest.

There is no justification in this record for the present discrimination against domestic users of gas in favor of industrial users. It is one of the evils against which the Natural Gas Act was aimed by Congress and one of the evils complained of here by Cleveland and Akron. If

Hope's revenues should be cut by some $3,600,000 the whole reduction is owing to domestic users. If it be considered wise to raise part of Hope's revenues by industrial purpose sales, the utmost possible revenue should be raised from the least consumption of gas. If competitive relationships to other fuels will permit, the industrial price should be substantially advanced, not for the benefit of the Company, but the increased revenues from the advance should be applied to reduce domestic rates. For in my opinion the 'public interest' requires that the great volume of gas now being put to uneconomic industrial use should either be saved for its more important future domestic use or the present domestic user should have the full benefit of its exchange value in reducing his present rates.

Of course the Commission's power directly to regulate does not extend to the fixing of rates at which the local company shall sell to consumers. Nor is such power required to accomplish the purpose. As already pointed out, the very contract the Commission is altering classifies the gas according to the purposes for which it is to be resold and provides differentials between the two classifications. It would only be necessary for the Commission to order ****315** that all gas supplied under paragraph (a) of Hope's contract with the East Ohio Company shall be ***660** at a stated price fixed to give to domestic service the entire reduction herein and any further reductions that may prove possible by increasing industrial rates. It might further provide that gas delivered under paragraph (b) of the contract for industrial purposes to those industrial customers Hope has approved in writing shall be at such other figure as might be found consistent with the public interest as herein defined. It is too late in the day to contend that the authority of a regulatory commission does not extend to a consideration of public interests which it may not directly regulate and a conditioning of its orders for their protection. Interstate Commerce Commission v. Railway Labor Executives Ass'n, 315 U.S. 373, 62 S.Ct. 717, 86 L.Ed. 904; United States v. Lowden, 308 U.S. 225, 60 S.Ct. 248, 84 L.Ed. 208.

Whether the Commission will assert its apparently broad statutory authorization over prices and discriminations is, of course, its own affair, not ours. It is entitled to its own notion of the 'public interest' and its judgment of policy must prevail. However, where there is ground for thinking that views of this Court may have constrained the Commission to accept the rate-base method of decision and a particular single formula as 'all important' for a rate base, it is appropriate to make clear the reasons why I, at least, would not be so understood. The Commission is free to face up realistically to the nature and peculiarity of the resources in its control, to foster their duration in fixing price, and to consider future interests in addition to those of investors and present consumers. If we return this case it may accept or decline the proffered freedom. This problem presents the Commission an unprecedented opportunity if it will boldly make sound economic considerations, instead of legal and accounting theories, the foundation of federal policy. I would return the case to the Commission and thereby be clearly quit of what now may appear to be some responsibility for perpetrating a shortsighted pattern of natural gas regulation.

U.S. 1944.
Federal Power Commission v. Hope Natural Gas Co.
51 P.U.R.(NS) 193, 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333

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Supreme Court of the United States
BLUEFIELD WATERWORKS & IMPROVEMENT CO.
v.
PUBLIC SERVICE COMMISSION OF WEST VIRGINIA et al.
No. 256.

Argued January 22, 1923.
Decided June 11, 1923.

In Error to the Supreme Court of Appeals of West Virginia.

Proceedings by the Bluefield Waterworks & Improvement Company against the Public Service Commission of the State of West Virginia and others to suspend and set aside an order of the Commission fixing rates. From a judgment of the Supreme Court of West Virginia, dismissing the petition, and denying the relief (89 W. Va. 736, 110 S. E. 205), the Waterworks Company bring error. Reversed.

West Headnotes

Constitutional Law 92 298(1.5)

92 Constitutional Law
92XII Due Process of Law
92k298 Regulation of Charges and Prices
92k298(1.5) k. Public Utilities in General. Most Cited Cases
Rates which are not sufficient to yield a reasonable return on the value of the property used in public service at the time it is being so used to render the service are unjust, unreasonable, and confiscatory, and their enforcement deprives the public utility company of its property, in violation of the Fourteenth Amendment of the Constitution.

Constitutional Law 92 298(3)

92 Constitutional Law
92XII Due Process of Law
92k298 Regulation of Charges and Prices
92k298(3) k. Water and Irrigation Companies. Most Cited Cases
Under the due process clause of the Fourteenth Amendment of the Constitution, U.S.C.A., a waterworks company is entitled to the independent judgment of the court as to both law and facts, where the question is whether the rates fixed by a public service commission are confiscatory.

Waters and Water Courses 405 203(10)

405 Waters and Water Courses
405IX Public Water Supply
405IX(A) Domestic and Municipal Purposes
405k203 Water Rents and Other Charges
405k203(10) k. Reasonableness of Charges. Most Cited Cases
It was error for a state public service commission, in arriving at the value of the property used in public service, for the purpose of fixing the rates, to fail to give proper weight to the greatly increased cost of construction since the war.

Waters and Water Courses 405 203(10)

405 Waters and Water Courses
405IX Public Water Supply
405IX(A) Domestic and Municipal Purposes
405k203 Water Rents and Other Charges
405k203(10) k. Reasonableness of Charges. Most Cited Cases
A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties, but it has no constitutional right to such profits as are realized or anticipated in highly profitable enterprises or speculative ventures.

Waters and Water Courses 405 203(10)

405 Waters and Water Courses
405IX Public Water Supply
405IX(A) Domestic and Municipal Purposes
405k203 Water Rents and Other Charges
405k203(10) k. Reasonableness

of Charges. Most Cited Cases
Since the investors take into account the result of past operations as well as present rates in determining whether they will invest, a waterworks company which had been earning a low rate of returns through a long period up to the time of the inquiry is entitled to return of more than 6 per cent. on the value of its property used in the public service, in order to justly compensate it for the use of its property.

Federal Courts 170B 504.1

170B Federal Courts
170BVII Supreme Court
170BVII(E) Review of Decisions of State Courts
170Bk504 Nature of Decisions or Questions Involved
170Bk504.1 k. In General. Most Cited Cases
(Formerly 106k394(6))
A proceeding in a state court attacking an order of a public service commission fixing rates, on the ground that the rates were confiscatory and the order void under the federal Constitution, is one where there is drawn in question the validity of authority exercised under the state, on the ground of repugnancy to the federal Constitution, and therefore is reviewable by writ of error.

****675 *680** Messrs. Alfred G. Fox and Jos. M. Sanders, both of Bluefield, W. Va., for plaintiff in error.
Mr. Russell S. Ritz, of Bluefield, W. Va., for defendants in error.

***683** Mr. Justice BUTLER delivered the opinion of the Court.
Plaintiff in error is a corporation furnishing water to the city of Bluefield, W. Va., ****676** and its inhabitants. September 27, 1920, the Public Service Commission of the state, being authorized by statute to fix just and reasonable rates, made its order prescribing rates. In accordance with the laws of the state (section 16, c. 15-O, Code of West Virginia [sec. 651]), the company instituted proceedings in the Supreme Court of Appeals to suspend and set aside the order. The petition alleges that the order is repugnant to the Fourteenth Amendment, and deprives the company of its property without just compensation and without due process of law, and denies it equal protection of the laws. A final judgment was entered, denying the company relief and dismissing its petition. The case is here on writ of error.

[1] 1. The city moves to dismiss the writ of error for the reason, as it asserts, that there was not drawn in question the validity of a statute or an authority exercised under the state, on the ground of repugnancy to the federal Constitution.

The validity of the order prescribing the rates was directly challenged on constitutional grounds, and it was held valid by the highest court of the state. The prescribing of rates is a legislative act. The commission is an instrumentality of the state, exercising delegated powers. Its order is of the same force as would be a like enactment by the Legislature. If, as alleged, the prescribed rates are confiscatory, the order is void. Plaintiff in error is entitled to bring the case here on writ of error and to have that question decided by this court. The motion to dismiss will be denied. See ***684**Oklahoma Natural Gas Co. v. Russell, 261 U. S. 290, 43 Sup. Ct. 353, 67 L. Ed. 659, decided March 5, 1923, and cases cited; also Ohio Valley Co. v. Ben Avon Borough, 253 U. S. 287, 40 Sup. Ct. 527, 64 L. Ed. 908.

2. The commission fixed $460,000 as the amount on which the company is entitled to a return. It found that under existing rates, assuming some increase of business, gross earnings for 1921 would be $80,000 and operating expenses $53,000 leaving $27,000, the equivalent of 5.87 per cent., or 3.87 per cent. after deducting 2 per cent. allowed for depreciation. It held existing rates insufficient to the extent of 10,000. Its order allowed the company to add 16 per cent. to all bills, excepting those for public and private fire protection. The total of the bills so to be increased amounted to $64,000; that is, 80 per cent. of the revenue was authorized to be increased 16 per cent., equal to an increase of 12.8 per cent. on the total, amounting to $10,240.

As to value: The company claims that the value of the property is greatly in excess of $460,000. Reference to the evidence is necessary. There was submitted to the commission evidence of value which it summarized substantially as follows:

a. Estimate by company's engineer

	on. basis of reproduction new, less. depreciation, at prewar prices.	$ 624,548 00
b.	Estimate by company's engineer on. basis of reproduction new, less. depreciation, at 1920 prices.	1,194,663 00
c.	Testimony of company's engineer. fixing present fair value for rate. making purposes.	900,000 00
d.	Estimate by commissioner's engineer on. basis of reproduction new, less. depreciation at 1915 prices, plus. additions since December 31, 1915, at. actual cost, excluding Bluefield. Valley waterworks, water rights,. and going value.	397,964 38
e.	Report of commission's statistician. showing investment cost less. depreciation.	365,445 13
f.	Commission's valuation, as fixed in. case No. 368 ($360,000), plus gross. additions to capital since made. ($92,520.53).	452,520 53

***685** It was shown that the prices prevailing in 1920 were nearly double those in 1915 and pre-war time. The company did not claim value as high as its estimate of cost of construction in 1920. Its valuation engineer testified that in his opinion the value of the property was $900,000-a figure between the cost of construction in 1920, less depreciation, and the cost of construction in 1915 and before the war, less depreciation.

The commission's application of the evidence may be stated briefly as follows:

As to ‘a,’ supra: The commission deducted $204,000 from the estimate (details printed in the margin), FN1 leaving approximately $421,000, which it contrasted with the estimate of its own engineer, $397,964.38 (see ‘d,’ supra). It found that there should be included $25,000 for the Bluefield Valley waterworks plant in Virginia, 10 per cent. for going value, and $10,000 for working capital. If these be added to $421,000, there results $500,600. This may be compared with the commission's final figure, $460,000.

FN1

Difference in depreciation allowed.	$ 49,000
Preliminary organization and development. cost.	14,500
Bluefield Valley waterworks plant.	25,000
Water rights.	50,000
Excess overhead costs.	39,000
Paving over mains.	28,500
	$204,000

***686** As to 'b' and 'c,' supra: These were given no weight by the commission in arriving at its final figure, $460,000. It said:

'Applicant's plant was originally constructed more than twenty years ago, and has been added to from time to time as the progress and development of the community required. For this reason, it would be unfair to its consumers to use as a basis for present fair value the abnormal prices prevailing during the recent war period; but, when, as in this case, a part of the plant has been constructed or added to during that period, in fairness to the applicant, consideration must be given to the cost of such expenditures made to meet the demands of the public.'

****677** As to 'd,' supra: The commission, taking $400,000 (round figures), added $25,000 for Bluefield Valley waterworks plant in Virginia, 10 per cent. for going value, and $10,000 for working capital, making $477,500. This may be compared with its final figure, $460,000.

As to 'e,' supra: The commission, on the report of its statistician, found gross investment to be $500,402.53. Its engineer, applying the straight line method, found 19 per cent. depreciation. It applied 81 per cent. to gross investment and added 10 per cent. for going value and $10,000 for working capital, producing $455,500. [FN2] This may be compared with its final figure, $460,000.

FN2 As to 'e': $365,445.13 represents investment cost less depreciation. The gross investment was found to be $500,402.53, indicating a deduction on account of depreciation of $134,957.40, about 27 per cent., as against 19 per cent. found by the commission's engineer.

As to 'f,' supra: It is necessary briefly to explain how this figure, $452,520.53, was arrived at. Case No. 368 was a proceeding initiated by the application of the company for higher rates, April 24, 1915. The commission made a valuation as of January 1, 1915. There were presented two estimates of reproduction cost less depreciation, one by a valuation engineer engaged by the company, ***687** and the other by a valuation engineer engaged by the city, both 'using the same method.' An inventory made by the company's engineer was accepted as correct by the city and by the commission. The method 'was that generally employed by courts and commissions in arriving at the value of public utility properties under this method.' and in both estimates 'five year average unit prices' were applied. The estimate of the company's engineer was $540,000 and of the city's engineer, $392,000. The principal differences as given by the commission are shown in the margin. [FN3] The commission disregarded both estimates and arrived at $360,000. It held that the best basis of valuation was the net investment, i. e., the total cost of the property less depreciation. It said:

'The books of the company show a total gross investment, since its organization, of $407,882, and that there has been charged off for depreciation from year to year the total sum of $83,445, leaving a net investment of

FN3

		Company Engineer.	City Engineer.
1.	Preliminary costs.	$14,455	$1,000
2.	Water rights.	50,000	Nothing
3.	Cutting pavements over. mains.	27,744	233
4.	Pipe lines from gravity. springs.	22,072	15,442
5.	Laying cast iron street. mains.	19,252	15,212
6.	Reproducing Ada springs.	18,558	13,027
7.	Superintendence and. engineering.	20,515	13,621
8.	General contingent cost.	16,415	5,448
		$189,011	$63,983

$324,427. * * * From an examination of the books * * * it appears that the records of the company have been remarkably well kept and preserved. It therefore seems that, when a plant is developed under these conditions, the net investment, which, of course, means the total gross investment less depreciation, is the very best basis of valuation for rate making purposes and that the other methods above referred to should ***688** be used only when it is impossible to arrive at the true investment. Therefore, after making due allowance for capital necessary for the conduct of the business and considering the plant as a going concern, it is the opinion of the commission that the fair value for the purpose of determining reasonable and just rates in this case of the property of the applicant company, used by it in the public service of supplying water to the city of Bluefield and its citizens, is the sum of $360,000, which sum is hereby fixed and determined by the commission to be the fair present value for the said purpose of determining the reasonable and just rates in this case.'

In its report in No. 368, the commission did not indicate the amounts respectively allowed for going value or working capital. If 10 per cent. be added for the former, and $10,000 for the latter (as fixed by the commission in the present case), there is produced $366,870, to be compared with $360,000, found by the commission in its valuation as of January 1, 1915. To this it added $92,520.53, expended since, producing $452,520.53. This may be compared with its final figure, $460,000.

The state Supreme Court of Appeals holds that the valuing of the property of a public utility corporation and prescribing rates are purely legislative acts, not subject to judicial review, except in so far as may be necessary to determine whether such rates are void on constitutional or other grounds, and that findings of fact by the commission based on evidence to support them will not be reviewed by the court. City of Bluefield v. Waterworks, 81 W. Va. 201, 204, 94 S. E. 121; Coal & Coke Co. v. Public Service Commission, 84 W. Va. 662, 678, 100 S. E. 557, 7 A. L. R. 108; Charleston v. Public Service Commission, 86 W. Va. 536, 103 S. E. 673.

In this case (89 W. Va. 736, 738, 110 S. E. 205, 206) it said:

'From the written opinion of the commission we find that it ascertained the value of the petitioner's property for rate making [then quoting the commission] 'after ***689** maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record.''

[2] [3] The record clearly shows that the commission, in arriving at its final figure, did not accord proper, if any, weight to the greatly enhanced costs of construction in 1920 over those prevailing about 1915 and before the war, as established by uncontradicted ****678** evidence; and the company's detailed estimated cost of reproduction new, less depreciation, at 1920 prices, appears to have been wholly disregarded. This was erroneous. Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission of Missouri, 262 U. S. 276, 43 Sup. Ct. 544, 67 L. Ed. 981, decided May 21, 1923. Plaintiff in error is entitled under the due process clause of the Fourteenth Amendment to the independent judgment of the court as to both law and facts. Ohio Valley Co. v. Ben Avon Borough, 253 U. S. 287, 289, 40 Sup. Ct. 527, 64 L. Ed. 908, and cases cited.

We quote further from the court's opinion (89 W. Va. 739, 740, 110 S. E. 206):

'In our opinion the commission was justified by the law and by the facts in finding as a basis for rate making the sum of $460,000.00. * * * In our case of Coal & Coke Ry. Co. v. Conley, 67 W. Va. 129, it is said: 'It seems to be generally held that, in the absence of peculiar and extraordinary conditions, such as a more costly plant than the public service of the community requires, or the erection of a plant at an actual, though extravagant, cost, or the purchase of one at an exorbitant or inflated price, the actual amount of money invested is to be taken as the basis, and upon this a return must be allowed equivalent to that which is ordinarily received in the locality in which the business is done, upon capital invested in similar enterprises. In addition to this, consideration must be given to the nature of the investment, a higher rate ***690** being regarded as justified by the risk incident to a hazardous investment.'

'That the original cost considered in connection with the history and growth of the utility and the value of the services rendered constitute the principal elements to be considered in connection with rate making, seems to be supported by nearly all the authorities.'

[4] The question in the case is whether the rates prescribed in the commission's order are confiscatory and therefore beyond legislative power. Rates which are not sufficient to yield a reasonable return on the value of the property used at the time it is being used to render the service are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the Fourteenth Amendment. This is so well settled by numerous decisions of this court that citation of the cases is scarcely necessary:

'What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience.' Smyth v. Ames (1898) 169 U. S. 467, 547, 18 Sup. Ct. 418, 434 (42 L. Ed. 819).
'There must be a fair return upon the reasonable value of the property at the time it is being used for the public. * * * And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase.' Willcox v. Consolidated Gas Co. (1909) 212 U. S. 19, 41, 52, 29 Sup. Ct. 192, 200 (53 L. Ed. 382, 15 Ann. Cas. 1034, 48 L. R. A. [N. S.] 1134).
'The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts.' Minnesota Rate Cases (1913) 230 U. S. 352, 434, 33 Sup. Ct. 729, 754 (57 L. Ed. 1511, 48 L. R. A. [N. S.] 1151, Ann. Cas. 1916A, 18).
***691** 'And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property.' Smyth v. Ames, 169 U. S., 546, 547, 18 Sup. Ct. 434, 42 L. Ed. 819.
'* * * The making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law.'

Minnesota Rate Cases, 230 U. S. 454, 33 Sup. Ct. 762, 57 L. Ed. 1511, 48 L. R. A. (N. S.) 1151, Ann. Cas. 1916A, 18.

In Missouri ex rel. Southwestern Bell Telephone Co., v. Public Service Commission of Missouri, supra, applying the principles of the cases above cited and others, this court said:
'Obviously, the commission undertook to value the property without according any weight to the greatly enhanced costs of material, labor, supplies, etc., over those prevailing in 1913, 1914, and 1916. As matter of common knowledge, these increases were large. Competent witnesses estimated them as 45 to 50 per centum. * * * It is impossible to ascertain what will amount to a fair return upon properties devoted to public service, without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of probable future values, made upon a view of all the relevant circumstances, is essential. If the highly important element of present costs is wholly disregarded, such a forecast becomes impossible. Estimates for to-morrow cannot ignore prices of to-day.'

[5] ***692** It is clear that the court also failed to give proper consideration to the higher cost of construction in 1920 over that in 1915 and before the war, and failed to give weight to cost of reproduction less depreciation on the basis of 1920 prices, or to the testimony of the company's valuation engineer, based on present and past costs of construction, that the property in his opinion, was worth $900,000. The final figure, $460,000, was arrived ****679** at substantially on the basis of actual cost, less depreciation, plus 10 per cent. for going value and $10,000 for working capital. This resulted in a valuation considerably and materially less than would have been reached by a fair and just consideration of all the facts. The valuation cannot be sustained. Other objections to the valuation need not be considered.

3. Rate of return: The state commission found that the company's net annual income should be approximately $37,000, in order to enable it to earn 8 per cent. for return and depreciation upon the value of its property as fixed by it. Deducting 2 per cent. for depreciation, there remains 6 per cent. on $460,000, amounting to $27,600 for return. This was approved by the state court.

[6] The company contends that the rate of return is too low and confiscatory. What annual rate will constitute just compensation depeds upon many circumstances, and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in ***693** highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A

rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.

In 1909, this court, in Willcox v. Consolidated Gas Co., 212 U. S. 19, 48-50, 29 Sup. Ct. 192, 53 L. Ed. 382, 15 Ann. Cas. 1034, 48 L. R. A. (N. S.) 1134, held that the question whether a rate yields such a return as not to be confiscatory depends upon circumstances, locality and risk, and that no proper rate can be established for all cases; and that, under the circumstances of that case, 6 per cent. was a fair return on the value of the property employed in supplying gas to the city of New York, and that a rate yielding that return was not confiscatory. In that case the investment was held to be safe, returns certain and risk reduced almost to a minimum-as nearly a safe and secure investment as could be imagined in regard to any private manufacturing enterprise.

In 1912, in Cedar Rapids Gas Co. v. Cedar Rapids, 223 U. S. 655, 670, 32 Sup. Ct. 389, 56 L. Ed. 594, this court declined to reverse the state court where the value of the plant considerably exceeded its cost, and the estimated return was over 6 per cent.

In 1915, in Des Moines Gas Co. v. Des Moines, 238 U. S. 153, 172, 35 Sup. Ct. 811, 59 L. Ed. 1244, this court declined to reverse the United States District Court in refusing an injunction upon the conclusion reached that a return of 6 per cent. per annum upon the value would not be confiscatory.

In 1919, this court in Lincoln Gas Co. v. Lincoln, 250 U. S. 256, 268, 39 Sup. Ct. 454, 458 (63 L. Ed. 968), declined on the facts of that case to approve a finding that no rate yielding as much as 6 per cent. ***694** on the invested capital could be regarded as confiscatory. Speaking for the court, Mr. Justice Pitney said:
'It is a matter of common knowledge that, owing principally to the World War, the costs of labor and supplies of every kind have greatly advanced since the ordinance was adopted, and largely since this cause was last heard in the court below. And it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similar public utilities a few years ago furnishes no safe criterion for the present or for the future.'

In 1921, in Brush Electric Co. v. Galveston, the United States District Court held 8 per cent. a fair rate of return. [FN4]

FN4 This case was affirmed by this court June 4, 1923, 262 U. S. 443, 43 Sup. Ct. 606, 67 L. Ed. 1076.

In January, 1923, in City of Minneapolis v. Rand, the Circuit Court of Appeals of the Eighth Circuit (285 Fed. 818, 830) sustained, as against the attack of the city on the ground that it was excessive, 7 1/2 per cent., found by a special master and approved by the District Court as a fair and reasonable return on the capital investment-the value of the property.

[7] Investors take into account the result of past operations, especially in recent years, when determining the terms upon which they will invest in such an undertaking. Low, uncertain, or irregular income makes for low prices for the securities of the utility and higher rates of interest to be demanded by investors. The fact that the company may not insist as a matter of constitutional right that past losses be made up by rates to be applied in the present and future tends to weaken credit, and the fact that the utility is protected against being compelled to serve for confiscatory rates tends to support it. In ***695** this case the record shows that the rate of return has been low through a long period up to the time of the inquiry by the commission here involved. For example, the average rate of return on the total cost of the property from 1895 to 1915, inclusive, was less than 5 per cent.; from 1911 to 1915, inclusive, about 4.4 per cent., without allowance for depreciation. In 1919 the net operating income was approximately $24,700, leaving $15,500, approximately, or 3.4 per cent. on $460,000 fixed by the commission, after deducting 2 per cent. for depreciation. In 1920, the net operating income was approximately $25,465, leaving $16,265 for return, after allowing for depreciation. Under the facts and circumstances indicated by the record, we think that a rate of return of 6 per cent. upon the value of the property is substantially too low to constitute just compensation for the use of the property employed to render the service.

The judgment of the Supreme Court of Appeals of West Virginia is reversed.

Mr. Justice BRANDEIS concurs in the judgment of reversal, for the reasons stated by him in Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission of Missouri, supra.
U.S. 1923
Bluefield Waterworks & Imp. Co. v. Public Service Commission of W. Va.
P.U.R. 1923D 11, 262 U.S. 679, 43 S.Ct. 675, 67 L.Ed. 1176

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ORIGINAL ARTICLE

New approach to estimating the cost of common equity capital for public utilities

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Abstract The regulatory process for setting public utilities' allowed rate of return on common equity has generally used the Gordon DCF, CAPM and Risk Premium specifications to estimate the cost of common equity. Despite the widely known problems with these models, there has been little movement to adopt more recently developed asset pricing models to provide additional evidence for estimating the cost of capital. This paper presents, validates empirically and applies a general yet simple consumption-based asset pricing specification to model the risk-return relationship for stocks and estimate the cost of common equity for public utilities. The model is not necessarily superior to other models in its practical results, yet these results do indicate that it should be used to provide additional estimates of the cost of common equity. Additionally, the model raises doubts as to whether assets such as utility stocks are a consumption (business cycle) hedge.

Keywords Public utilities · Cost of capital · GARCH · Consumption asset pricing model

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1 Introduction

Following electricity deregulation with the National Energy Policy Act of 1992, the estimation of the cost of common equity capital remains a critical component of the utility rate-of-return regulatory process. Since the cost of common equity is not observable in capital markets, it must be inferred from asset pricing models. The models that are commonly applied in regulatory proceedings are the Gordon (1974) Discounted Cash Flow (DCF), the Capital Asset Pricing (CAPM) and Risk Premium Models. There are other tools used to estimate the cost of common equity such as comparable earnings or earnings-to-price ratios, but they are not asset pricing models. The empirical literature on the CAPM is vast {Fama and French (2004)} and the CAPM is used by a number of US regulatory jurisdictions. The DCF model has not been empirically tested to the same extent as the CAPM, yet it is considered by many US regulatory jurisdictions.

The purpose of this paper is to present, test empirically and apply a recently developed general consumption-based asset pricing model that estimates the risk-return relationship directly from asset pricing data and, when estimated with recently developed time series methods, produces a prediction of the equity risk premium that is driven by its predicted volatility. The predicted risk premium is then added to a risk-free rate of return to provide an estimate of the cost of common equity. We predict two forms of the equity risk premium with the model, the risk premium net of the risk-free rate and the equity-to-debt risk premium (equity risk premium net of the relevant bond yield for the company's stock). Either can be applied to predict the common equity cost of capital for a public utility. Although the model is tested and applied to public utilities for rate of return regulation, it can be used to estimate the cost of capital for any stock. Section 2 reviews the asset pricing models typically used in public utility rate cases and the generalized consumption asset pricing model we propose to estimate the cost of common equity. Section 3 discusses the data and the empirical testing of the consumption asset pricing model. Section 4 reviews the application of the model and compares it with the DCF and CAPM results. Section 5 is the conclusion.

2 DCF, CAPM and consumption asset pricing model

2.1 DCF and CAPM approaches

The standard DCF model frequently used in estimative the cost rate of common equity in regulatory proceedings is defined by the following equation:

$$k = D_0\,(1+g)\,/P_0 + g,$$

where k is the expected return on common equity; D_0 is the current dividend per share; g is the expected dividend per share growth rate; and P_0 is the current market price.

The DCF was developed by Gordon (1974) specifically for regulatory purposes. Underlying the DCF model is the theory that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate) over the investment holding period. Mathematically, the expected dividend yield ($D_0(1+g)/P_0$) on market price plus an expected growth rate equals the capitalization rate, i.e., the expected return on common equity.

The standard DCF contains several restrictive assumptions, the most contentious of which during utility cost of capital proceedings is typically that dividends per share (DPS), book value per share (BVPS), earnings per share (EPS) as well as market price grow at the same rate in perpetuity. There is also considerable contention over the proper proxy for g, prospective or historical growth in DPS, BVPS, EPS and market price and over what time period. In addition, although the standard DCF described above is a single stage annual growth model, there is considerable discussion over the use of multiple stage growth models during regulatory proceedings. Some analysts use the discrete version and others use the continuous version of the DCF model. Solving these models for k, the cost of common equity, results in differing equations to solve for k. The equation above is from the discrete version. The continuous version uses the current dividend yield and is not adjusted by g, which results in a lower estimate for k. Because of these and other restrictive assumptions that require numerous subjective judgments in application, it is often difficult for regulatory commissions to reconcile the frequently large disparities in rates of return on common equity recommended by various parties in a public utility rate case.

The CAPM model is defined by the following equation:

$$k = R_f + \beta\left(R_m - R_f\right),$$

where k is the expected return on common equity; R_f is the expected risk-free rate of return; β is the expected beta; and R_m is the expected market return.

CAPM theory defines risk as the co-variability of a security's returns with the market's returns or β, also known as systematic or market risk, with the market beta being defined as 1.0. Because CAPM theory assumes that all investors hold perfectly diversified portfolios, they are presumed to be exposed only to systematic risk and the market (according to the model) will not reward them a risk premium for unsystematic or non-market risk. In other words, the CAPM presumes that investors require compensation only for systematic or market risks which are due to macroeconomic and other events that affect the returns on all assets. Mathematically, the CAPM is applied by adding a forward-looking risk-free rate of return to an expected market equity risk premium adjusted proportionately by the expected beta to reflect the systematic risk.

As with the DCF, there is considerable contention during regulatory cost of capital proceedings as to the proper proxies for all components of the CAPM: the R_f, the R_m, as well as β. In addition, the CAPM assumption that the market will only reward investors for systematic or market risk is extremely restrictive when estimating the expected return on common equity for a single asset such as a single jurisdictional regulated operating utility. Additionally, this assumption requires that the investor have a perfectly diversified portfolio, that is, one with no unsystematic risk. Since this assumption is not applicable, estimating the cost of common equity capital for a single utility's common equity undoubtedly will not reflect the risk actually faced by the imperfectly diversified investor.

As will be discussed in the next section, our application of the risk premium approach, the consumption asset pricing model and GARCH[1] rest on minimal assumptions and restrictions and therefore requires considerably less judgment in its application.

2.2 Risk premium approach, consumption asset pricing models, and GARCH

A widely used model to estimate the cost of common equity capital for public utilities is the risk premium approach. This approach often estimates the expected rate of return as the long-term historic mean of the realized risk premium above an historic yield plus the current yield of the relevant bond applicable to a specific utility or peer group of utilities. Litigants in public utility rate proceedings debate the choice of inputs to estimate the risk premium as well as how far back to reach into history to collect data for calculating an average that is representative of a forward-looking premium.

It is surprising that, as popular as the risk premium method is in public utility rate cases, the intuitively appealing general consumption-based asset pricing model, with its minimal assumptions and strong theoretical foundation, has not been applied to estimate the cost of common equity capital for public utilities. The model provides projections of the conditional expected risk premium on an asset based on its relation to its predicted conditional volatility. This model generalizes the well known special case asset pricing models such as the Merton (1973) intertemporal capital asset pricing model, Campbell (1993) intertemporal asset pricing model, and the habit-persistence model of Campbell and Cochrane (1999), which are special cases of the general model. The relation of the model to their specialized cases can be found in Cochrane (2006) and Cochrane (2007). The approach of consumption asset pricing models is to make investment decisions that maximize investors' utility from the consumption that they ultimately desire, not returns.

Even if the model is not used to project directly the expected risk premium, it can, at a minimum, be used to verify that the risk premia data chosen for estimating the cost of capital is empirically validated by fitting the model well. The model can be used to predict the equity risk premia net of the risk-free rate (equity risk premium) or to predict the equity-to-debt risk premium for a firm. We perform both of these empirical tests in this paper. The general consumption-based asset pricing model developed in Michelfelder and Pilotte (2011) and based on Cochrane (2004) provides the relationship of the ex ante risk premium to an asset's own volatility in return:

$$E_t[R_{i,t+1}] - R_{f,t} = -\frac{vol_t[M_{t+1}]}{E_t\left[M_{t+1}\right]} vol_t[R_{i,t+1}] corr_t[M_{t+1}, R_{i,t+1}]. \tag{1}$$

[1] GARCH refers to the generalized autoregressive conditional heteroskedasticity regression model which is discussed below.

where vol_t is the conditional volatility, $corr_t$ is the conditional correlation, and M_{t+1} is the stochastic discount factor (SDF).

The SDF is the intertemporal marginal rate of substitution in consumption, or, $M_{t+1} = \beta \frac{U_{c,t+1}}{U_{c,t}}$, where the U_c's are the marginal utilities of consumption in the next period, $t+1$, and the current period, t, and β is the discount factor for period t to $t+1$. Equation 1 shows that the algebraic sign of the relation between the expected risk premium and the conditional volatility of an asset's risk premium is determined by the correlation between the asset's return and the SDF. That is, the direction of the relation between the asset return and the ratio of intertemporal marginal utilities in consumption inversely determines the relation between the expected risk premium and conditional volatility. When the correlation is equal to negative one, the asset's conditional expected risk premium is perfectly positively correlated with its conditional volatility. A positive relation between the conditionally expected risk premium and volatility obtains when $-1 < corr_t < 0$. A negative relation obtains when $0 < corr_t < 1$. For an asset that represents a perfect hedge against shocks to the marginal utility of consumption, with $corr_t = 1$, there will be a perfect negative correlation between the conditionally expected risk premium and its volatility.[2] Therefore, estimates of the relation between the first two conditional moments of a public utility stock's returns provide a direct test of the effectiveness of a public utility stock, or any asset, as a consumption hedging asset. In Eq. 1, $vol_t[M_{t+1}]/E_t[M_{t+1}]$ is the slope of the mean-variance frontier. If this slope changes over time, the estimated relation between the stock's risk and return will vary over time. This model can also be viewed simplistically as the projected expected risk premium as a function of its own projected risk, given information available at time t.

Note that the model allows for the expected risk premium to be negative if the asset hedges shocks to the marginal utility of consumption. Investors are willing to accept an expected rate of return lower than the risk-free rate of return if the pattern of volatility is such that returns are expected to rise with expected reductions in consumption. Simply, investors are willing to *pay* a premium for a higher level of returns volatility that has the desired pattern of returns. These desired returns patterns have a tendency to offset drops in consumption. Therefore, this model shows that investors may not be averse to volatility, but rather to the timing of expected changes in returns.

Summarizing, several conclusions can be drawn from the general model of asset pricing. First, the sign of the relation between a stock's risk premium and conditional volatility depends on the extent to which the stock serves as an intertemporal hedge against shocks to the marginal utility of consumption. Second, the relation between stock risk and return may be time-varying depending on changes in the slope of the mean-variance frontier. Third, hedging assets have desired patterns of volatility that result in expected rates of return that are less than the risk-free rate. We do not expect

[2] A hedging asset is one that has a positive increase in returns that is coincident with a positive shock in the ratio of intertemporal marginal utilities of consumption. Note that if we assume a concave utility function in consumption, as consumption declines, the marginal utility of consumption rises relative to last period marginal utility. If we think of a decline in consumption as a contraction in the business cycle, the hedging asset delivers positive changes in returns when the business cycle is moving into a contraction, and therefore the asset is a business cycle hedge.

that public utility stocks serve as a hedging asset as they are not viewed as defensive stocks (they do not rise in value during downturns in the stock market) due to asymmetric regulation and returns as discussed in detail in Kolbe and Tye (1990). Under asymmetric regulation, utility regulators have a tendency to allow the return on equity to fall below the allowed return during downturns in the business cycle and to reduce the return should it rise above the allowed return during expansions. Therefore we expect that the parameter estimates of the return-risk relationship to be positive as utility stocks are hypothesized to not be hedges.

We use the GARCH model to estimate the general asset pricing model since the GARCH model accommodates ARCH effects that improve the efficiency of the parameter estimates. It also provides a volatility forecasting model for the conditional volatility of the asset's risk premium. The conditional volatility projection is used, in turn to predict the expected risk premium. We also use the GARCH-in-Mean model (GARCH-M) since it specifies that the conditional expected risk premium is a linear function of its conditional volatility. There is a vast body of literature that estimates asset pricing models with the GARCH and GARCH-M methods and therefore we will not attempt to summarize them here.

The GARCH-M model was initially developed and tested by Engle et al. (1987) to estimate the relationship between US Treasury and corporate bond risk premia and their expected volatilities. The GARCH-M model is specified as:

$$R_{t+1} - R_{f,t+1} = \alpha\sigma_{t+1}^2 + \varepsilon_{t+1} \tag{2}$$

$$\sigma_{t+1}^2 = \beta_0 + \beta_1\sigma_t^2 + \beta_2\varepsilon_t^2 + \eta_{t+1} \tag{3}$$

$$\varepsilon_t \,|\psi_{t-1} \sim T(0, \sigma_t^2) \tag{4}$$

where R_{t+1} is the expected total return on the public utility stock index or individual utility stock; $R_{f,t+1}$ is the risk-free rate of return or the yield on an index of public utility bonds of a specified bond rating for the equity-to-debt premium; σ_{t+1}^2 is the conditional or predicted variance of the risk premium that is conditioned on past information (ψ_{t-1}); and ε_t is the error term that is conditional on ψ_{t-1}.

The conditional distribution of the error term is specified as the non-unitary variance T-distribution due to the thick-tailed distribution of the risk premia data. If the error distribution is thick-tailed, using an approximating distribution that accommodates thick tails improves the efficiency of the estimates. The parameter, α, is the return-to-risk coefficient as specified in Eq. 1 as:

$$\alpha = -\frac{vol_t[M_{t+1}]}{E_t\left[M_{t+1}\right]} corr_t[M_{t+1}, R_{i,t+1}] \tag{5}$$

Note that the coefficient will be positive if the conditional correlation between the SDF and the asset return is negative, indicating that the stock is not a hedging asset. Recall that the SDF is the ratio of intertemporal marginal utilities. Assuming a concave utility function, an upward shock in the ratio implies falling consumption, therefore an associated rise (positive correlation) in the return (R_i) would offset the reduction in consumption, thereby causing the sign of α to be negative. The parameter, α, is also the ratio of risk premium to variance, or, the Sharpe ratio.

The intercept in Eq. 2 is restricted to zero as specified by the general asset pricing model specification. The restriction on the intercept equal to zero has been found to be robust in producing consistently positive and significant relationships between equity risk premia and risk in GARCH-M models. This is discussed in Lanne and Saikkonen (2006) and Lanne and Luoto (2007). We have found the same results in our modeling in this paper, although we have excluded these results for brevity (available upon request). Therefore we specify the prior assumption that the intercept or the "excess" return, i.e., the return not associated with risk to be equal to zero and drop the intercept from the model.

The consumption asset pricing model is estimated in the empirical section of the paper and applied in the applications section of the paper. The model is tested to (1) determine if equity-to-debt risk premium indices for utilities of differing risk specified by differing bond ratings are validated by the asset pricing model and therefore have some empirical support for risk premium prediction and application to utility cost of capital estimation, (2) determine whether equity risk premia can be predicted and fit the model and therefore be used to estimate the cost of common equity, (3) empirically test the consumption asset pricing model, and (4) ascertain whether utility stocks are assets that hedge shocks to the marginal utility of consumption.

If utility stocks are hedging assets then the cost of common equity should reflect a downward adjustment to a specified risk-free rate to reflect investors' preferences for a hedge and the compensation that they are willing to pay for it.

3 Data and empirical results

We use portfolios as represented by public utility stock and bond indices to estimate the conditional return-risk relationship for the equity-to-debt premium. The equity-to-debt risk premium data employed for estimating Eq. 1 with the GARCH-M conditional return-risk regressions are monthly total returns on the Standard and Poor's Public Utilities Stock Index (utility portfolio), and the monthly Moody's Public Utility Aa, A, and Baa yields for the debt cost. We also obtained equity risk premia for the utility portfolio using the Fama-French specified risk-free rate of return, which is the holding period return on a 1-month US Treasury Bill. The data range from January 1928 to December 2007 with 960 observations. The return-risk relationships for the equity-to-debt premia are risk-differentiated by their own bond rating.

As a check, we also estimate Eq. 1 with the GARCH-M for large common stock returns using the monthly Ibbotson Large Company Common Stocks Portfolio total returns and the Ibbotson US Long-Term Government income returns as the risk-free rate. Additionally, as another check, we do the same for the University of Chicago's Center for Research in Security Prices value-weighted stock index (CRSP) using the Fama-French risk-free rate. This is the Fama-French specification of the market equity risk premium. The data range from January 1926 to December 2007 with 984 observations for the Large Company Common Stock estimation and the data ranges

Table 1 Descriptive statistics: public utility and large company common stocks equity-to-debt and equity risk premia

Utility bond rating	Mean	Std. Dev.	Skewness	Kurtosis	JB
Aa	0.0037	0.0568	0.0744	10.07	2,001.2***
A	0.0035	0.0568	0.0632	10.06	1,991.8***
Baa	0.0031	0.0568	0.0375	10.02	1,973.6***
Ibbotson					
Large common stocks	0.0054	0.0554	0.4300	12.84	3,954.7***
CRSP value-weighted stock index	0.0062	0.0544	0.2309	10.92	2,519.1***

The public utility equity-to-debt risk premia monthly time series is from January 1928 to December 2007 with 960 observations. The equity risk premium monthly time series for the Large Common Stocks and the CRSP index are January 1926 to December 2007 with 984 observations, and January 1926 to December 2007 with 984 observations, respectively. The public utility stocks equity-to-debt risk premia are calculated as the total return on the S&P Public Utilities Index of stocks minus the Moody's Public Utility Aa, A, and Baa Indices yields to maturity. The Large Company Common Stock equity risk premia are the monthly total returns on the Ibbotson Large Company Common Stocks Portfolio minus the Ibbotson Long-Term US Government Bonds Portfolio income yield. The CRSP equity risk premia, or the Fama-French market risk premia are the CRSP total returns on the value-weighted equity index minus the 1-month holding period return on a 1 month Treasury Bill. The Jarque-Bera (JB) statistic is a goodness-of-fit measure of the departure of the distribution of a data series from normality, based on the levels of skewness and excess kurtosis. The JB statistic is χ^2 distributed with 2° of freedom. *** Significant at 0.01 level, one-tailed test

from January 1928 to January 2007 with 960 observations (same as the utilities) for the CRSP estimation.

Table 1 displays the descriptive statistics for these data. We have estimated the mean, standard deviation, skewness and kurtosis parameters, as well as the Jarque-Bera (JB) statistic to test the distribution of the data. The means of the utility equity-to-debt risk premia fall as the risk (bond rating) declines. This is consistent with the notion that larger yields are subtracted from stock returns the lower the bond rating. Intertemporally, there is an inverse relationship between risk premia and interest rates (See Brigham et al. (1985) and Harris et al. (2003)). The mean for risk premia will have a tendency to be larger during low interest rate periods.

Not surprisingly, large company common stocks have the highest mean risk premia as the majority of these firms are not rate-of-return regulated firms with a ceiling on their ROE's close to their cost of capital. Interestingly, the standard deviations of the utility stock returns are similar and slightly higher than large company common stocks. Skewness coefficients are small and positive except for Ibbotson large company common stock returns and CRSP returns that have large positive skewness. This suggests that large unregulated stocks have a tendency to have more and larger positive shocks in returns than do utilities that are rate of return regulated. The kurtosis values show that all of the risk premia are thick-tail distributed. This is also found in the significant JB statistics that test the null hypothesis that the data are normally distributed. The null hypothesis is rejected for all assets. The high kurtosis, low skewness, and significant JB statistics show that the risk premia data are substantially thick-tailed, except for non-utility stocks that are both skewed and thick-tailed. Therefore, robust estimation methods are required to produce efficient regression estimates with non-normal data. Additionally, although not shown but available upon request, the serial correlation and

ARCH Lagrange Multiplier tests show that residuals from OLS regressions of risk premia on volatilities follow an ARCH process. Therefore, the GARCH-M method will improve the efficiency of the estimates. We specify the regression error distribution as a non-unitary variance T-distribution so that thick-tails could be accommodated in the estimation and therefore produce increasingly efficient parameter estimates.

We used maximum likelihood estimation with the likelihood function specified with the non-unitary-variance T-distribution as the approximating distribution of the residuals to accommodate the thick-tailed nature of the error distribution. The equations are estimated as a system using the Marquardt iterative optimization algorithm. The chosen software for estimating the model was EViews© version 6.0 (2007).

Table 2 shows the GARCH-M estimations for the consumption asset pricing Eq. 1. We have estimated Eq. 1 for the utility equity risk premia using the Fama-French risk-free rate in addition to the equity-to-debt risk premia risk-differentiated by bond ratings and the two measures of the market equity risk premium. The chosen measure of volatility is the variance of risk premium (in contrast to other such measures such as the standard deviation or the log of variance. Although these results are not shown for brevity, they are robust to these other measures of volatility). The slope, which is the predicted return-to-predicted risk coefficient and Sharpe ratio, is positive and significant at the 99% level for all assets except the utility stock returns with Baa bonds, which is significant at the 95% level. Given that all slopes are positive, public utility stocks are not found to hedge shocks to the marginal utility of consumption. Note that the reward-to-risk slope rises as bond rating rises. This suggests that lower risk utility stocks provide a higher incremental risk-premium for an increase in conditional volatility. This is consistent with other studies that find that lower risk assets, such as shorter maturity bonds, have higher Sharpe Ratios than long-term bonds and stocks. See Pilotte and Sterbenz (2006) and Michelfelder and Pilotte (2011).

The variance equation shows that all GARCH coefficients (β's) are significant at the 1% level and the sums of β_1 and β_2 are close to, but less than 1.0, indicating that the residuals of the risk premium equation follow a GARCH process and that the persistence of a volatility shock on returns and stock prices for utility stocks is temporary. The estimates of the non-unitary variance T-distribution degrees of freedom parameter are low and statistically significant, indicating that the residuals are well approximated by the T. Similar values for the log-likelihood functions (Log-L) show that each of the regressions has a similar goodness-of-fit. Chi-squared distributed likelihood ratio tests (not shown but available upon request) that compare the goodness of fit among the T and normal specifications of the likelihood function of the GARCH-M regressions show that the T has a significantly better fit than the normal distribution.

The GARCH-M results for the large company common stocks portfolio are similar to those of the utility stocks. Not surprisingly, large company common stocks do not hedge shocks to the marginal utility of consumption and volatility shocks temporarily affect their valuations. The exception is that the return-risk slope is substantially higher than utility stock slopes. This is partially due to the risk-free nature of the risk-free rates used with the non-utility equity risk premia compared to the

Table 2 Estimation of return-risk relation: public utility and large company common stocks

Utility bond rating	α	β_0	β_1	β_2	Log-L	T dist. D.F.
Aa	1.5183*** (0.5308)	0.0000** (0.0000)	0.8791*** (0.0230)	0.1031*** (0.0219)	1,604.4	9.9254*** (3.0272)
A	1.4536*** (0.5308)	0.0000** (0.0000)	0.8790*** (0.0230)	0.1033*** (0.0220)	1,605.0	9.9381*** (3.0408)
Baa	1.3318** (0.5303)	0.0000** (0.0000)	0.8789*** (0.0229)	0.1040*** (0.0220)	1,605.2	10.0*** (3.0540)
Fama-French R_f	2.1428*** (0.5318)	0.0000** (0.0000)	0.8811*** (0.0232)	0.0979*** (0.0212)	1,601.0	9.8773*** (2.9700)
Ibbotson						
Large company common stocks	2.7753*** (0.5513)	0.0001*** (0.0000)	0.8381*** (0.0269)	0.1186*** (0.0332)	1,620.8	8.8457*** (2.1613)
CRSP value-weighted stock index	3.3873*** (0.5673)	0.0001*** (0.0000)	0.8330*** (0.0270)	0.1149*** (0.0358)	1,598.9	8.8571*** (1.9505)

The results below are the GARCH-in-Mean regressions for the risk premium $(R_{t+1} - R_{f,t+1})$ on the conditional variance of the risk premium (σ^2_{t+1}) in the mean equation. The intercept in the mean equation is restricted to be equal to zero. The public utility equity-to-debt risk premia monthly time series is from January 1928 to December 2007 with 960 observations. The equity risk premium monthly time series for the Large Company Common Stocks and the CRSP index are January 1926 to December 2007 with 984 observations, and January 1926 to December 2007 with 984 observations, respectively. The public utility stocks equity-to-debt risk premia are calculated as the total return on the S&P Public Utilities Index of stocks minus the Moody's Public Utility Aa, A, and Baa Indices yields to maturity. The Large Company Common Stock equity risk premia are the monthly total returns on the Ibbotson Large Company Common Stocks Portfolio minus the Ibbotson Long-Term US Government Bonds Portfolio income yield. The CRSP equity risk premia, or the Fama-French market risk premia are the CRSP total returns on the value-weighted equity index minus the 1-month holding period return on a 1 month Treasury Bill. The estimated model is:

$$R_{t+1} - R_{f,t+1} = \alpha\sigma^2_{t+1} + \varepsilon_{t+1} \text{ where } \alpha = -\frac{vol_t[M_{t+1}]}{E_t[M_{t+1}]} corr_t[M_{t+1}, R_{i,t+1}]$$

$$\sigma^2_{t+1} = \beta_0 + \beta_1\sigma^2_t + \beta_2\varepsilon^2_t + \eta_{t+1}$$

The conditional distribution of the error term is the non-unitary variance T-distribution to accommodate the kurtosis of the risk premia and error term. Standard errors are in parentheses. ***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively for two-tail tests

utility bond yields that reflect risk. The utility stocks slope value of 2.1428 using the Fama-French risk-free rate is closer to the higher CRSP value of 3.3873 that is also based on the Fama-French risk-free rate. This is inconsistent with previous results herein and in other papers that find that Sharpe Ratios are lower for higher risk assets unless this finding can be interpreted as utility stocks having more risk than non-regulated stocks. The standard deviations on Table 1 suggest that utility stock return volatilities are as high as the stock returns of non-regulated firms. However, similar model estimates of portfolios of common stocks yield unstable results, such as negative as well as positive return-risk slopes when the intercept is not restricted to zero. See Campbell (1987), Glosten et al. (1993), Harvey (2001), and Whitelaw (1994).

Stock market results are highly sensitive to empirical model specification. Many studies do not consider the impact of a zero-intercept prior restriction on the stability of their results. This simple innovation has led to more consistent results in modeling stock market risk-return relationships, and therefore we have included it in this paper.

The estimation of the consumption asset pricing model for utility stock equity-debt risk premia shows that the use of bond-rating risk-differentiated risk premia are validated as their risk-return relationships are well-fitted by theoretical and empirical models of risk and return. Therefore, these data impound good representations of the risk and reward relationship.

One concern is the intertemporal stability of the alphas. Figure 1 plots the utility stock portfolio alpha (using the Fama-French R_f to calculate the premium) and its standard error for 240 month rolling regressions of the model estimated with GARCH-M in the same manner as described above to review the intertemporal stability of the alpha. A 20-year period was used for each estimation to trade off timeliness with sufficient observation of up and down stock market regimes and business cycles. This resulted in 720 estimated alphas from 1947 to 2007. The results show that the utility alpha is stable to the extent that the algebraic sign is always positive and generally significant, therefore the nature of utility stocks are assets that are not and have never been hedges during the second half of the twentieth century up to the present. The value of the alpha does change substantially. The mean of the alpha is 4.40 with a range from -0.11 (insignificantly different from 0) to 11.66. As a comparison, the alpha for the CRSP value-weighted stock index was also estimated with rolling regressions in the same manner and for the same time period. Figure 2 is a plot of the CRSP alpha and standard error. Note that the general stock market alpha is similar to that of utility stocks. They are all positive and almost all statistically significant and follow a strikingly similar cycle. Figure 3 plots both the utility and stock market alphas and demonstrates the similarity. The correlation coefficient between the utility and stock market alphas is 0.88. Recalling that the alpha is a Sharpe Ratio, we see that return to risk ratio does change substantially. This is consistent with the results in Pilotte and Sterbenz (2006).

One other interesting observation is that the standard errors of the alphas are highly stable over the study period and are very similar in magnitude regardless of the size of the corresponding alpha. Whereas the alpha follows a cyclical pattern, the volatility in alpha is highly stationary around a constant, long-run mean.

The GARCH-M model estimations of the consumption asset pricing model were specified with variance as the measure of volatility. We also performed the same model estimations with alternative specifications of volatility such as the standard deviation and the log of variance and the results were not sensitive to this specification.

4 Application

We apply the model in this section to compare the cost of common equity capital estimates with the DCF and CAPM models. Using EViews© Version 6.0, we estimated the model coefficients (α, $\beta's$) over rolling 24 month periods ending December 2008.

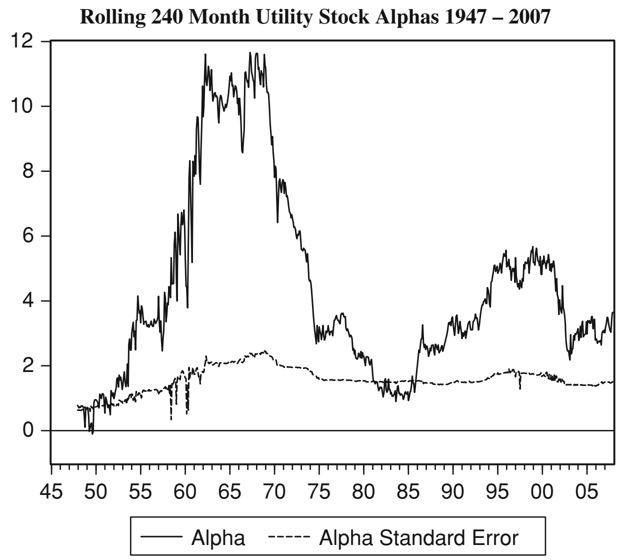


Fig. 1 Rolling 240 month utility stock alphas 1947–2007

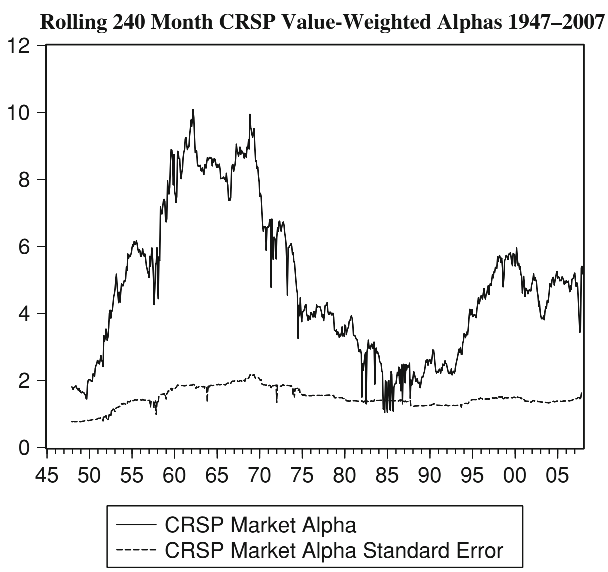


Fig. 2 Rolling 240 month CRSP value-weighted alphas 1947–2007

We repeated the estimation over 5, 10, 15, 20 and 79 year periods.[3] Predicted monthly variances (σ_{t+1}^2) were generated from these estimations to produce predicted risk premiums that were calculated by multiplying the predicted variance by the "α" slope

[3] We did not include the results of the 10 and 15 year estimations to abbreviate the amount of empirical results presented since they added no material insights beyond those already presented.

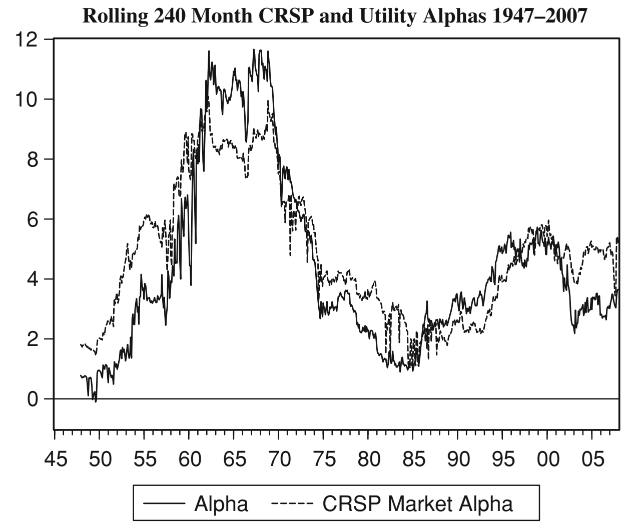


Fig. 3 Rolling 240 month CRSP and utility alphas 1947–2007

Table 3 Estimates of expected risk premia

	Mean (%)		Range (%)		Standard deviation (%)	
	Average	Spot	Average	Spot	Average	Spot
Ibbotson Associates data						
79-years	9.59	5.76	8.74–9.96	2.62–22.60	0.32	5.24
20-years	6.77	6.94	4.99–8.50	2.24–28.95	0.95	6.88
5-years	4.20	10.25	−98.49–11.62	−100.00–39.65	22.00	26.61
S&P Utility Index						
79-years	5.28	2.90	4.30–5.28	1.65–8.15	0.32	1.60
20-years	3.93	3.51	2.78–5.03	2.18–6.88	0.57	1.11
5-years	31.82	326.63	7.77–156.97	6.12–6465.74	31.47	1283.51

coefficient. To test the stability of the predicted risk premia over time, the predicted risk premia were calculated using either the predicted variance over each entire time period or the last monthly (spot) predicted variance. Table 3 presents the mean predicted risk premia, the range of predicted premia and the standard deviations for each time period. It is clear from the results that the risk premia are more stable over the rolling 24 month period when calculated using the average predicted variance compared with using the spot variance. Secondly, the 20 and 79 year means are substantially more stable and reasonable in magnitude than the 5 year means.

Next, given the lessons from the analyses above, we apply the model to mechanically[4] estimate the cost of common equity for 8 utility companies using the model and

[4] The term "mechanically" in this context means that the resulting values have been developed in a consistent manner with the same inputs across all utility stocks but no subjective judgment was used to develop final values for each specific utility stock application.

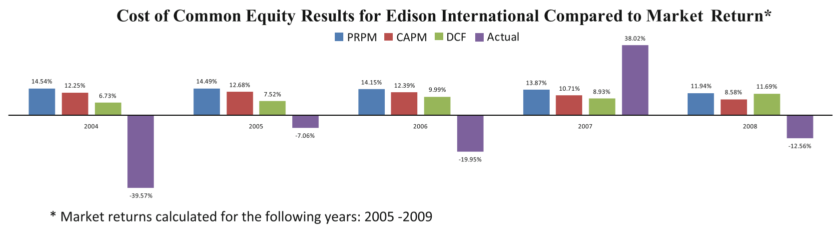
the DCF and CAPM as comparisons. We also calculated the realized market return for comparison. Two publicly-traded electric, electric and gas combination, gas, and water utilities respectively were chosen for the application. The Gordon (1974) DCF and CAPM models are used in many utility regulatory jurisdictions in the US.

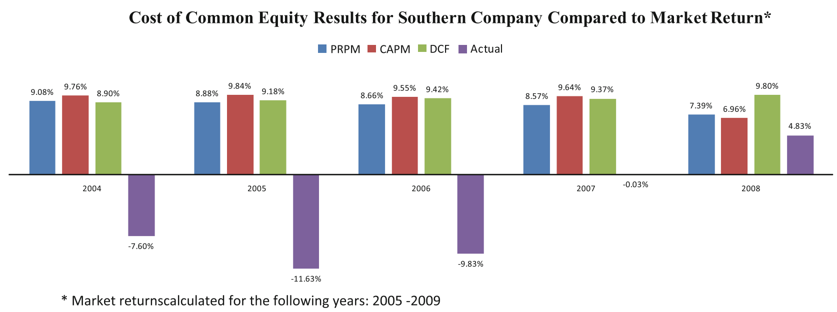
The DCF was applied using a dividend yield, D_0/P_0, derived by dividing the year-end indicated dividend per share (D_0) by the year-end spot market price (P_0). The dividend yield is grown by the year-end I/B/E/S five year projected earnings per share growth rate (g) to derive $D_0(1+g)/P_0$. The one-year predicted dividend yield is then added to the I/B/E/S five-year projected EPS growth rate to obtain the DCF estimate of the cost of common equity capital, k. This study was conducted for the 5 years ending 2008.

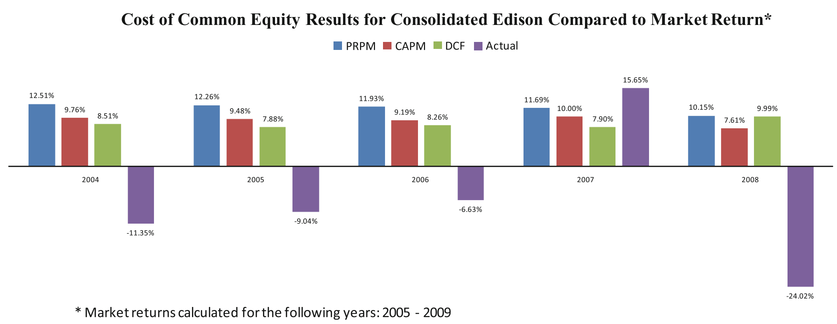
The CAPM was applied by multiplying the Value Line beta (β) available at year-end for each company by the long-term historic arithmetic mean market risk premium ($R_m - R_f$). $R_m - R_f$ is derived as the spread of the total return of large company common stocks over the income return on long-term government bonds from the Ibbotson SBBI 2009 Valuation Yearbook. The resulting company-specific market equity risk premium is then added to a projected consensus estimate of the yield on 30-year U.S. Treasury rate provided by Blue Chip Financial Forecasts as the risk-free rate (R_f) to obtain the CAPM result. This study was also conducted over the 5 years ending 2008.

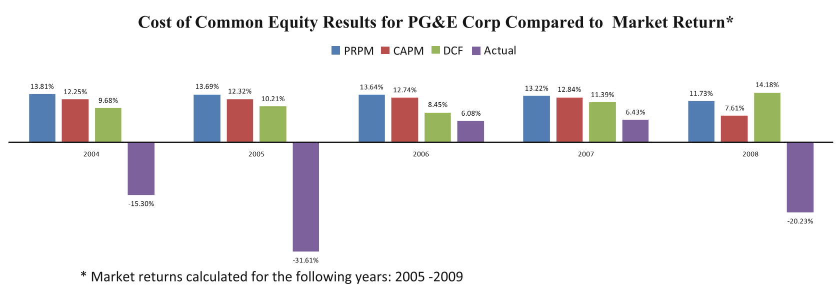
Figures 4–11 show the histograms of the cost of common equity capital estimations for each of the eight public utility stocks and the realized market returns in the forthcoming year. The consumption asset pricing model appears to track more consistently with the CAPM than with the DCF which seems to produce generally lower values than the other methods. The consumption asset pricing model results are similar to the CAPM. The model and the CAPM compete as the best predictor of the rate of return on the book value of common equity (not shown but available upon request), but none of the expected returns were good predictors of market returns. That does not infer that they were not good predictors of *expected* market returns. These results are an initial indicator that the consumption asset pricing model provides reasonable and stable results. This paper does not suggest at this early juncture that the consumption asset pricing model is superior to the CAPM or DCF, although it is based on far less restrictive assumptions than these other models. For example, both the DCF and CAPM assume that markets are efficient. Many assume that the DCF requires that the market-to-book ratio to always equal one, whereas the long-term value for the Standard and Poor's 500 is equal to 2.34. The CAPM assumes that investors demand higher returns for higher volatility and that the minimum required return is the risk-free rate, whereas the consumption asset pricing model allows for investors to require returns less than the risk-free rate for stocks that may have relatively higher volatility but are hedging assets that have desirable return fluctuation patterns that offset downturns in the business cycle. Unlike the CAPM, the model prices the risk to which investors are actually exposed, whether it's systematic risk or not. Some investors are diversified and some are not; the model prices whatever risk to which the aggregate of investors of the specific stock is exposed.

We find that the consumption asset pricing model should be used in combination with other cost of common equity pricing models as additional information in the devel-





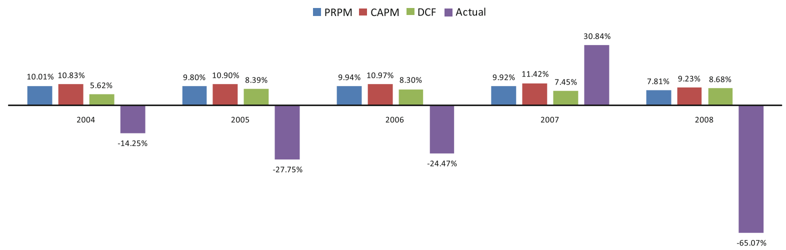




Figs. 4–11 Comparison of the cost of common equity estimates and market

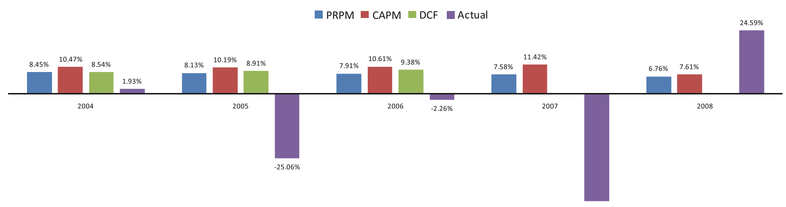
opment of a cost of common equity capital recommendation. Practitioners may find the modeling methods and the use of relatively advanced econometric methods rather cumbersome. The software for performing these estimations is readily available from EViews© and SAS©; two commonly available software packages at utilities, consult-

Cost of Common Equity Results for National Fuel Gas Co. Compared to Market Return*



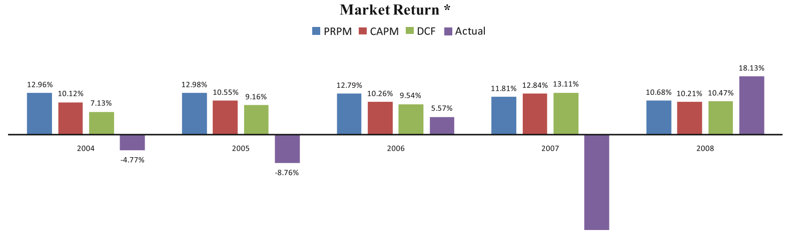
* Market returrnscalculated for the following years: 2005 -2009

Cost of Common Equity Results for Laclede Group Compared to Market Return*



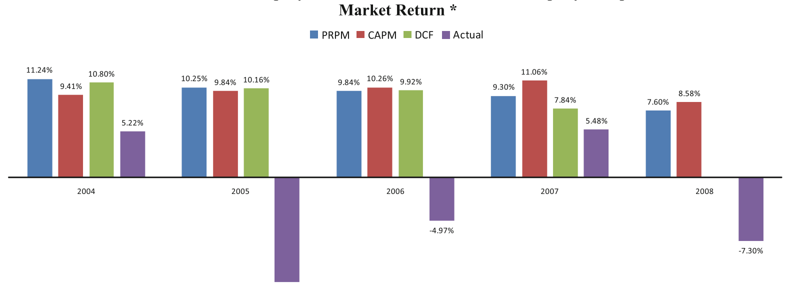
* Market returnscalculated for the following years: 2005-2009
Missing DCF Cost of Capital Estimates Due to Unavailable Growth Rate

Cost of Common Equity Results for California Water Service Group Compared to Market Return *



* Market returns calculated for the following years: 2005 -2009

Cost of Common Equity Results for Middlesex Water Company Compared to Market Return *



* Market returnscalculated for following years: 2005 -2009
Missing DCF Cost of Capital Estimate Due to Unavailable Growth Rate

Figs. 4–11 continued

ing firms and financial firms. Recent Ph.D. and M.S. holding members of research departments of investment and consulting firms have ready access to the model and methods discussed in this paper, although it will require years for these tools, like any "new" technology, to diffuse into standard use. Another problem is that the model requires a substantial time series history on stock returns data to develop stable estimates of risk premia This is problematic especially for the electric and gas utility industries that have consolidated with many mergers in the recent past. This problem can be addressed by developing and predicting the value-weighted risk premium of a portfolio of similar stocks such as electric utilities that have nuclear generating assets. The specific stock in question would be included in the returns index with a weight based on market capitalization that would go to 0 when the stock price history is no longer existent reaching back into the past.

5 Conclusion

The purpose of this paper is to introduce, test empirically and apply a general consumption based asset pricing model that is based on a minimum of assumptions and restrictions that can be used to predict the risk premium to be applied in estimating the cost of common equity for public utilities in regulatory proceedings. The results support the simple consumption-based asset pricing model that predicts the ex ante risk premium with a conditionally predicted volatility in risk premium. The estimates of the cost of common equity from the consumption asset pricing model compare well with rates of return on the book value of common equity and with the CAPM, although both the model and the CAPM results are substantially higher than the DCF. This is quite common in the practice of the cost of common equity in the utility industry. The results of the model are stable and consistent over time. Therefore the model should be considered as it provides additional evidence on the cost of common equity in general and specifically in public utility regulatory proceedings. Secondly, the use of bond-rated yields to predict risk differentiated equity-to-debt risk premia is supported by the empirical evidence and therefore should be applied in estimating the cost of common equity. Finally, the robust empirical evidence on the positive risk-return relationship also shows that utility stocks are not a consumption hedge and are not good hedging securities against contractions in the economy. The model and estimation methodology presented in this paper provide a relatively simple tool to determine whether any asset is a hedge to adverse changes in the business cycle through the level of consumption in the economy.

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Stocks, Bonds, Bills, and Inflation®

U.S. Capital Markets Performance by
Asset Class 1926–2020

Appendix A-1

Large-Capitalization Stocks: Total Return
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1926	0.0000	-0.0385	-0.0575	0.0253	0.0179	0.0457	0.0479	0.0248	0.0252	-0.0284	0.0347	0.0196	1926	0.1162
1927	-0.0193	0.0537	0.0087	0.0201	0.0607	-0.0067	0.0670	0.0515	0.0450	-0.0502	0.0721	0.0279	1927	0.3749
1928	-0.0040	-0.0125	0.1101	0.0345	0.0197	-0.0385	0.0141	0.0803	0.0259	0.0168	0.1292	0.0049	1928	0.4361
1929	0.0583	-0.0019	-0.0012	0.0176	-0.0362	0.1140	0.0471	0.1028	-0.0476	-0.1973	-0.1246	0.0282	1929	-0.0842
1930	0.0639	0.0259	0.0812	-0.0080	-0.0096	-0.1625	0.0386	0.0141	-0.1282	-0.0855	-0.0089	-0.0706	1930	-0.2490
1931	0.0502	0.1193	-0.0675	-0.0935	-0.1279	0.1421	-0.0722	0.0182	-0.2973	0.0896	-0.0798	-0.1400	1931	-0.4334
1932	-0.0271	0.0570	-0.1158	-0.1997	-0.2196	-0.0022	0.3815	0.3869	-0.0346	-0.1349	-0.0417	0.0565	1932	-0.0819
1933	0.0087	-0.1772	0.0353	0.4256	0.1683	0.1338	-0.0862	0.1206	-0.1118	-0.0855	0.1127	0.0253	1933	0.5399
1934	0.1069	-0.0322	0.0000	-0.0251	-0.0736	0.0229	-0.1132	0.0611	-0.0033	-0.0286	0.0942	-0.0010	1934	-0.0144
1935	-0.0411	-0.0341	-0.0286	0.0980	0.0409	0.0699	0.0850	0.0280	0.0256	0.0777	0.0474	0.0394	1935	0.4767
1936	0.0670	0.0224	0.0268	-0.0751	0.0545	0.0333	0.0701	0.0151	0.0031	0.0775	0.0134	-0.0029	1936	0.3392
1937	0.0390	0.0191	-0.0077	-0.0809	-0.0024	-0.0504	0.1045	-0.0483	-0.1403	-0.0981	-0.0866	-0.0459	1937	-0.3503
1938	0.0152	0.0674	-0.2487	0.1447	-0.0330	0.2503	0.0744	-0.0226	0.0166	0.0776	-0.0273	0.0401	1938	0.3112
1939	-0.0674	0.0390	-0.1339	-0.0027	0.0733	-0.0612	0.1105	-0.0648	0.1673	-0.0123	-0.0398	0.0270	1939	-0.0041
1940	-0.0336	0.0133	0.0124	-0.0024	-0.2289	0.0809	0.0341	0.0350	0.0123	0.0422	-0.0316	0.0009	1940	-0.0978
1941	-0.0463	-0.0060	0.0071	-0.0612	0.0183	0.0578	0.0579	0.0010	-0.0068	-0.0657	-0.0284	-0.0407	1941	-0.1159
1942	0.0161	-0.0159	-0.0652	-0.0400	0.0796	0.0221	0.0337	0.0164	0.0290	0.0678	-0.0021	0.0549	1942	0.2034
1943	0.0737	0.0583	0.0545	0.0035	0.0552	0.0223	-0.0526	0.0171	0.0263	-0.0108	-0.0654	0.0617	1943	0.2590
1944	0.0171	0.0042	0.0195	-0.0100	0.0505	0.0543	-0.0193	0.0157	-0.0008	0.0023	0.0133	0.0374	1944	0.1975
1945	0.0158	0.0683	-0.0441	0.0902	0.0195	-0.0007	-0.0180	0.0641	0.0438	0.0322	0.0396	0.0116	1945	0.3644
1946	0.0714	-0.0641	0.0480	0.0393	0.0288	-0.0370	-0.0239	-0.0674	-0.0997	-0.0060	-0.0027	0.0457	1946	-0.0807
1947	0.0255	-0.0077	-0.0149	-0.0363	0.0014	0.0554	0.0381	-0.0203	-0.0111	0.0238	-0.0175	0.0233	1947	0.0571
1948	-0.0379	-0.0388	0.0793	0.0292	0.0879	0.0054	-0.0508	0.0158	-0.0276	0.0710	-0.0961	0.0346	1948	0.0550
1949	0.0039	-0.0296	0.0328	-0.0179	-0.0258	0.0014	0.0650	0.0219	0.0263	0.0340	0.0175	0.0486	1949	0.1879
1950	0.0197	0.0199	0.0070	0.0486	0.0509	-0.0548	0.0119	0.0443	0.0592	0.0093	0.0169	0.0513	1950	0.3171
1951	0.0637	0.0157	-0.0156	0.0509	-0.0299	-0.0228	0.0711	0.0478	0.0013	-0.0103	0.0096	0.0424	1951	0.2402
1952	0.0181	-0.0282	0.0503	-0.0402	0.0343	0.0490	0.0196	-0.0071	-0.0176	0.0020	0.0571	0.0382	1952	0.1837
1953	-0.0049	-0.0106	-0.0212	-0.0237	0.0077	-0.0134	0.0273	-0.0501	0.0034	0.0540	0.0204	0.0053	1953	-0.0099
1954	0.0536	0.0111	0.0325	0.0516	0.0418	0.0031	0.0589	-0.0275	0.0851	-0.0167	0.0909	0.0534	1954	0.5262
1955	0.0197	0.0098	-0.0030	0.0396	0.0055	0.0841	0.0622	-0.0025	0.0130	-0.0284	0.0827	0.0015	1955	0.3156
1956	-0.0347	0.0413	0.0710	-0.0004	-0.0593	0.0409	0.0530	-0.0328	-0.0440	0.0066	-0.0050	0.0370	1956	0.0656

*Compound annual return

Appendix A-1

Large-Capitalization Stocks: Total Return
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1957	-0.0401	-0.0264	0.0215	0.0388	0.0437	0.0004	0.0131	-0.0505	-0.0602	-0.0302	0.0231	-0.0395	1957	-0.1078
1958	0.0445	-0.0141	0.0328	0.0337	0.0212	0.0279	0.0449	0.0176	0.0501	0.0270	0.0284	0.0535	1958	0.4336
1959	0.0053	0.0049	0.0020	0.0402	0.0240	-0.0022	0.0363	-0.0102	-0.0443	0.0128	0.0186	0.0292	1959	0.1196
1960	-0.0700	0.0147	-0.0123	-0.0161	0.0326	0.0211	-0.0234	0.0317	-0.0590	-0.0007	0.0465	0.0479	1960	0.0047
1961	0.0645	0.0319	0.0270	0.0051	0.0239	-0.0275	0.0342	0.0243	-0.0184	0.0298	0.0447	0.0046	1961	0.2689
1962	-0.0366	0.0209	-0.0046	-0.0607	-0.0811	-0.0803	0.0652	0.0208	-0.0465	0.0064	0.1086	0.0153	1962	-0.0873
1963	0.0506	-0.0239	0.0370	0.0500	0.0193	-0.0188	-0.0022	0.0535	-0.0097	0.0339	-0.0046	0.0262	1963	0.2280
1964	0.0283	0.0147	0.0165	0.0075	0.0162	0.0178	0.0195	-0.0118	0.0301	0.0096	0.0005	0.0056	1964	0.1648
1965	0.0345	0.0031	-0.0133	0.0356	-0.0030	-0.0473	0.0147	0.0272	0.0334	0.0289	-0.0031	0.0106	1965	0.1245
1966	0.0062	-0.0131	-0.0205	0.0220	-0.0492	-0.0146	-0.0120	-0.0725	-0.0053	0.0494	0.0095	0.0002	1966	-0.1006
1967	0.0798	0.0072	0.0409	0.0437	-0.0477	0.0190	0.0468	-0.0070	0.0342	-0.0276	0.0065	0.0278	1967	0.2398
1968	-0.0425	-0.0261	0.0110	0.0834	0.0161	0.0105	-0.0172	0.0164	0.0400	0.0087	0.0531	-0.0402	1968	0.1106
1969	-0.0068	-0.0426	0.0359	0.0229	0.0026	-0.0542	-0.0587	0.0454	-0.0236	0.0459	-0.0297	-0.0177	1969	-0.0850
1970	-0.0743	0.0558	0.0044	-0.0875	-0.0578	-0.0466	0.0769	0.0478	0.0362	-0.0083	0.0506	0.0597	1970	0.0386
1971	0.0432	0.0117	0.0394	0.0389	-0.0391	0.0033	-0.0387	0.0388	-0.0044	-0.0392	0.0002	0.0888	1971	0.1430
1972	0.0206	0.0277	0.0083	0.0068	0.0197	-0.0194	0.0048	0.0369	-0.0025	0.0118	0.0481	0.0142	1972	0.1900
1973	-0.0149	-0.0352	0.0008	-0.0383	-0.0163	-0.0040	0.0407	-0.0341	0.0427	0.0017	-0.1109	0.0198	1973	-0.1469
1974	-0.0072	-0.0007	-0.0205	-0.0359	-0.0302	-0.0113	-0.0742	-0.0864	-0.1152	0.1681	-0.0488	-0.0156	1974	-0.2647
1975	0.1272	0.0638	0.0254	0.0510	0.0477	0.0477	-0.0644	-0.0176	-0.0312	0.0653	0.0282	-0.0081	1975	0.3723
1976	0.1217	-0.0084	0.0337	-0.0078	-0.0111	0.0443	-0.0048	-0.0018	0.0258	-0.0186	-0.0041	0.0561	1976	0.2393
1977	-0.0473	-0.0182	-0.0105	0.0042	-0.0196	0.0494	-0.0124	-0.0172	0.0016	-0.0390	0.0316	0.0075	1977	-0.0716
1978	-0.0574	-0.0203	0.0294	0.0902	0.0092	-0.0138	0.0583	0.0301	-0.0032	-0.0872	0.0215	0.0196	1978	0.0657
1979	0.0443	-0.0321	0.0596	0.0063	-0.0217	0.0435	0.0134	0.0577	0.0043	-0.0640	0.0475	0.0214	1979	0.1861
1980	0.0622	-0.0001	-0.0972	0.0462	0.0515	0.0316	0.0696	0.0101	0.0294	0.0202	0.1065	-0.0302	1980	0.3250
1981	-0.0418	0.0174	0.0400	-0.0193	0.0026	-0.0063	0.0021	-0.0577	-0.0493	0.0540	0.0413	-0.0256	1981	-0.0492
1982	-0.0131	-0.0559	-0.0052	0.0452	-0.0341	-0.0150	-0.0178	0.1214	0.0125	0.1151	0.0404	0.0193	1982	0.2155
1983	0.0372	0.0229	0.0369	0.0788	-0.0087	0.0389	-0.0295	0.0150	0.0138	-0.0116	0.0211	-0.0052	1983	0.2256
1984	-0.0056	-0.0352	0.0173	0.0095	-0.0554	0.0217	-0.0124	0.1104	0.0002	0.0039	-0.0112	0.0263	1984	0.0627
1985	0.0779	0.0122	0.0007	-0.0009	0.0578	0.0157	-0.0015	-0.0085	-0.0313	0.0462	0.0686	0.0484	1985	0.3173
1986	0.0056	0.0747	0.0558	-0.0113	0.0532	0.0169	-0.0559	0.0742	-0.0827	0.0577	0.0243	-0.0255	1986	0.1867
1987	0.1347	0.0395	0.0289	-0.0089	0.0087	0.0505	0.0507	0.0373	-0.0219	-0.2154	-0.0824	0.0761	1987	0.0525

*Compound annual return

Appendix A-1

Large-Capitalization Stocks: Total Return
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1988	0.0421	0.0466	-0.0309	0.0111	0.0086	0.0459	-0.0038	-0.0339	0.0426	0.0278	-0.0143	0.0174	1988	0.1661
1989	0.0732	-0.0249	0.0233	0.0519	0.0405	-0.0057	0.0903	0.0195	-0.0041	-0.0232	0.0204	0.0240	1989	0.3169
1990	-0.0671	0.0129	0.0265	-0.0249	0.0975	-0.0067	-0.0032	-0.0904	-0.0487	-0.0043	0.0646	0.0279	1990	-0.0310
1991	0.0436	0.0715	0.0242	0.0024	0.0431	-0.0458	0.0466	0.0237	-0.0167	0.0134	-0.0403	0.1144	1991	0.3047
1992	-0.0186	0.0130	-0.0194	0.0294	0.0049	-0.0149	0.0409	-0.0205	0.0118	0.0035	0.0341	0.0123	1992	0.0762
1993	0.0084	0.0136	0.0211	-0.0242	0.0268	0.0029	-0.0040	0.0379	-0.0077	0.0207	-0.0095	0.0121	1993	0.1008
1994	0.0340	-0.0271	-0.0436	0.0128	0.0164	-0.0245	0.0328	0.0410	-0.0245	0.0225	-0.0364	0.0148	1994	0.0132
1995	0.0259	0.0390	0.0295	0.0294	0.0400	0.0232	0.0332	0.0025	0.0422	-0.0036	0.0439	0.0193	1995	0.3758
1996	0.0340	0.0093	0.0096	0.0147	0.0258	0.0038	-0.0442	0.0211	0.0563	0.0276	0.0756	-0.0198	1996	0.2296
1997	0.0625	0.0078	-0.0411	0.0597	0.0609	0.0448	0.0796	-0.0560	0.0548	-0.0334	0.0463	0.0172	1997	0.3336
1998	0.0111	0.0721	0.0512	0.0101	-0.0172	0.0406	-0.0106	-0.1446	0.0641	0.0813	0.0606	0.0576	1998	0.2858
1999	0.0418	-0.0311	0.0400	0.0387	-0.0236	0.0555	-0.0312	-0.0049	-0.0274	0.0633	0.0203	0.0589	1999	0.2104
2000	-0.0502	-0.0189	0.0978	-0.0301	-0.0205	0.0247	-0.0156	0.0621	-0.0528	-0.0042	-0.0788	0.0049	2000	-0.0910
2001	0.0355	-0.0912	-0.0634	0.0777	0.0067	-0.0243	-0.0098	-0.0626	-0.0808	0.0191	0.0767	0.0088	2001	-0.1189
2002	-0.0146	-0.0193	0.0376	-0.0606	-0.0074	-0.0712	-0.0780	0.0066	-0.1087	0.0880	0.0589	-0.0587	2002	-0.2210
2003	-0.0262	-0.0150	0.0097	0.0824	0.0527	0.0128	0.0176	0.0195	-0.0106	0.0566	0.0088	0.0524	2003	0.2868
2004	0.0184	0.0139	-0.0151	-0.0157	0.0137	0.0194	-0.0331	0.0040	0.0108	0.0153	0.0405	0.0340	2004	0.1088
2005	-0.0244	0.0210	-0.0177	-0.0190	0.0318	0.0014	0.0372	-0.0091	0.0081	-0.0167	0.0378	0.0003	2005	0.0491
2006	0.0265	0.0027	0.0124	0.0134	-0.0288	0.0014	0.0062	0.0238	0.0258	0.0326	0.0190	0.0140	2006	0.1579
2007	0.0151	-0.0196	0.0112	0.0443	0.0349	-0.0166	-0.0310	0.0150	0.0374	0.0159	-0.0418	-0.0069	2007	0.0549
2008	-0.0600	-0.0325	-0.0043	0.0487	0.0130	-0.0843	-0.0084	0.0145	-0.0891	-0.1679	-0.0718	0.0106	2008	-0.3700
2009	-0.0843	-0.1065	0.0876	0.0957	0.0559	0.0020	0.0756	0.0361	0.0373	-0.0186	0.0600	0.0193	2009	0.2646
2010	-0.0360	0.0310	0.0603	0.0158	-0.0799	-0.0523	0.0701	-0.0451	0.0892	0.0380	0.0001	0.0668	2010	0.1506
2011	0.0237	0.0343	0.0004	0.0296	-0.0113	-0.0167	-0.0203	-0.0543	-0.0703	0.1093	-0.0022	0.0102	2011	0.0211
2012	0.0448	0.0432	0.0329	-0.0063	-0.0601	0.0412	0.0139	0.0225	0.0258	-0.0185	0.0058	0.0091	2012	0.1600
2013	0.0518	0.0136	0.0375	0.0193	0.0234	-0.0134	0.0509	-0.0290	0.0314	0.0460	0.0305	0.0253	2013	0.3239
2014	-0.0346	0.0457	0.0084	0.0074	0.0235	0.0207	-0.0138	0.0400	-0.0140	0.0244	0.0269	-0.0025	2014	0.1369
2015	-0.0300	0.0575	-0.0158	0.0096	0.0129	-0.0194	0.0210	-0.0603	-0.0247	0.0844	0.0030	-0.0158	2015	0.0138
2016	-0.0496	-0.0013	0.0678	0.0039	0.0180	0.0026	0.0369	0.0014	0.0002	-0.0182	0.0370	0.0198	2016	0.1196
2017	0.0190	0.0397	0.0012	0.0103	0.0141	0.0062	0.0206	0.0031	0.0206	0.0233	0.0307	0.0111	2017	0.2183
2018	0.0573	-0.0369	-0.0254	0.0038	0.0241	0.0062	0.0372	0.0326	0.0057	-0.0684	0.0204	-0.0903	2018	-0.0438
2019	0.0801	0.0321	0.0194	0.0405	-0.0635	0.0705	0.0144	-0.0158	0.0187	0.0217	0.0363	0.0302	2019	0.3149
2020	-0.0004	-0.0823	-0.1235	0.1282	0.0476	0.0199	0.0564	0.0719	-0.0380	-0.0266	0.1095	0.0384	2020	0.1840

*Compound annual return

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U.S. Capital Markets Performance by Asset Class 1926–2020

Appendix A-7

Long-term Government Bonds: Income Returns
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1926	0.0031	0.0028	0.0032	0.0030	0.0028	0.0033	0.0031	0.0031	0.0030	0.0030	0.0031	0.0030	1926	0.0373
1927	0.0030	0.0027	0.0029	0.0027	0.0028	0.0027	0.0027	0.0029	0.0027	0.0028	0.0027	0.0027	1927	0.0341
1928	0.0027	0.0025	0.0027	0.0026	0.0027	0.0027	0.0027	0.0029	0.0027	0.0030	0.0027	0.0029	1928	0.0322
1929	0.0029	0.0027	0.0028	0.0034	0.0030	0.0029	0.0032	0.0030	0.0032	0.0031	0.0026	0.0031	1929	0.0347
1930	0.0029	0.0026	0.0029	0.0027	0.0027	0.0029	0.0028	0.0026	0.0029	0.0027	0.0026	0.0028	1930	0.0332
1931	0.0028	0.0026	0.0029	0.0027	0.0026	0.0028	0.0027	0.0027	0.0027	0.0029	0.0031	0.0032	1931	0.0333
1932	0.0032	0.0032	0.0031	0.0030	0.0028	0.0028	0.0028	0.0028	0.0026	0.0027	0.0026	0.0027	1932	0.0369
1933	0.0027	0.0023	0.0027	0.0025	0.0028	0.0025	0.0026	0.0026	0.0025	0.0026	0.0025	0.0028	1933	0.0312
1934	0.0029	0.0024	0.0027	0.0025	0.0025	0.0024	0.0024	0.0024	0.0023	0.0027	0.0025	0.0025	1934	0.0318
1935	0.0025	0.0021	0.0022	0.0023	0.0023	0.0022	0.0024	0.0023	0.0023	0.0023	0.0024	0.0024	1935	0.0281
1936	0.0024	0.0023	0.0024	0.0022	0.0022	0.0024	0.0023	0.0023	0.0021	0.0023	0.0022	0.0022	1936	0.0277
1937	0.0021	0.0020	0.0022	0.0023	0.0022	0.0025	0.0024	0.0023	0.0023	0.0023	0.0024	0.0023	1937	0.0266
1938	0.0023	0.0021	0.0023	0.0022	0.0022	0.0021	0.0021	0.0022	0.0021	0.0022	0.0021	0.0022	1938	0.0264
1939	0.0021	0.0019	0.0021	0.0019	0.0020	0.0018	0.0019	0.0018	0.0019	0.0023	0.0020	0.0019	1939	0.0240
1940	0.0020	0.0018	0.0019	0.0018	0.0019	0.0019	0.0020	0.0019	0.0018	0.0018	0.0018	0.0017	1940	0.0223
1941	0.0016	0.0016	0.0018	0.0017	0.0017	0.0016	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	1941	0.0194
1942	0.0021	0.0019	0.0021	0.0020	0.0019	0.0021	0.0021	0.0021	0.0020	0.0021	0.0020	0.0021	1942	0.0246
1943	0.0020	0.0019	0.0021	0.0020	0.0019	0.0021	0.0021	0.0021	0.0020	0.0020	0.0021	0.0021	1943	0.0244
1944	0.0021	0.0020	0.0021	0.0020	0.0022	0.0020	0.0021	0.0021	0.0020	0.0021	0.0020	0.0020	1944	0.0246
1945	0.0021	0.0018	0.0020	0.0019	0.0019	0.0019	0.0018	0.0019	0.0018	0.0019	0.0018	0.0018	1945	0.0234
1946	0.0017	0.0015	0.0016	0.0017	0.0018	0.0016	0.0019	0.0017	0.0018	0.0019	0.0018	0.0019	1946	0.0204
1947	0.0018	0.0016	0.0018	0.0017	0.0017	0.0019	0.0018	0.0017	0.0018	0.0018	0.0017	0.0021	1947	0.0213
1948	0.0020	0.0019	0.0022	0.0020	0.0018	0.0021	0.0019	0.0021	0.0020	0.0019	0.0021	0.0020	1948	0.0240
1949	0.0020	0.0018	0.0019	0.0018	0.0020	0.0019	0.0017	0.0019	0.0017	0.0018	0.0017	0.0017	1949	0.0225
1950	0.0018	0.0016	0.0018	0.0016	0.0019	0.0017	0.0018	0.0018	0.0017	0.0019	0.0018	0.0018	1950	0.0212
1951	0.0020	0.0017	0.0019	0.0020	0.0021	0.0020	0.0023	0.0021	0.0019	0.0023	0.0021	0.0022	1951	0.0238
1952	0.0023	0.0021	0.0023	0.0022	0.0020	0.0022	0.0022	0.0021	0.0023	0.0023	0.0021	0.0024	1952	0.0266
1953	0.0023	0.0021	0.0025	0.0024	0.0024	0.0027	0.0025	0.0025	0.0025	0.0023	0.0024	0.0024	1953	0.0284
1954	0.0023	0.0022	0.0025	0.0022	0.0020	0.0025	0.0022	0.0023	0.0022	0.0021	0.0023	0.0023	1954	0.0279
1955	0.0022	0.0022	0.0024	0.0022	0.0025	0.0023	0.0023	0.0027	0.0024	0.0025	0.0024	0.0024	1955	0.0275
1956	0.0025	0.0023	0.0023	0.0026	0.0026	0.0023	0.0026	0.0026	0.0025	0.0029	0.0027	0.0028	1956	0.0299

*Compound annual return

Appendix A-7

Long-term Government Bonds: Income Returns
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1957	0.0029	0.0025	0.0026	0.0029	0.0029	0.0025	0.0033	0.0030	0.0031	0.0031	0.0029	0.0029	1957	0.0344
1958	0.0027	0.0025	0.0027	0.0026	0.0024	0.0027	0.0027	0.0027	0.0032	0.0032	0.0028	0.0033	1958	0.0327
1959	0.0031	0.0031	0.0035	0.0033	0.0033	0.0036	0.0035	0.0035	0.0034	0.0035	0.0035	0.0036	1959	0.0401
1960	0.0035	0.0037	0.0036	0.0032	0.0037	0.0034	0.0032	0.0034	0.0032	0.0033	0.0032	0.0033	1960	0.0426
1961	0.0033	0.0030	0.0031	0.0031	0.0034	0.0032	0.0033	0.0033	0.0032	0.0034	0.0032	0.0031	1961	0.0383
1962	0.0037	0.0032	0.0033	0.0033	0.0032	0.0030	0.0034	0.0034	0.0030	0.0035	0.0031	0.0032	1962	0.0400
1963	0.0032	0.0029	0.0031	0.0034	0.0033	0.0030	0.0036	0.0033	0.0034	0.0034	0.0032	0.0036	1963	0.0389
1964	0.0035	0.0032	0.0037	0.0035	0.0032	0.0038	0.0035	0.0035	0.0034	0.0034	0.0035	0.0035	1964	0.0415
1965	0.0033	0.0032	0.0038	0.0033	0.0033	0.0038	0.0034	0.0037	0.0035	0.0034	0.0037	0.0037	1965	0.0419
1966	0.0038	0.0034	0.0040	0.0036	0.0041	0.0039	0.0038	0.0043	0.0041	0.0040	0.0038	0.0039	1966	0.0449
1967	0.0040	0.0034	0.0039	0.0035	0.0043	0.0039	0.0043	0.0042	0.0040	0.0045	0.0045	0.0044	1967	0.0459
1968	0.0050	0.0042	0.0043	0.0049	0.0046	0.0042	0.0048	0.0042	0.0044	0.0045	0.0043	0.0049	1968	0.0550
1969	0.0050	0.0046	0.0047	0.0055	0.0047	0.0055	0.0052	0.0048	0.0055	0.0057	0.0049	0.0060	1969	0.0595
1970	0.0056	0.0052	0.0056	0.0054	0.0055	0.0064	0.0059	0.0057	0.0056	0.0055	0.0058	0.0053	1970	0.0674
1971	0.0051	0.0046	0.0056	0.0048	0.0047	0.0056	0.0052	0.0055	0.0050	0.0047	0.0051	0.0050	1971	0.0632
1972	0.0050	0.0047	0.0049	0.0048	0.0055	0.0049	0.0051	0.0049	0.0047	0.0052	0.0048	0.0045	1972	0.0587
1973	0.0054	0.0051	0.0056	0.0057	0.0058	0.0055	0.0061	0.0062	0.0055	0.0063	0.0056	0.0060	1973	0.0651
1974	0.0061	0.0055	0.0059	0.0068	0.0068	0.0061	0.0072	0.0065	0.0071	0.0070	0.0062	0.0067	1974	0.0727
1975	0.0068	0.0060	0.0066	0.0067	0.0067	0.0070	0.0068	0.0065	0.0073	0.0072	0.0061	0.0075	1975	0.0799
1976	0.0065	0.0061	0.0071	0.0064	0.0059	0.0073	0.0065	0.0069	0.0064	0.0061	0.0066	0.0063	1976	0.0789
1977	0.0059	0.0057	0.0065	0.0061	0.0067	0.0062	0.0059	0.0067	0.0061	0.0063	0.0063	0.0062	1977	0.0714
1978	0.0069	0.0060	0.0069	0.0063	0.0075	0.0069	0.0073	0.0070	0.0065	0.0073	0.0071	0.0068	1978	0.0790
1979	0.0079	0.0065	0.0074	0.0076	0.0077	0.0071	0.0076	0.0073	0.0068	0.0082	0.0083	0.0083	1979	0.0886
1980	0.0083	0.0084	0.0099	0.0100	0.0087	0.0086	0.0084	0.0081	0.0097	0.0097	0.0091	0.0108	1980	0.0997
1981	0.0094	0.0088	0.0111	0.0101	0.0104	0.0109	0.0109	0.0110	0.0114	0.0117	0.0113	0.0100	1981	0.1155
1982	0.0108	0.0103	0.0124	0.0112	0.0101	0.0120	0.0114	0.0112	0.0100	0.0091	0.0095	0.0093	1982	0.1350
1983	0.0087	0.0081	0.0089	0.0085	0.0091	0.0090	0.0088	0.0103	0.0096	0.0095	0.0094	0.0094	1983	0.1038
1984	0.0103	0.0092	0.0098	0.0104	0.0103	0.0106	0.0116	0.0106	0.0094	0.0108	0.0091	0.0098	1984	0.1174
1985	0.0096	0.0082	0.0094	0.0102	0.0097	0.0080	0.0094	0.0085	0.0088	0.0089	0.0081	0.0086	1985	0.1125
1986	0.0079	0.0073	0.0071	0.0063	0.0062	0.0070	0.0066	0.0063	0.0065	0.0069	0.0059	0.0070	1986	0.0898
1987	0.0064	0.0059	0.0066	0.0065	0.0066	0.0075	0.0073	0.0075	0.0075	0.0079	0.0075	0.0078	1987	0.0792

*Compound annual return

Appendix A-7

Long-term Government Bonds: Income Returns
From 1926 to 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan–Dec*
1988	0.0072	0.0071	0.0072	0.0070	0.0078	0.0076	0.0071	0.0083	0.0076	0.0076	0.0070	0.0075	1988	0.0897
1989	0.0080	0.0069	0.0079	0.0070	0.0080	0.0070	0.0068	0.0066	0.0065	0.0072	0.0064	0.0064	1989	0.0881
1990	0.0073	0.0066	0.0071	0.0075	0.0075	0.0068	0.0074	0.0071	0.0069	0.0081	0.0071	0.0072	1990	0.0819
1991	0.0071	0.0064	0.0064	0.0076	0.0068	0.0063	0.0076	0.0068	0.0068	0.0065	0.0060	0.0068	1991	0.0822
1992	0.0061	0.0059	0.0067	0.0065	0.0061	0.0067	0.0063	0.0060	0.0058	0.0057	0.0061	0.0063	1992	0.0726
1993	0.0059	0.0055	0.0063	0.0057	0.0052	0.0062	0.0054	0.0056	0.0050	0.0049	0.0053	0.0055	1993	0.0717
1994	0.0055	0.0049	0.0058	0.0057	0.0063	0.0061	0.0060	0.0066	0.0061	0.0066	0.0064	0.0066	1994	0.0659
1995	0.0070	0.0059	0.0064	0.0058	0.0065	0.0054	0.0056	0.0057	0.0052	0.0057	0.0051	0.0049	1995	0.0760
1996	0.0054	0.0048	0.0052	0.0059	0.0058	0.0054	0.0062	0.0057	0.0060	0.0058	0.0052	0.0056	1996	0.0618
1997	0.0056	0.0051	0.0059	0.0059	0.0058	0.0059	0.0058	0.0049	0.0058	0.0054	0.0047	0.0054	1997	0.0664
1998	0.0048	0.0044	0.0052	0.0049	0.0048	0.0052	0.0049	0.0048	0.0044	0.0042	0.0045	0.0045	1998	0.0583
1999	0.0042	0.0040	0.0053	0.0048	0.0045	0.0055	0.0051	0.0054	0.0052	0.0050	0.0056	0.0055	1999	0.0557
2000	0.0057	0.0051	0.0054	0.0047	0.0056	0.0052	0.0052	0.0050	0.0046	0.0053	0.0048	0.0045	2000	0.0650
2001	0.0049	0.0042	0.0045	0.0047	0.0050	0.0047	0.0052	0.0046	0.0041	0.0048	0.0041	0.0046	2001	0.0553
2002	0.0048	0.0043	0.0043	0.0054	0.0049	0.0044	0.0051	0.0044	0.0042	0.0040	0.0040	0.0045	2002	0.0559
2003	0.0041	0.0038	0.0040	0.0040	0.0039	0.0036	0.0038	0.0042	0.0046	0.0041	0.0039	0.0047	2003	0.0480
2004	0.0042	0.0038	0.0043	0.0039	0.0040	0.0048	0.0043	0.0045	0.0040	0.0038	0.0041	0.0043	2004	0.0502
2005	0.0041	0.0035	0.0041	0.0039	0.0040	0.0036	0.0034	0.0040	0.0035	0.0039	0.0039	0.0039	2005	0.0469
2006	0.0040	0.0036	0.0039	0.0039	0.0048	0.0044	0.0045	0.0043	0.0039	0.0042	0.0039	0.0036	2006	0.0468
2007	0.0043	0.0038	0.0039	0.0042	0.0041	0.0040	0.0046	0.0042	0.0037	0.0043	0.0039	0.0037	2007	0.0486
2008	0.0040	0.0034	0.0037	0.0035	0.0037	0.0040	0.0039	0.0036	0.0039	0.0037	0.0036	0.0033	2008	0.0445
2009	0.0024	0.0030	0.0035	0.0029	0.0033	0.0038	0.0036	0.0036	0.0034	0.0033	0.0035	0.0034	2009	0.0347
2010	0.0036	0.0033	0.0040	0.0038	0.0034	0.0037	0.0031	0.0032	0.0026	0.0027	0.0032	0.0032	2010	0.0425
2011	0.0035	0.0032	0.0036	0.0034	0.0036	0.0032	0.0032	0.0034	0.0026	0.0022	0.0024	0.0022	2011	0.0382
2012	0.0021	0.0020	0.0022	0.0025	0.0023	0.0018	0.0020	0.0018	0.0017	0.0021	0.0019	0.0019	2012	0.0246
2013	0.0022	0.0022	0.0021	0.0026	0.0023	0.0024	0.0030	0.0028	0.0029	0.0029	0.0027	0.0031	2013	0.0288
2014	0.0032	0.0026	0.0029	0.0028	0.0028	0.0025	0.0027	0.0026	0.0023	0.0025	0.0023	0.0022	2014	0.0341
2015	0.0020	0.0015	0.0021	0.0019	0.0020	0.0023	0.0024	0.0022	0.0021	0.0021	0.0022	0.0022	2015	0.0247
2016	0.0021	0.0020	0.0018	0.0017	0.0020	0.0018	0.0014	0.0016	0.0015	0.0016	0.0018	0.0022	2016	0.0230
2017	0.0024	0.0021	0.0023	0.0021	0.0024	0.0021	0.0022	0.0022	0.0019	0.0022	0.0021	0.0020	2017	0.0267
2018	0.0024	0.0022	0.0024	0.0025	0.0025	0.0023	0.0025	0.0025	0.0022	0.0030	0.0028	0.0027	2018	0.0282
2019	0.0025	0.0022	0.0023	0.0023	0.0023	0.0018	0.0021	0.0019	0.0015	0.0016	0.0016	0.0018	2019	0.0255
2020	0.0020	0.0015	0.0013	0.0009	0.0009	0.0009	0.0010	0.0008	0.0000	0.0009	0.0011	0.0011	2020	0.0142

* Compound annual return

U.S. Capital Markets Performance
by Asset Class 1926–2019

2020
SBBI® Yearbook

Stocks, Bonds, Bills, and Inflation®

Roger G. Ibbotson

DUFF & PHELPS

20-Year vs. 30-Year Treasuries

The U.S. Treasury periodically changes the maturities that it issues. For example, in April 1986 the U.S. Treasury stopped issuing 20-year Treasuries, and from October 2001 through January 2006 the U.S. Treasury did not issue 30-year bonds (it resumed issuing 30-year Treasury bonds in February 2006), making the 10-year bond the longest-term Treasury security issued over the October 2001–January 2006 period. Most recently, on January 16, 2020 the U.S. Department of the Treasury announced it plans to issue a 20-year nominal coupon bond in the first half of calendar year 2020, the first time a 20-year maturity will be offered since March 1986.[10.10,10.11]

Our methodology for estimating the long-horizon equity risk premium makes use of the income return on a 20-year Treasury bond. While a 30-year bond is theoretically more correct when dealing with the long-term nature of business valuation,[10.12] 30-year Treasury securities have an issuance history that is on-again-off-again. Ibbotson Associates creates a series of returns using bonds on the market with approximately 20 years to maturity because Treasury bonds of this maturity are available over a long history, while Treasury bonds of 30-years are not.

Income Return

Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation.

The total return comprises three return components: the income return, the capital appreciation return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.

Arithmetic vs. Geometric Mean

The equity risk premium data presented in this book are arithmetic average risk premiums as opposed to geometric average risk premiums. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building-block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number.

10.10 To learn more, visit the U.S. Department of the Treasury website at: https://home.treasury.gov/news/press-releases/sm878.

10.11 See Kate Davidson, "Treasury to Issue New 20-Year Bond in First Half of 2020", *The Wall Street Journal*, January 16, 2020 at: https://www.wsj.com/articles/treasury-to-issue-new-20-year-bond-in-first-half-of-2020-11579217450

10.12 An equity risk premium is an input in developing cost of capital estimates (i.e., "expected return", "required return", or "discount rate") for use in a discounted cash flow model. **Note:** Three of the four Duff & Phelps *Valuation Handbooks* have been transitioned from print to a new online delivery platform, the "Cost of Capital Navigator". The Cost of Capital Navigator guides financial professionals through the process of estimating the cost of capital, a key component of any valuation analysis. The Cost of Capital Navigator can be used to estimate country-level cost of equity capital globally, for up to 188 countries, from the perspective of investors based in any one of up to 56 countries. For more information, visit dpcostofcapital.com.

This is because both the CAPM and the building-block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance because it represents the compound average return.

Appropriate Historical Period

The equity risk premium can be estimated using any historical time period. For the U.S., market data exist at least as far back as the late 1800s. Therefore, it is possible to estimate the equity risk premium using data that covers roughly the past 125 years.

Our equity risk premium covers 1926 to the present. The original data source for the time series comprising the equity risk premium is the Center for Research in Security Prices. CRSP chose to begin its analysis of market returns with 1926 for two main reasons. CRSP determined that 1926 was approximately when quality financial data became available. They also made a conscious effort to include the period of extreme market volatility from the late 1920s and early 1930s; 1926 was chosen because it includes one full business cycle of data before the market crash of 1929.

Implicit in using history to forecast the future is the assumption that investors' expectations for future outcomes conform to past results. This method assumes that the price of taking on risk changes only slowly, if at all, over time. This "future equals the past" assumption is most applicable to a random time-series variable. A time-series variable is random if its value in one period is independent of its value in other periods.

Choosing an Appropriate Historical Period

The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable. Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.

Some analysts estimate the expected equity risk premium using a shorter, more recent period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s, and 1940s contain too many unusual events. This view is suspect because all periods contain unusual events. Some of the most unusual events of the last 100 years took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, the development of the European Economic Community, the attacks of Sept. 11, 2001, and the more recent global financial crisis of 2008–2009.

The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts

Robert S. Harris and Felicia C. Marston

Using expectational data from financial analysts, we estimate a market risk premium for US stocks. Using the S&P 500 as a proxy for the market portfolio, the average market risk premium is found to be 7.14% above yields on long-term US government bonds over the period 1982-1998. This risk premium varies over time; much of this variation can be explained by either the level of interest rates or readily available forward-looking proxies for risk. The market risk premium appears to move inversely with government interest rates suggesting that required returns on stocks are more stable than interest rates themselves. [JEL: G31, G12]

■The notion of a market risk premium (the spread between investor required returns on safe and average risk assets) has long played a central role in finance. It is a key factor in asset allocation decisions to determine the portfolio mix of debt and equity instruments. Moreover, the market risk premium plays a critical role in the Capital Asset Pricing Model (CAPM), the most widely used means of estimating equity hurdle rates by practitioners. In recent years, the practical significance of estimating such a market premium has increased as firms, financial analysts, and investors employ financial frameworks to analyze corporate and investment performance. For instance, the increased use of Economic Value Added (EVA®) to assess corporate performance has provided a new impetus for estimating capital costs.

The most prevalent approach to estimating the market risk premium relies on some average of the historical spread between returns on stocks and bonds.[1] This choice has some appealing characteristics but is subject to many arbitrary assumptions such as the relevant period for taking an average. Compounding the difficulty of using historical returns is the well noted fact that standard models of consumer choice would predict much lower spreads between equity and debt returns than have occurred in US markets—the so called equity risk premium puzzle (see Welch, 2000 and Siegel and Thaler, 1997). In addition, theory calls for a forward-looking risk premium that could well change over time.

This paper takes an alternate approach by using expectational data to estimate the market risk premium. The approach has two major advantages for practitioners. First, it provides an independent estimate that can be compared to historical averages. At a minimum, this can help in understanding likely ranges for risk premia. Second, expectational data allow investigation of changes in risk premia over time. Such time variations in risk premia serve as important signals from investors that should affect a host of financial decisions. This paper provides new tests of whether changes in risk premia over time are linked to forward-looking measures of risk. Specifically, we look at the

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[1]Bruner, Eades, Harris, and Higgins (1998) provide survey evidence on both textbook advice and practitioner methods for estimating capital costs. As testament to the market for cost of capital estimates, Ibbotson Associates (1998) publishes a "Cost of Capital Quarterly."

Exhibit 3. Average Historical Returns on Bonds, Stocks, Bills, and Inflation in the US, 1926-1998

Historical Return Realizations	Geometric Mean	Arithmetic Mean
Common Stock (Large Company)	11.2%	13.2%
Long-term Government Bonds	5.3	5.7
Treasury Bills	3.8	3.8
Inflation Rate	3.1	3.2

Source: Ibbotson Associates, Inc., *1999 Stocks, Bonds, Bills and Inflation*, 1999 Yearbook.

underlying dividend yield and growth components of k as Exhibit 2 illustrates. The results suggest that k is more stable than government interest rates. Such relative stability of k translates into parallel changes in the market risk premium. In a subsequent section, we examine whether changes in our market risk premium estimates appear linked to interest rate conditions and a number of proxies for risk.

We explored the sensitivity of the results to our screening procedures in selecting companies. The reported results screen out all non-dividend paying stocks on the premise that use of the DCF model is inappropriate in such cases. The dividend screen eliminates an average of 55 companies per month. In a given month, we also screen out firms with fewer than three analysts' forecasts, or if the standard deviation around the mean forecast exceeds 20%. When the analysis is repeated without any of the three screens, the average risk premium over the sample period increased by only 40 basis points, from 7.14% to 7.54%. The beta of the sample firms also was estimated and the sample average was one, suggesting that the screens do not systematically remove low or high-risk firms. (Specifically, using firms in the screened sample as of December 1997 (the last date for which we had CRSP return data), we used ordinary least squares regressions to estimate beta for each stock using the prior 60 months of data and the CRSP return (SPRTRN) as the market index. The value-weighted average of the individual betas was 1.00.)

The results reported here use firms in the S&P500 as reported by COMPUSTAT in September 1998. This could create a survivorship bias, especially in the earlier months of the sample. We compared our current results to those obtained in Harris and Marston (1992) for which there was data to update the S&P500 composition each month. For the overlapping period, January 1982-May 1991, the two procedures yield the same average market risk premium, 6.47%. This suggests that the firms departing from or entering the S&P500 index do so for a number of reasons with no discernable effect on the overall estimated S&P500 market risk premium.

IV. Changes in the Market Risk Premium Over Time

With changes in the economy and financial markets, equity investments may be perceived to change in risk. For instance, investor sentiment about future business conditions likely affects attitudes about the riskiness of equity investments compared to investments in the bond markets. Moreover, since bonds are risky investments themselves, equity risk premia (relative to bonds) could change due to changes in perceived riskiness of bonds, even if equities displayed no shifts in risk.

In earlier work covering the 1982-1991 period, Harris and Marston (1992) reported regression results indicating that the market premium decreased with the level of government interest rates and increased with the spread between corporate and government bond yields (BSPREAD). This bond yield spread was interpreted as a time series proxy for equity risk. In this paper, we introduce three additional *ex ante* measures of risk shown in Exhibit 1: CON, DISP, and VOL. The three measures come from three independent sets of data and are supplied by different agents in the economy (consumers, equity analysts, and investors (via option and share price data)). Exhibit 4 provides summary data on all four of these risk measures.

Exhibit 5 replicates and updates earlier analysis by Harris and Marston (1992).[7] The results confirm the earlier patterns. For the entire sample period, Panel A shows that risk premia are negatively related to interest rates. This negative relationship is also true for both

[7]OLS regressions with levels of variables generally showed severe autocorrelation. As a result, we used the Prais-Winsten method (on levels of variables) and also OLS regressions on first differences of variables. Since both methods yielded similar results and the latter had more stable coefficients across specifications, we report only the results using first differences. Tests using Durbin-Watson statistics from regressions in Exhibits 5 and 6 do not accept the hypothesis of autocorrelated errors (tests at .01 significance level, see Johnston, 1984). We also estimated the first difference model without an intercept and obtained estimates almost identical to those reported.

Exhibit 4. Descriptive Statistics on *Ex Ante* Risk Measures

Entries are based on monthly data. BSPREAD is the spread between yields on long-term corporate and government bonds. CON is the consumer confidence index. DISP measures the dispersion of analysts' forecasts of earnings growth. VOL is the volatility on the S&P500 index implied by options data. Variables are expressed in decimal form, (e.g., 12% = .12).

Panel A. Variables are Monthly Levels

	Mean	Standard Deviation	Minimum	Maximum
BSPREAD	.0123	.0040	.0070	.0254
CON	.9504	.2242	.473	1.382
DISP	.0349	.0070	.0285	.0687
VOL	.1599	.0697	.0765	.6085

Panel B. Variables are Monthly Changes

	Mean	Standard Deviation	Minimum	Maximum
BSPREAD	-.00001	.0011	-.0034	.0036
CON	.0030	.0549	-.2300	.2170
DISP	-.00002	.0024	-.0160	.0154
VOL	-.0008	.0592	-.2156	.4081

Panel C. Correlation Coefficients for Monthly Changes

	BSPREAD	CON	DISP	VOL
BSPREAD	1.00	-.16**	.054	.22*
CON	-.16**	1.00	.065	-.09
DISP	.054	.065	1.00	.027
VOL	.22*	-.09	.027	1.00

**Significantly different from zero at the .05 level.
*Significantly different from zero at the .01 level.

the 1980s and 1990s as displayed in Panels B and C. For the entire 1982 to 1998 period, the addition of the yield spread risk proxy to the regressions lowers the magnitude of the coefficient on government bond yields, as can be seen by comparing Equations (1) and (2) of Panel A. Furthermore, the coefficient of the yield spread (0.488) is itself significantly positive. This pattern suggests that a reduction in the risk differential between investment in government bonds and in corporate bonds is translated into a lower equity market risk premium.

In major respects, the results in Exhibit 5 parallel earlier findings. The market risk premium changes over time and appears inversely related to government interest rates but is positively related to the bond yield spread, which proxies for the incremental risk of investing in equities as opposed to government bonds. One striking feature is the large negative coefficients on government bond yields. The coefficients indicate the equity risk premium declines by over 70 basis points for a 100 basis point increase in government interest rates.[8] This inverse relationship suggests

[8]The Exhibit 5 coefficients on i are significantly different from −1. 0 suggesting that equity required returns do respond to interest rate changes. However, the large negative coefficients imply only minor adjustments of required returns to interest rate changes since the risk premium declines. In earlier work (Harris and Marston, 1992) the coefficient was significantly negative but not as large in absolute value. In that earlier work, we reported results using the Prais-Winsten estimators. When we use that estimation technique and recreate the second regression in Exhibit 5, the coefficient for i is -.584 (t = - 12.23) for the entire sample period 1982-1998.

The Risk Premium Approach to Measuring a Utility's Cost of Equity

Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson

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■ In the mid-1960s, Myron Gordon and others began applying the theory of finance to help estimate utilities' costs of capital. Previously, the standard approach in cost of equity studies was the "comparable earnings method," which involved selecting a sample of unregulated companies whose investment risk was judged to be comparable to that of the utility in question, calculating the average return on book equity (ROE) of these sample companies, and setting the utility's service rates at a level that would permit the utility to achieve the same ROE as comparable companies. This procedure has now been thoroughly discredited (see Robichek [15]), and it has been replaced by three market-oriented (as opposed to accounting-oriented) approaches: (i) the DCF method, (ii) the bond-yield-plus-risk-premium method, and (iii) the CAPM, which is a specific version of the generalized bond-yield-plus-risk-premium approach.

Our purpose in this paper is to discuss the risk-premium approach, including the market risk premium that is used in the CAPM. First, we critique the various procedures that have been used in the past to estimate risk premiums. Second, we present some data on estimated risk premiums since 1965. Third, we examine the relationship between equity risk premiums and the level of interest rates, because it is important, for purposes of estimating the cost of capital, to know just how stable the relationship between risk premiums and interest rates is over time. If stability exists, then one can estimate the cost of equity at any point in time as a function of interest rates as reported in *The Wall Street Journal*, the *Federal Reserve Bulletin*, or some similar source.[1] Fourth, while we do not discuss the CAPM directly, our analysis does have some important implications for selecting a market risk premium for use in that model. Our focus is on utilities, but the methodology is applicable to the estimation of the cost of

[1]For example, the Federal Energy Regulatory Commission's Staff recently proposed that a risk premium be estimated every two years and that, between estimation dates, the last-determined risk premium be added to the current yield on ten-year Treasury bonds to obtain an estimate of the cost of equity to an average utility (Docket RM 80–36). Subsequently, the FCC made a similar proposal ("Notice of Proposed Rulemaking," August 13, 1984, Docket No. 84–800). Obviously, the validity of such procedures depends on (i) the accuracy of the risk premium estimate and (ii) the stability of the relationship between risk premiums and interest rates. Both proposals are still under review.

equity for any publicly traded firm, and also for non-traded firms for which an appropriate risk class can be assessed, including divisions of publicly traded corporations.[2]

Alternative Procedures for Estimating Risk Premiums

In a review of both rate cases and the academic literature, we have identified three basic methods for estimating equity risk premiums: (i) the *ex post,* or historic, yield spread method; (ii) the survey method; and (iii) an *ex ante* yield spread method based on DCF analysis.[3] In this section, we briefly review these three methods.

Historic Risk Premiums

A number of researchers, most notably Ibbotson and Sinquefield [12], have calculated historic holding period returns on different securities and then estimated risk premiums as follows:

$$\text{Historic Risk Premium} = \begin{pmatrix} \text{Average of the} \\ \text{annual returns on} \\ \text{a stock index for} \\ \text{a particular} \\ \text{past period} \end{pmatrix} - \begin{pmatrix} \text{Average of the} \\ \text{annual returns on} \\ \text{a bond index for} \\ \text{the same} \\ \text{past period} \end{pmatrix}. \quad (1)$$

Ibbotson and Sinquefield (I&S) calculated both arithmetic and geometric average returns, but most of their risk-premium discussion was in terms of the geometric averages. Also, they used both corporate and Treasury bond indices, as well as a T-bill index, and they analyzed all possible holding periods since 1926. The I&S study has been employed in numerous rate cases in two ways: (i) directly, where the I&S historic risk premium is added to a company's bond yield to obtain an estimate of its cost of equity, and (ii) indirectly, where I&S data are used to estimate the market risk premium in CAPM studies.

There are both conceptual and measurement problems with using I&S data for purposes of estimating the cost of capital. Conceptually, there is no compelling reason to think that investors expect the same relative returns that were earned in the past. Indeed, evidence presented in the following sections indicates that relative expected returns should, and do, vary significantly over time. Empirically, the measured historic premium is sensitive both to the choice of estimation horizon and to the end points. These choices are essentially arbitrary, yet they can result in significant differences in the final outcome. These measurement problems are common to most forecasts based on time series data.

The Survey Approach

One obvious way to estimate equity risk premiums is to poll investors. Charles Benore [1], the senior utility analyst for Paine Webber Mitchell Hutchins, a leading institutional brokerage house, conducts such a survey of major institutional investors annually. His 1983 results are reported in Exhibit 1.

Exhibit 1. Results of Risk Premium Survey, 1983*

Assuming a double A, long-term utility bond currently yields 12½%, the common stock for the same company would be fairly priced relative to the bond if its expected return was as follows:

Total Return	Indicated Risk Premium (basis points)	Percent of Respondents
over 20½%	over 800	
20½%	800	
19½%	700	
18½%	600	10%
17½%	500	8%
16½%	400	29%
15½%	300	35%
14½%	200	16%
13½%	100	0%
under 13½%	under 100	1%
Weighted average	358	100%

*Benore's questionnaire included the first two columns, while his third column provided a space for the respondents to indicate which risk premium they thought applied. We summarized Benore's responses in the frequency distribution given in Column 3. Also, in his questionnaire each year, Benore adjusts the double A bond yield and the total returns (Column 1) to reflect current market conditions. Both the question above and the responses to it were taken from the survey conducted in April 1983.

[2]The FCC is particularly interested in risk-premium methodologies, because (i) only eighteen of the 1,400 telephone companies it regulates have publicly-traded stock, and hence offer the possibility of DCF analysis, and (ii) most of the publicly-traded telephone companies have both regulated and unregulated assets, so a corporate DCF cost might not be applicable to the regulated units of the companies.

[3]In rate cases, some witnesses also have calculated the differential between the yield to maturity (YTM) of a company's bonds and its concurrent ROE, and then called this differential a risk premium. In general, this procedure is unsound, because the YTM on a bond is a *future expected* return on the bond's *market value*, while the ROE is the *past realized* return on the stock's *book value*. Thus, comparing YTMs and ROEs is like comparing apples and oranges.

Benore's results, as measured by the average risk premiums, have varied over the years as follows:

Year	Average RP (basis points)
1978	491
1979	475
1980	423
1981	349
1982	275
1983	358

The survey approach is conceptually sound in that it attempts to measure investors' expectations regarding risk premiums, and the Benore data also seem to be carefully collected and processed. Therefore, the Benore studies do provide one useful basis for estimating risk premiums. However, as with most survey results, the possibility of biased responses and/or biased sampling always exists. For example, if the responding institutions are owners of utility stocks (and many of them are), and if the respondents think that the survey results might be used in a rate case, then they might bias upward their responses to help utilities obtain higher authorized returns. Also, Benore surveys large institutional investors, whereas a high percentage of utility stocks are owned by individuals rather than institutions, so there is a question as to whether his reported risk premiums are really based on the expectations of the "representative" investor. Finally, from a pragmatic standpoint, there is a question as to how to use the Benore data for utilities that are not rated AA. The Benore premiums can be applied as an add-on to the own-company bond yields of any given utility only if it can be assumed that the premiums are constant across bond rating classes. *A priori*, there is no reason to believe that the premiums will be constant.

DCF-Based *Ex Ante* Risk Premiums

In a number of studies, the DCF model has been used to estimate the *ex ante* market risk premium, RP_M. Here, one estimates the average expected future return on equity for a group of stocks, k_M, and then subtracts the concurrent risk-free rate, R_F, as proxied by the yield to maturity on either corporate or Treasury securities:[4]

$$RP_M = k_M - R_F. \tag{2}$$

Conceptually, this procedure is exactly like the I&S approach except that one makes direct estimates of future expected returns on stocks and bonds rather than assuming that investors expect future returns to mirror past returns.

The most difficult task, of course, is to obtain a valid estimate of k_M, the expected rate of return on the market. Several studies have attempted to estimate DCF risk premiums for the utility industry and for other stock market indices. Two of these are summarized next.

Vandell and Kester. In a recently published monograph, Vandell and Kester [18] estimated *ex ante* risk premiums for the period from 1944 to 1978. R_F was measured both by the yield on 90-day T-bills and by the yield on the Standard and Poor's AA Utility Bond Index. They measured k_M as the average expected return on the S&P's 500 Index, with the expected return on individual securities estimated as follows:

$$k_i = \left(\frac{D_1}{P_0}\right)_i + g_i, \tag{3}$$

where,

D_1 = dividend per share expected over the next twelve months,
P_0 = current stock price,
g = estimated long-term constant growth rate, and
i = the i^{th} stock.

To estimate g_i, Vandell and Kester developed fifteen forecasting modéls based on both exponential smoothing and trend-line forecasts of earnings and dividends, and they used historic data over several estimating horizons. Vandell and Kester themselves acknowledge that, like the Ibbotson-Sinquefield premiums, their analysis is subject to potential errors associated with trying to estimate expected future growth purely from past data. We shall have more to say about this point later.

[4]In this analysis, most people have used yields on long-term bonds rather than short-term money market instruments. It is recognized that long-term bonds, even Treasury bonds, are not risk free, so an RP_M based on these debt instruments is smaller than it would be if there were some better proxy to the long-term riskless rate. People have attempted to use the T-bill rate for R_F, but the T-bill rate embodies a different average inflation premium than stocks, and it is subject to random fluctuations caused by monetary policy, international currency flows, and other factors. Thus, many people believe that for cost of capital purposes, R_F should be based on long-term securities.

We did test to see how debt maturities would affect our calculated risk premiums. If a short-term rate such as the 30-day T-bill rate is used, measured risk premiums jump around widely and, so far as we could tell, randomly. The choice of a maturity in the 10- to 30-year range has little effect, as the yield curve is generally fairly flat in that range.

Malkiel. Malkiel [14] estimated equity risk premiums for the Dow Jones Industrials using the DCF model. Recognizing that the constant dividend growth assumption may not be valid, Malkiel used a nonconstant version of the DCF model. Also, rather than rely exclusively on historic data, he based his growth rates on Value Line's five-year earnings growth forecasts plus the assumption that each company's growth rate would, after an initial five-year period, move toward a long-run real national growth rate of four percent. He also used ten-year maturity government bonds as a proxy for the riskless rate. Malkiel reported that he tested the sensitivity of his results against a number of different types of growth rates, but, in his words, "The results are remarkably robust, and the estimated risk premiums are all very similar." Malkiel's is, to the best of our knowledge, the first risk-premium study that uses analysts' forecasts. A discussion of analysts' forecasts follows.

Security Analysts' Growth Forecasts

Ex ante DCF risk premium estimates can be based either on expected growth rates developed from time series data, such as Vandell and Kester used, or on analysts' forecasts, such as Malkiel used. Although there is nothing inherently wrong with time series-based growth rates, an increasing body of evidence suggests that primary reliance should be placed on analysts' growth rates. First, we note that the observed market price of a stock reflects the consensus view of investors regarding its future growth. Second, we know that most large brokerage houses, the larger institutional investors, and many investment advisory organizations employ security analysts who forecast future EPS and DPS, and, to the extent that investors rely on analysts' forecasts, the consensus of analysts' forecasts is embodied in market prices. Third, there have been literally dozens of academic research papers dealing with the accuracy of analysts' forecasts, as well as with the extent to which investors actually use them. For example, Cragg and Malkiel [7] and Brown and Rozeff [5] determined that security analysts' forecasts are more relevant in valuing common stocks and estimating the cost of capital than are forecasts based solely on historic time series. Stanley, Lewellen, and Schlarbaum [16] and Linke [13] investigated the importance of analysts' forecasts and recommendations to the investment decisions of individual and institutional investors. Both studies indicate that investors rely heavily on analysts' reports and incorporate analysts' forecast information in the formation of their expectations about stock returns. A representative listing of other work supporting the use of analysts' forecasts is included in the References section. Thus, evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts. Accordingly, we based our cost of equity, and hence risk premium estimates, on analysts' forecast data.[5]

Risk Premium Estimates

For purposes of estimating the cost of capital using the risk premium approach, it is necessary either that the risk premiums be time-invariant or that there exists a predictable relationship between risk premiums and interest rates. If the premiums are constant over time, then the constant premium could be added to the prevailing interest rate. Alternatively, if there exists a stable relationship between risk premiums and interest rates, it could be used to predict the risk premium from the prevailing interest rate.

To test for stability, we obviously need to calculate risk premiums over a fairly long period of time. Prior to 1980, the only consistent set of data we could find came from Value Line, and, because of the work involved, we could develop risk premiums only once a year (on January 1). Beginning in 1980, however, we began collecting and analyzing Value Line data on a monthly basis, and in 1981 we added monthly estimates from Merrill Lynch and Salomon Brothers to our data base. Finally, in mid-1983, we expanded our analysis to include the IBES data.

Annual Data and Results, 1966–1984

Over the period 1966–1984, we used Value Line data to estimate risk premiums both for the electric utility industry and for industrial companies, using the companies included in the Dow Jones Industrial and Utility averages as representative of the two groups. Value Line makes a five-year growth rate forecast, but it also gives data from which one can develop a longer-term forecast. Since DCF theory calls for a truly long-term (infinite horizon) growth rate, we concluded that it was better to develop and use such a forecast than to

[5]Recently, a new type of service that summarizes the key data from most analysts' reports has become available. We are aware of two sources of such services, the Lynch, Jones, and Ryan's Institutional Brokers Estimate System (IBES) and Zack's Icarus Investment Service. IBES and the Icarus Service gather data from both buy-side and sell-side analysts and provide it to subscribers on a monthly basis in both a printed and a computer-readable format.

Exhibit 2. Estimated Annual Risk Premiums, Nonconstant (Value Line) Model, 1966–1984

January 1 of the Year Reported	Dow Jones Electrics			Dow Jones Industrials			
	k_{Avg}	R_F	RP	k_{Avg}	R_F	RP	(3) ÷ (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1966	8.11%	4.50%	3.61%	9.56%	4.50%	5.06%	0.71
1967	9.00%	4.76%	4.24%	11.57%	4.76%	6.81%	0.62
1968	9.68%	5.59%	4.09%	10.56%	5.59%	4.97%	0.82
1969	9.34%	5.88%	3.46%	10.96%	5.88%	5.08%	0.68
1970	11.04%	6.91%	4.13%	12.22%	6.91%	5.31%	0.78
1971	10.80%	6.28%	4.52%	11.23%	6.28%	4.95%	0.91
1972	10.53%	6.00%	4.53%	11.09%	6.00%	5.09%	0.89
1973	11.37%	5.96%	5.41%	11.47%	5.96%	5.51%	0.98
1974	13.85%	7.29%	6.56%	12.38%	7.29%	5.09%	1.29
1975	16.63%	7.91%	8.72%	14.83%	7.91%	6.92%	1.26
1976	13.97%	8.23%	5.74%	13.32%	8.23%	5.09%	1.13
1977	12.96%	7.30%	5.66%	13.63%	7.30%	6.33%	0.89
1978	13.42%	7.87%	5.55%	14.75%	7.87%	6.88%	0.81
1979	14.92%	8.99%	5.93%	15.50%	8.99%	6.51%	0.91
1980	16.39%	10.18%	6.21%	16.53%	10.18%	6.35%	0.98
1981	17.61%	11.99%	5.62%	17.37%	11.99%	5.38%	1.04
1982	17.70%	14.00%	3.70%	19.30%	14.00%	5.30%	0.70
1983	16.30%	10.66%	5.64%	16.53%	10.66%	5.87%	0.96
1984	16.03%	11.97%	4.06%	15.72%	11.97%	3.75%	1.08

use the five-year prediction.[6] Therefore, we obtained data as of January 1 from Value Line for each of the Dow Jones companies and then solved for k, the expected rate of return, in the following equation:

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1 + k)^t} + \left(\frac{D_n(1 + g_n)}{k - g_n}\right)\left(\frac{1}{1 + k}\right)^n. \qquad (4)$$

Equation (4) is the standard nonconstant growth DCF model; P_0 is the current stock price; D_t represents the forecasted dividends during the nonconstant growth period; n is the years of nonconstant growth; D_n is the first constant growth dividend; and g_n is the constant, long-run growth rate after year n. Value Line provides D_t values for t = 1 and t = 4, and we interpolated to obtain D_2 and D_3. Value Line also gives estimates for ROE and for the retention rate (b) in the terminal year, n, so we can forecast the long-term growth rate as g_n = b(ROE). With all the values in Equation (4) specified except k, we can solve for k, which is the DCF rate of return that would result if the Value Line forecasts were met, and, hence, the DCF rate of return implied in the Value Line forecast.[7]

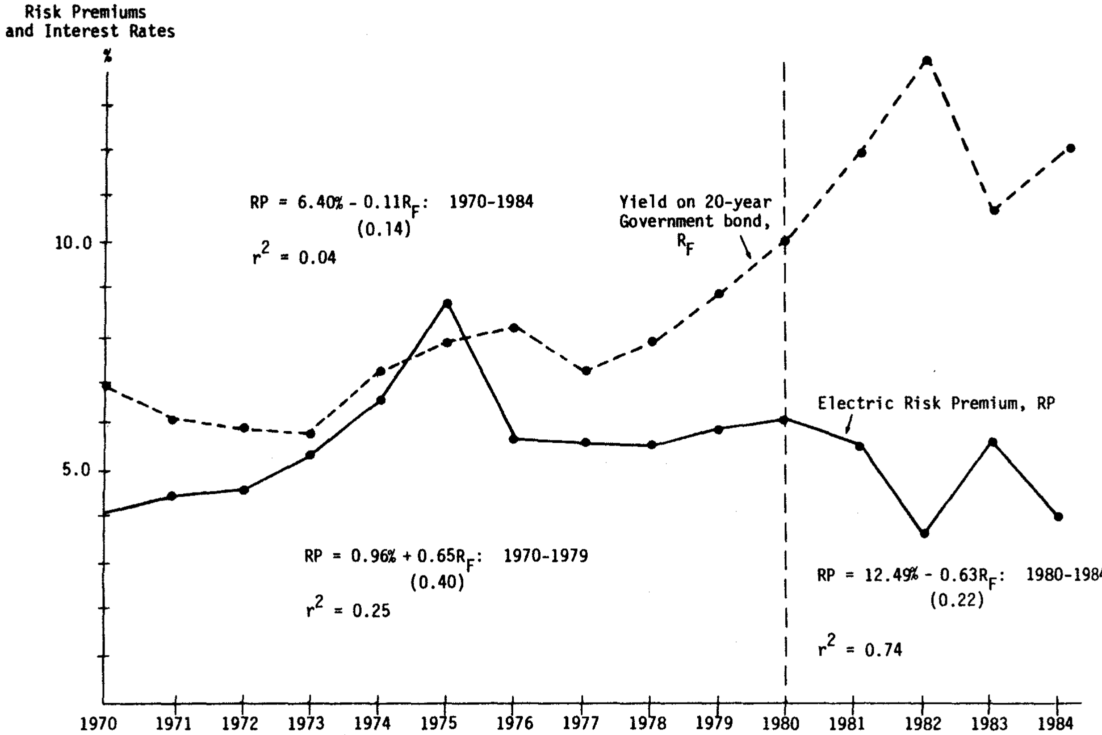
Having estimated a k value for each of the electric and industrial companies, we averaged them (using market-value weights) to obtain a k value for each group, after which we subtracted R_F (taken as the December 31 yield on twenty-year constant maturity Treasury bonds) to obtain the estimated risk premiums shown in Exhibit 2. The premiums for the electrics are plotted in Exhibit 3, along with interest rates. The following points are worthy of note:

1. Risk premiums fluctuate over time. As we shall see in the next section, fluctuations are even wider when measured on a monthly basis.
2. The last column of Exhibit 2 shows that risk premi-

[6] This is a debatable point. Cragg and Malkiel, as well as many practicing analysts, feel that most investors actually focus on five-year forecasts. Others, however, argue that five-year forecasts are too heavily influenced by base-year conditions and/or other nonpermanent conditions for use in the DCF model. We note (i) that most published forecasts do indeed cover five years, (ii) that such forecasts are typically "normalized" in some fashion to alleviate the base-year problem, and (iii) that for relatively stable companies like those in the Dow Jones averages, it generally does not matter greatly if one uses a normalized five-year or a longer-term forecast, because these companies meet the conditions of the constant-growth DCF model rather well.

[7] Value Line actually makes an explicit price forecast for each stock, and one could use this price, along with the forecasted dividends, to develop an expected rate of return. However, Value Line's forecasted stock price builds in a forecasted *change* in k. Therefore, the forecasted price is inappropriate for use in estimating current values of k.

Exhibit 3. Equity Risk Premiums for Electric Utilities and Yields on 20-Year Government Bonds, 1970–1984*



*Standard errors of the coefficients are shown in parentheses below the coefficients.

ums for the utilities increased relative to those for the industrials from the mid-1960s to the mid-1970s. Subsequently, the perceived riskiness of the two groups has, on average, been about the same.

3. Exhibit 3 shows that, from 1970 through 1979, utility risk premiums tended to have a positive association with interest rates: when interest rates rose, so did risk premiums, and vice versa. However, beginning in 1980, an inverse relationship appeared: rising interest rates led to declining risk premiums. We shall discuss this situation further in the next section.

Monthly Data and Results, 1980–1984

In early 1980, we began calculating risk premiums on a monthly basis. At that time, our only source of analysts' forecasts was Value Line, but beginning in 1981 we also obtained Merrill Lynch and Salomon Brothers' data, and then, in mid-1983, we obtained IBES data. Because our focus was on utilities, we restricted our monthly analysis to that group.

Our 1980–1984 monthly risk premium data, along with Treasury bond yields, are shown in Exhibits 4 and 5 and plotted in Exhibits 6, 7, and 8. Here are some comments on these Exhibits:

1. Risk premiums, like interest rates and stock prices, are volatile. Our data indicate that it would not be appropriate to estimate the cost of equity by adding the current cost of debt to a risk premium that had been estimated in the past. Current risk premiums should be matched with current interest rates.
2. Exhibit 6 confirms the 1980–1984 section of Exhibit 3 in that it shows a strong inverse relationship between interest rates and risk premiums; we shall discuss shortly why this relationship holds.
3. Exhibit 7 shows that while risk premiums based on Value Line, Merrill Lynch, and Salomon Brothers

Exhibit 4. Estimated Monthly Risk Premiums for Electric Utilities Using Analysts' Growth Forecasts, January 1980–June 1984

Beginning of Month	Value Line	Merrill Lynch	Salomon Brothers	Average Premiums	20-Year Treasury Bond Yield, Constant Maturity Series
Jan 1980	6.21%	NA	NA	6.21%	10.18%
Feb 1980	5.77%	NA	NA	5.77%	10.86%
Mar 1980	4.73%	NA	NA	4.73%	12.59%
Apr 1980	5.02%	NA	NA	5.02%	12.71%
May 1980	4.73%	NA	NA	4.73%	11.04%
Jun 1980	5.09%	NA	NA	5.09%	10.37%
Jul 1980	5.41%	NA	NA	5.41%	9.86%
Aug 1980	5.72%	NA	NA	5.72%	10.29%
Sep 1980	5.16%	NA	NA	5.16%	11.41%
Oct 1980	5.62%	NA	NA	5.62%	11.75%
Nov 1980	5.09%	NA	NA	5.09%	12.33%
Dec 1980	5.65%	NA	NA	5.65%	12.37%
Annual Avg.	5.35%			5.35%	11.31%
Jan 1981	5.62%	4.76%	5.63%	5.34%	11.99%
Feb 1981	4.82%	4.87%	5.16%	4.95%	12.48%
Mar 1981	4.70%	3.73%	4.97%	4.47%	13.10%
Apr 1981	4.24%	3.23%	4.52%	4.00%	13.11%
May 1981	3.54%	3.24%	4.24%	3.67%	13.51%
Jun 1981	3.57%	4.04%	4.27%	3.96%	13.39%
Jul 1981	3.61%	3.63%	4.16%	3.80%	13.32%
Aug 1981	3.17%	3.05%	3.04%	3.09%	14.23%
Sep 1981	2.11%	2.24%	2.35%	2.23%	14.99%
Oct 1981	2.83%	2.64%	3.24%	2.90%	14.93%
Nov 1981	2.08%	2.49%	3.03%	2.53%	15.27%
Dec 1981	3.72%	3.45%	4.24%	3.80%	13.12%
Annual Avg.	3.67%	3.45%	4.07%	3.73%	13.62%
Jan 1982	3.70%	3.37%	4.04%	3.70%	14.00%
Feb 1982	3.05%	3.37%	3.70%	3.37%	14.37%
Mar 1982	3.15%	3.28%	3.75%	3.39%	13.96%
Apr 1982	3.49%	3.61%	4.29%	3.80%	13.69%
May 1982	3.08%	4.25%	3.91%	3.75%	13.47%
Jun 1982	3.16%	4.51%	4.72%	4.13%	13.53%
Jul 1982	2.57%	4.21%	4.21%	3.66%	14.48%
Aug 1982	4.33%	4.83%	5.27%	4.81%	13.69%
Sep 1982	4.08%	5.14%	5.58%	4.93%	12.40%
Oct 1982	5.35%	5.24%	6.34%	5.64%	11.95%
Nov 1982	5.67%	5.95%	6.91%	6.18%	10.97%
Dec 1982	6.31%	6.71%	7.45%	6.82%	10.52%
Annual Avg.	4.00%	4.54%	5.01%	4.52%	13.09%
Jan 1983	5.64%	6.04%	6.81%	6.16%	10.66%
Feb 1983	4.68%	5.99%	6.10%	5.59%	11.01%
Mar 1983	4.99%	6.89%	6.43%	6.10%	10.71%
Apr 1983	4.75%	5.82%	6.31%	5.63%	10.84%
May 1983	4.50%	6.41%	6.24%	5.72%	10.57%
Jun 1983	4.29%	5.21%	6.16%	5.22%	10.90%
Jul 1983	4.78%	5.72%	6.42%	5.64%	11.12%
Aug 1983	3.89%	4.74%	5.41%	4.68%	11.78%
Sep 1983	4.07%	4.90%	5.57%	4.85%	11.71%
Oct 1983	3.79%	4.64%	5.38%	4.60%	11.64%
Nov 1983	2.84%	3.77%	4.46%	3.69%	11.90%
Dec 1983	3.36%	4.27%	5.00%	4.21%	11.83%
Annual Avg.	4.30%	5.37%	5.86%	5.17%	11.22%
Jan 1984	4.06%	5.04%	5.65%	4.92%	11.97%
Feb 1984	4.25%	5.37%	5.96%	5.19%	11.76%
Mar 1984	4.73%	6.05%	6.38%	5.72%	12.12%
Apr 1984	4.78%	5.33%	6.32%	5.48%	12.51%
May 1984	4.36%	5.30%	6.42%	5.36%	12.78%
Jun 1984	3.54%	4.00%	5.63%	4.39%	13.60%

Exhibit 5. Monthly Risk Premiums Based on IBES Data

Beginning of Month	Average of Merrill Lynch, Salomon Brothers, and Value Line Premiums for Dow Jones Electrics	IBES Premiums for Dow Jones Electrics	IBES Premiums for Entire Electric Industry
Aug 1983	4.68%	4.10%	4.16%
Sep 1983	4.85%	4.43%	4.27%
Oct 1983	4.60%	4.31%	3.90%
Nov 1983	3.69%	3.36%	3.36%
Dec 1983	4.21%	3.86%	3.54%
Jan 1984	4.92%	4.68%	4.18%
Feb 1984	5.19%	5.00%	4.36%
Mar 1984	5.72%	5.35%	4.45%
Apr 1984	5.48%	5.33%	4.23%
May 1984	5.36%	5.26%	4.30%
Jun 1984	4.39%	4.47%	3.40%
Average Premiums	4.83%	4.56%	4.01%

Exhibit 6. Utility Risk Premiums and Interest Rates, 1980–1984

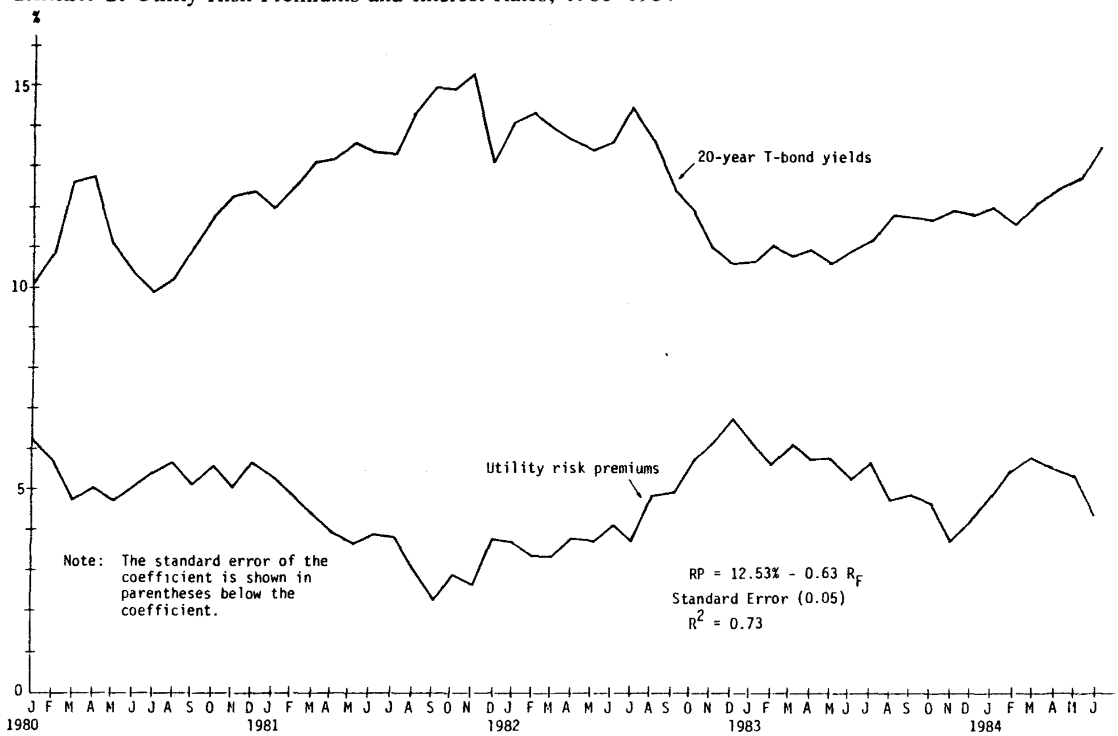


Exhibit 7. Monthly Risk Premiums, Electric Utilities, 1981–1984 (to Date)

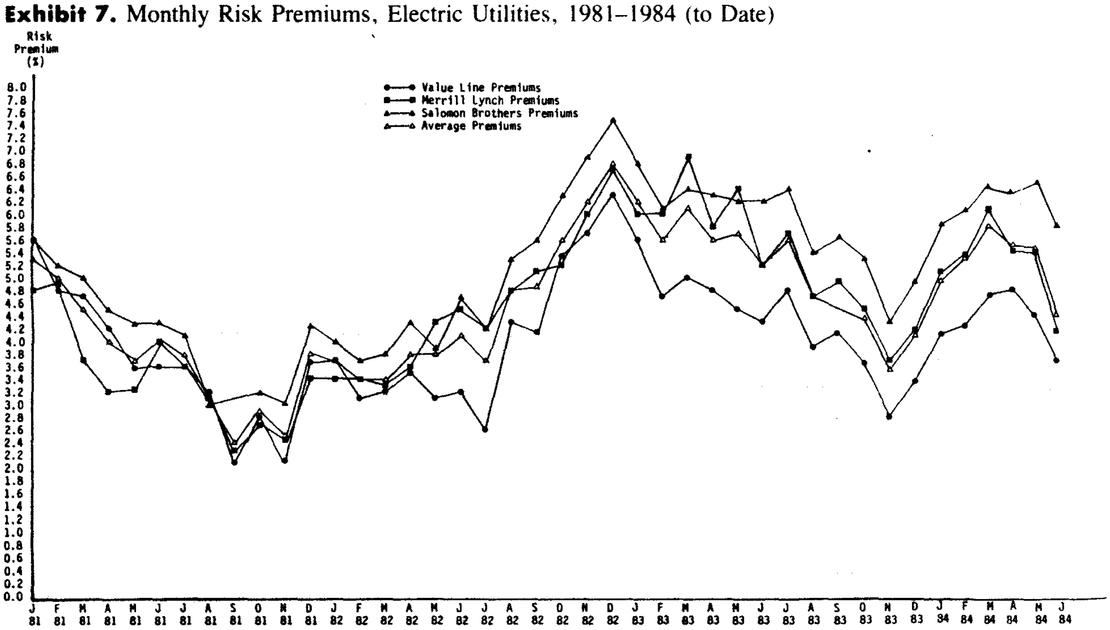
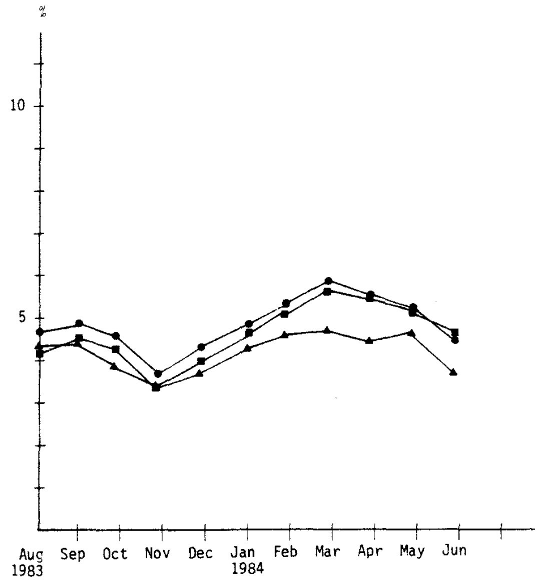


Exhibit 8. Comparative Risk Premium Data



do differ, the differences are not large given the nature of the estimates, and the premiums follow one another closely over time. Since all of the analysts are examining essentially the same data and since utility companies are not competitive with one another, and hence have relatively few secrets, the similarity among the analysts' forecasts is not surprising.

4. The IBES data, presented in Exhibit 5 and plotted in Exhibit 8, contain too few observations to enable us to draw strong conclusions, but (i) the Dow Jones Electrics risk premiums based on our three-analyst data have averaged 27 basis points above premiums based on the larger group of analysts surveyed by IBES and (ii) the premiums on the 11 Dow Jones Electrics have averaged 54 basis points higher than premiums for the entire utility industry followed by IBES. Given the variability in the data, we are, at this point, inclined to attribute these differences to random fluctuations, but as more data become available, it may turn out that the differences are statistically significant. In particular, the 11 electric utilities included in the Dow Jones Utility Index all have large nuclear investments, and this may cause them to be regarded as riskier than the industry average, which includes both nuclear and non-nuclear companies.

Tests of the Reasonableness of the Risk Premium Estimates

So far our claims to the reasonableness of our risk-premium estimates have been based on the reasonableness of our variable measures, particularly the measures of expected dividend growth rates. Essentially, we have argued that since there is strong evidence in the literature in support of analysts' forecasts, risk premiums based on these forecasts are reasonable. In the spirit of positive economics, however, it is also important to demonstrate the reasonableness of our results more directly.

It is theoretically possible to test for the validity of the risk-premium estimates in a CAPM framework. In a cross-sectional estimate of the CAPM equation,

$$(k - R_F)_i = \alpha_0 + \alpha_1\beta_i + u_i, \qquad (5)$$

we would expect

$$\hat{\alpha}_0 = 0 \text{ and } \hat{\alpha}_1 = k_M - R_F = \text{Market risk premium.}$$

This test, of course, would be a joint test of both the CAPM and the reasonableness of our risk-premium estimates. There is a great deal of evidence that questions the empirical validity of the CAPM, especially when applied to regulated utilities. Under these conditions, it is obvious that no unambiguous conclusion can be drawn regarding the efficacy of the premium estimates from such a test.[8]

A simpler and less ambiguous test is to show that the risk premiums are higher for lower rated firms than for higher rated firms. Using 1984 data, we classified the

[8] We carried out the test on a monthly basis for 1984 and found positive but statistically insignificant coefficients. A typical result (for April 1984) follows:

$$(k - R_F)_i = \underset{(0.91)}{3.1675} + \underset{(1.44)}{1.8031}\ \beta_i.$$

The figures in parentheses are standard errors. Utility risk premiums do increase with betas, but the intercept term is not zero as the CAPM would predict, and α_1 is both less than the predicted value and not statistically significant. Again, the observation that the coefficients do not conform to CAPM predictions could be as much a problem with CAPM specification for utilities as with the risk premium estimates.

A similar test was carried out by Friend, Westerfield, and Granito [9]. They tested the CAPM using expectational (survey) data rather than *ex post* holding period returns. They actually found their coefficient of β_i to be negative in all their cross-sectional tests.

Exhibit 9. Relationship between Risk Premiums and Bond Ratings, 1984*

Month	Aaa/AA	AA	Aa/A	A	A/BBB	BBB	Below BBB
January†	—	2.61%	3.06%	3.70%	5.07%	4.90%	9.45%
February	2.98%	3.17%	3.36%	4.03%	5.26%	5.14%	7.97%
March	2.34%	3.46%	3.29%	4.06%	5.43%	5.02%	8.28%
April	2.37%	3.03%	3.29%	3.88%	5.29%	4.97%	6.96%
May	2.00%	2.48%	3.42%	3.72%	4.72%	6.64%	8.81%
June	0.72%	2.17%	2.46%	3.16%	3.76%	5.00%	5.58%
Average	2.08%	2.82%	3.15%	3.76%	4.92%	5.28%	7.84%

*The risk premiums are based on IBES data for the electric utilities followed by both IBES and Salomon Brothers. The number of electric utilities followed by both firms varies from month to month. For the period between January and June 1984, the number of electrics followed by both firms ranged from 96 to 99 utilities.
†In January, there were no Aaa/AA companies. Subsequently, four utilities were upgraded to Aaa/AA.

utility industry into risk groups based on bond ratings. For each rating group, we estimated the average risk premium. The results, presented in Exhibit 9, clearly show that the lower the bond rating, the higher the risk premiums. Our premium estimates therefore would appear to pass this simple test of reasonableness.

Risk Premiums and Interest Rates

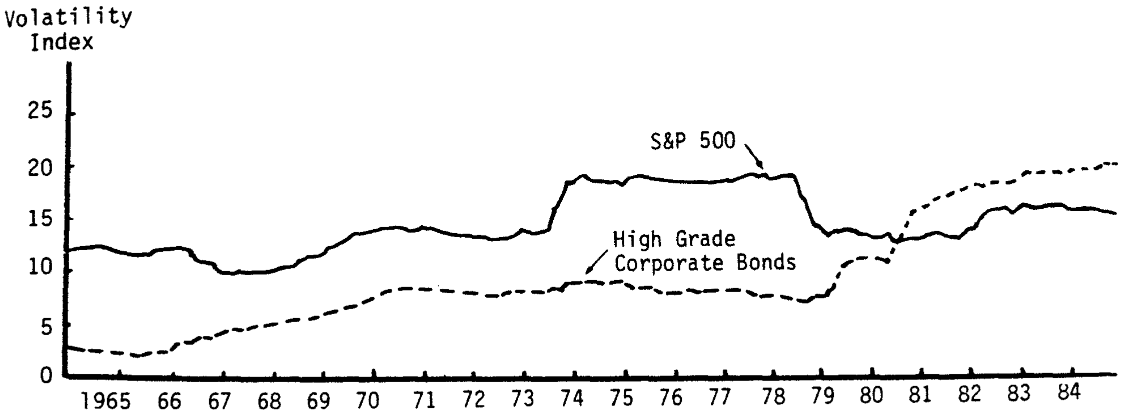
Traditionally, stocks have been regarded as being riskier than bonds because bondholders have a prior claim on earnings and assets. That is, stockholders stand at the end of the line and receive income and/or assets only after the claims of bondholders have been satisfied. However, if interest rates fluctuate, then the holders of long-term bonds can suffer losses (either realized or in an opportunity cost sense) even though they receive all contractually due payments. Therefore, if investors' worries about "interest rate risk" versus "earning power risk" vary over time, then perceived risk differentials between stocks and bonds, and hence risk premiums, will also vary.

Any number of events could occur to cause the perceived riskiness of stocks versus bonds to change, but probably the most pervasive factor, over the 1966–1984 period, is related to inflation. Inflationary expectations are, of course, reflected in interest rates. Therefore, one might expect to find a relationship between risk premiums and interest rates. As we noted in our discussion of Exhibit 3, risk premiums were positively correlated with interest rates from 1966 through 1979, but, beginning in 1980, the relationship turned negative. A possible explanation for this change is given next.

1966–1979 Period. During this period, inflation heated up, fuel prices soared, environmental problems surfaced, and demand for electricity slowed even as expensive new generating units were nearing completion. These cost increases required offsetting rate hikes to maintain profit levels. However, political pressure, combined with administrative procedures that were not designed to deal with a volatile economic environment, led to long periods of "regulatory lag" that caused utilities' earned ROEs to decline in absolute terms and to fall far below the cost of equity. These factors combined to cause utility stockholders to experience huge losses: S&P's Electric Index dropped from a mid-1960s high of 60.90 to a mid-1970s low of 20.41, a decrease of 66.5%. Industrial stocks also suffered losses during this period, but, on average, they were only one third as severe as the utilities' losses. Similarly, investors in long-term bonds had losses, but bond losses were less than half those of utility stocks. Note also that, during this period, (i) bond investors were able to reinvest coupons and maturity payments at rising rates, whereas the earned returns on equity did not rise, and (ii) utilities were providing a rising share of their operating income to debtholders versus stockholders (interest expense/book value of debt was rising, while net income/common equity was declining). This led to a widespread belief that utility commissions would provide enough revenues to keep utilities from going bankrupt (barring a disaster), and hence to protect the bondholders, but that they would not necessarily provide enough revenues either to permit the expected rate of dividend growth to occur or, perhaps, even to allow the dividend to be maintained.

Because of these experiences, investors came to regard inflation as having a more negative effect on utility stocks than on bonds. Therefore, when fears of inflation increased, utilities' measured risk premiums

Exhibit 10. Relative Volatility* of Stocks and Bonds, 1965–1984



*Volatility is measured as the standard deviation of total returns over the last 5 years.
Source: Merrill Lynch, *Quantitative Analysis*, May/June 1984.

also increased. A regression over the period 1966–1979, using our Exhibit 2 data, produced this result:

$$RP = 0.30\% + \underset{(0.22)}{0.73}\, R_F; \qquad r^2 = 0.48.$$

This indicates that a one percentage point increase in the Treasury bond rate produced, on average, a 0.73 percentage point increase in the risk premium, and hence a 1.00 + 0.73 = 1.73 percentage point increase in the cost of equity for utilities.

1980–1984 Period. The situation changed dramatically in 1980 and thereafter. Except for a few companies with nuclear construction problems, the utilities' financial situations stabilized in the early 1980s, and then improved significantly from 1982 to 1984. Both the companies and their regulators were learning to live with inflation; many construction programs were completed; regulatory lags were shortened; and in general the situation was much better for utility equity investors. In the meantime, over most of the 1980–1984 period, interest rates and bond prices fluctuated violently, both in an absolute sense and relative to common stocks. Exhibit 10 shows the volatility of corporate bonds very clearly. Over most of the eighteen-year period, stock returns were much more volatile than returns on bonds. However, that situation changed in October 1979, when the Fed began to focus on the money supply rather than on interest rates.[9]

In the 1980–1984 period, an increase in inflationary expectations has had a more adverse effect on bonds than on utility stocks. If the expected rate of inflation increases, then interest rates *will increase* and bond prices *will fall*. Thus, uncertainty about inflation translates directly into risk in the bond markets. The effect of inflation on stocks, including utility stocks, is less clear. If inflation increases, then utilities should, in theory, be able to obtain rate increases that would offset increases in operating costs and also compensate for the higher cost of equity. Thus, with "proper" regulation, utility stocks would provide a better hedge against unanticipated inflation than would bonds. This hedge did not work at all well during the 1966–1979 period, because inflation-induced increases in operating and capital costs were not offset by timely rate increases. However, as noted earlier, both the utilities and their regulators seem to have learned to live better with inflation during the 1980s.

Since inflation is today regarded as a major investment risk, and since utility stocks now seem to provide a better hedge against unanticipated inflation than do

[9]Because the standard deviations in Exhibit 10 are based on the last five years of data, even if bond returns stabilize, as they did beginning in 1982, their reported volatility will remain high for several more years. Thus, Exhibit 10 gives a rough indication of the current relative riskiness of stocks versus bonds, but the measure is by no means precise or necessarily indicative of future expectations.

bonds, the interest-rate risk inherent in bonds offsets, to a greater extent than was true earlier, the higher operating risk that is inherent in equities. Therefore, when inflationary fears rise, the perceived riskiness of bonds rises, helping to push up interest rates. However, since investors are today less concerned about inflation's impact on utility stocks than on bonds, the utilities' cost of equity does not rise as much as that of debt, so the observed risk premium tends to fall.

For the 1980–1984 period, we found the following relationship (see Exhibit 6):

$$RP = 12.53\% - \underset{(0.05)}{0.63}\, R_F; \qquad r^2 = 0.73.$$

Thus, a one percentage point increase in the T-bond rate, on average, caused the risk premium to fall by 0.63%, and hence it led to a 1.00 − 0.63 = 0.37 percentage point increase in the cost of equity to an average utility. This contrasts sharply with the pre-1980 period, when a one percentage point increase in interest rates led, on average, to a 1.73 percentage point increase in the cost of equity.

Summary and Implications

We began by reviewing a number of earlier studies. From them, we concluded that, for cost of capital estimation purposes, risk premiums must be based on expectations, not on past realized holding period returns. Next, we noted that expectational risk premiums may be estimated either from surveys, such as the ones Charles Benore has conducted, or by use of DCF techniques. Further, we found that, although growth rates for use in the DCF model can be either developed from time-series data or obtained from security analysts, analysts' growth forecasts are more reflective of investors' views, and, hence, in our opinion are preferable for use in risk-premium studies.

Using analysts' growth rates and the DCF model, we estimated risk premiums over several different periods. From 1966 to 1984, risk premiums for both electric utilities and industrial stocks varied widely from year to year. Also, during the first half of the period, the utilities had smaller risk premiums than the industrials, but after the mid-1970s, the risk premiums for the two groups were, on average, about equal.

The effects of changing interest rates on risk premiums shifted dramatically in 1980, at least for the utilities. From 1965 through 1979, inflation generally had a more severe adverse effect on utility stocks than on bonds, and, as a result, an increase in inflationary expectations, as reflected in interest rates, caused an increase in equity risk premiums. However, in 1980 and thereafter, rising inflation and interest rates increased the perceived riskiness of bonds more than that of utility equities, so the relationship between interest rates and utility risk premiums shifted from positive to negative. Earlier, a 1.00 percentage point increase in interest rates had led, on average, to a 1.73% increase in the utilities' cost of equity, but after 1980 a 1.00 percentage point increase in the cost of debt was associated with an increase of only 0.37% in the cost of equity.

Our study also has implications for the use of the CAPM to estimate the cost of equity for utilities. The CAPM studies that we have seen typically use either Ibbotson-Sinquefield or similar historic holding period returns as the basis for estimating the market risk premium. Such usage implicitly assumes (i) that *ex post* returns data can be used to proxy *ex ante* expectations and (ii) that the market risk premium is relatively stable over time. Our analysis suggests that neither of these assumptions is correct; at least for utility stocks, *ex post* returns data do not appear to be reflective of *ex ante* expectations, and risk premiums are volatile, not stable.

Unstable risk premiums also make us question the FERC and FCC proposals to estimate a risk premium for the utilities every two years and then to add this premium to a current Treasury bond rate to determine a utility's cost of equity. Administratively, this proposal would be easy to handle, but risk premiums are simply too volatile to be left in place for two years.

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Chapter 6
Alternative Asset Pricing Models

6.1 Empirical Validity of the CAPM

The last chapter showed that the practical difficulties of implementing the CAPM approach are surmountable. Conceptual and empirical problems remain, however.

At the conceptual level, the CAPM has been submitted to criticisms by academicians and practitioners. Contrary to the core assumption of the CAPM, investors may choose not to diversify, and bear company-specific risk if abnormal returns are expected. A substantial percentage of individual investors are indeed inadequately diversified. Short selling is somewhat restricted, in violation of CAPM assumptions. Factors other than market risk (beta) may also influence investor behavior, such as taxation, firm size, and restrictions on borrowing.

At the empirical level, there have been countless tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as predicted by the CAPM. With few exceptions, the empirical studies agree that the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is shown pictorially in Figure 6-1. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return required from high-beta securities, based on the empirical evidence. Brealey, Myers, and Allen (2006), among many others,[1] provide recent empirical evidence very similar to the relationship depicted in Figure 6-1. This is one of the most

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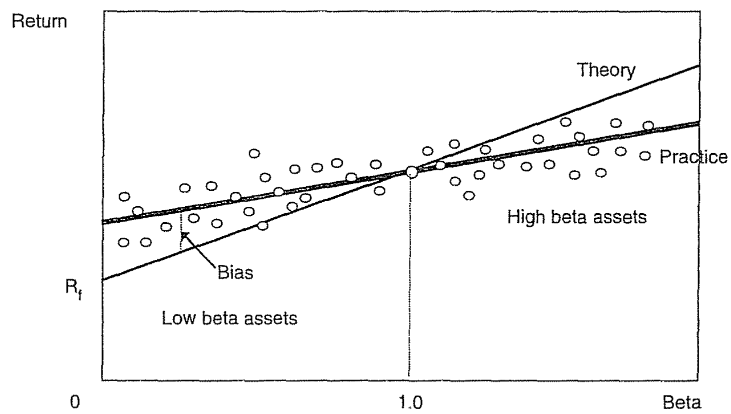
[1] For a summary of the empirical evidence on the CAPM, see Jensen (1972) and Ross (1978). The major empirical tests of the CAPM were published by Friend and Blume (1975), Black, Jensen, and Scholes (1972), Miller and Scholes (1972), Blume and Friend (1973), Blume and Husic (1973), Fama and Macbeth (1972), Basu (1977), Reinganum (1981B), Litzenberger and Ramaswamy (1979), Banz (1981), Gibbons (1982), Stambaugh (1982), Shanken (1985), Black (1993), and Brealey, Myers, and Allen (2006). Evidence in the Canadian context is available in Morin (1980, 1981).

FIGURE 6-1
PREDICTED VS. OBSERVED CAPM RETURN ESTIMATES



well-known results in finance. This result is particularly pertinent for public utilities whose betas are typically less than 1.00. Based on the evidence, as shown in Figure 6-1, a CAPM-based estimate of the cost of capital underestimates the return required from such securities.

The empirical evidence also demonstrates that the SML is highly unstable over short periods and differs significantly from the long-run relationship. This evidence underscores the potential for error in cost of capital estimates that apply the CAPM using historical data over short time periods. The evidence[2] also shows that the addition of specific company risk, as measured by standard deviation, adds explanatory power to the risk-return relationship.

In short, the currently available empirical evidence indicates that the simple version of the CAPM does not provide a perfectly accurate description of the process determining security returns. Explanations for this shortcoming include some or all of the following:

1. The CAPM excludes other important variables that are important in determining security returns, such as size, skewness, and taxes.
2. The market index used in the tests excludes important classes of securities, such as bonds, mortgages, and business investments. There is a further argument that the CAPM can never be really tested and that such a test is infeasible. This is because the market index proxy used

[2] See Friend, Westerfield, and Granito (1978) and Morin (1980).

The model is analogous to the standard CAPM, but with the return on a minimum risk portfolio that is unrelated to market returns, R_Z, replacing the risk-free rate, R_F. The model has been empirically tested by Black, Jensen, and Scholes (1972), who find a flatter than predicted SML, consistent with the model and other researchers' findings. An updated version of the Black-Jensen-Scholes study is available in Brealey, Myers, and Allen (2006) and reaches similar conclusions.

The zero-beta CAPM cannot be literally employed to estimate the cost of capital, since the zero-beta portfolio is a statistical construct difficult to replicate. Attempts to estimate the model are formally equivalent to estimating the constants, a and b, in Equation 6-2. A practical alternative is to employ the Empirical CAPM, to which we now turn.

6.3 Empirical CAPM

As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \acute{\alpha} + \beta \times (MRP - \acute{\alpha}) \qquad (6\text{-}5)$$

where $\acute{\alpha}$ is the "alpha" of the risk-return line, a constant, and the other symbols are defined as before. All the potential vagaries of the CAPM are telescoped into the constant $\acute{\alpha}$, which must be estimated econometrically from market data. Table 6-2 summarizes[10] the empirical evidence on the magnitude of alpha.[11]

[10] The technique is formally applied by Litzenberger, Ramaswamy, and Sosin (1980) to public utilities in order to rectify the CAPM's basic shortcomings. Not only do they summarize the criticisms of the CAPM insofar as they affect public utilities, but they also describe the econometric intricacies involved and the methods of circumventing the statistical problems. Essentially, the average monthly returns over a lengthy time period on a large cross-section of securities grouped into portfolios are related to their corresponding betas by statistical regression techniques; that is, Equation 6-5 is estimated from market data. The utility's beta value is substituted into the equation to produce the cost of equity figure. Their own results demonstrate how the standard CAPM underestimates the cost of equity capital of public utilities because of utilities' high dividend yield and return skewness.

[11] Adapted from Vilbert (2004).

TABLE 6-2
EMPIRICAL EVIDENCE ON THE ALPHA FACTOR

Author	Range of alpha
Fischer (1993)	−3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	−9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

For an alpha in the range of 1%–2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_F + 0.25\,(R_M - R_F) + 0.75\,\beta(R_M - R_F) \qquad (6\text{-}6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.[12]

An alpha range of 1%–2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

[12] Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926–1984 was given by:

$$\text{Return} = 0.0829 + 0.0520\,\beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x(R_M - R_F) + (1 - x)\beta(R_M - R_F)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

long-term risk-free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bring it closer to the CAPM predicted returns.[13]

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$\begin{aligned} K &= 5\% + 0.25\,(12\% - 5\%) + 0.75 \times 0.80\,(12\% - 5\%) \\ &= 5.0\% + 1.8\% + 4.2\% \\ &= 11.0\% \end{aligned}$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

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[13] The lowering of the tax burden on capital gains and dividend income has no impact as far as non-taxable institutional investors (pension funds, 401K, and mutual funds) are concerned, and such investors engage in very large amounts of trading on security markets. It is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.

Chapter 10
Flotation Cost Adjustment

This chapter demonstrates that an adjustment to the market-based cost of capital is necessary for flotation costs associated with the procurement of equity capital, and discusses the mechanics and controversies involved in applying this adjustment.

A typical utility is continuously issuing stock through its dividend reinvestment plan and employee stock option plan, and/or is selling new shares to the public on a regular basis in order to maintain its construction program and meet its mandated service requirements. The costs of issuing these securities are just as real as operating and maintenance expenses or costs incurred to build utility plants, and fair regulatory treatment must permit the recovery of these costs.

10.1 Flotation Cost Allowance

The simple fact of the matter is that common equity capital is not free. Flotation costs associated with common stock issues are very similar to the flotation costs associated with bonds and preferred stocks. Flotation costs are incurred, and if they are not expensed at the time of issue, they must be recovered through a rate of return adjustment. This is routinely done for bond and preferred stock issues by most regulatory commissions. To illustrate the conventional regulatory practice, consider this example. A utility company issues \$100 million of 10-year bonds at an interest rate of 5%. Flotation costs are 2% of the amount of the proceeds, \$2 million. The interest paid each year is \$100 million x 5% = \$5 million. The flotation cost of \$2 million is amortized over the 10-year life of the bond, so that the amortization each year equals \$2M/10 = \$0.2 million. The cost of debt K_d is then:

$$K_d = \frac{\text{Interest} + \text{Amortization of flotation costs}}{\text{Principal} - \text{Unamortized flotation costs}}$$

$$= \frac{\$5{,}000{,}000 + \$200{,}000}{\$100{,}000{,}000 - \$2{,}000{,}000} = 5.31\%$$

The cost of debt needs to be increased by 31 basis points in order to allow for the recovery of flotation costs. The recovery process is very similar for common stock issues.

In the case of issues of new common equity, flotation costs represent the discounts that must be provided to place the new securities. Flotation costs have three major components:

(1) the direct component, which is the compensation to the security underwriter for his marketing/consulting services, for the risks involved in distributing the issue, and for any operating-administrative expenses associated with the issue (printing, legal, prospectus, registration, etc.). The direct component includes the "spread" and "other direct expenses." The "spread" consists of a direct fee paid by the issuer to the underwriter (a.k.a. investment banker). The fee is simply the difference between the price the issuer receives and the offer price, and is directly related to the number of shares issued since it is a per-share cost item. "Other direct expenses" include additional direct costs incurred by the issuer that are not part of the compensation to underwriters such as filing fees, legal fees, and taxes, and are reported on the issuing prospectus. These are largely fixed costs, independent of the issuing price.

(2) the indirect component, or market pressure, which represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue, reflecting the basic economic fact that when the supply of securities is increased following a stock or bond issue, the price falls.[1] Indirect expenses also include the costs of management time spent working on the new issue. They are independent of the issuing price and are not reported on the prospectus.

(3) the potential market price decline related to external market variables; this is often referred to as the allowance for "market break."

To prevent the dilution of existing shareholders' investment resulting from these three factors, an amount must be added to the rate of return on common equity to obtain the final cost of equity financing. This incremental return is referred to as the "flotation cost allowance," and is the sum total of direct flotation expenses, market pressure, and market break.

To demonstrate the need for adjusting the market-determined return on equity for flotation costs, consider the following simple example. Shareholders invest \$100 of capital on which they expect to earn a return of 10%, or \$10, but the company nets \$95 because of issuance costs. It is obvious that the company will have to earn more than 10% (namely, 10.5%) on its net book investment

[1] Another plausible reason for the downward market pressure effect is the information asymmetry between managers and investors. If a stock is undervalued, management will be reluctant to sell new stock, and the reverse is true if the stock is overvalued. Investors are aware of this and therefore mark down the price when companies issue stock, for it must be overvalued.

(rate base) of $95 to provide investors with a $10 return on the money actually invested. This is because only the net proceeds from an equity issue are added to the rate base on which the investor earns.

Here is another example that illustrates the fact that existing shareholders are made worse off when a company issues new stock below the market price. Before the issue, let us say there are 100 shares trading at $10.00 per share. The company issues an additional 25 shares at $5.00. Company value must increase by 25 × $5 = $125. Therefore, after the issue each share is worth:

$$\frac{(100 \times \$10) + \$125}{(100 + 25)} = \$1{,}125/125 = \$9.00$$

New shareholders gain 25 × $4.00 = $100 while old shareholders lose 100 × $1.00 = $100. Thus, the new issue results in a transfer of wealth from existing to new shareholders.

10.2 Magnitude of Flotation Costs

The flotation cost allowance requires an estimated adjustment to the return on equity of approximately 5% to 10%, depending on the size and risk of the issue. A more precise figure can be obtained by surveying empirical studies on utility security offerings.[2]

According to empirical studies by Lee et al. (1996), Borum and Malley (1986), Logue and Jarrow (1978), Pettway (1984), Pettway and Radcliffe (1985), Eckbo and Masulis (1987), Bhagat and Frost (1986), Mikkelson and Partch (1986) and Smith (1977, 1986), underwriting costs and expenses average 4%–5.5% of gross proceeds for utility stock offerings. The more recent study by Lee et al. (1996) finds an average flotation cost of 4.92% for utility common stock offerings, and finds that flotation costs increase progressively for smaller size issues.

As far as the market pressure effect is concerned, empirical studies clearly show that the market pressure effect is real, tangible, and measurable. All the studies support the idea that the announcement of the sale of large blocks of stock produces a decline in a company's stock price, as one would expect

[2] The common practice of issuing common equity shares by public utilities is through a firm public underwriting. In recent years, this practice has given way to shelf registrations. Shelf registrations are cheaper than firm underwritings and will over time decrease the average cost of issuing equity, as the lower marginal cost of bought deals gradually lowers the historical average cost of raising equity. "Bought deals," which is a uniquely Canadian practice, bear strong resemblance to the shelf registration procedure in the U.S.

approximately 2% and 4%–5%, respectively, of the amount of the proceeds from the issue. Moreover, the cost associated with the decline in stock price at announcement date represents approximately 1%–3% as a result of a large utility stock offering.

10.3 Application of the Flotation Cost Adjustment

This section formally demonstrates: (1) how and why it is necessary to apply a flotation cost allowance to the dividend yield component of the DCF model in order to obtain the fair return on equity capital; (2) why the flotation adjustment is permanently required to avoid confiscation even if no further stock issues are contemplated; and (3) why flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years.

An analogy with bond issues, as discussed in Brigham, Aberwald, and Gapenski (1985), is useful here in order to understand the treatment of issue costs in the case of common stock issues. In the case of bonds as seem earlier in the chapter, flotation costs are recovered over the life of the bond in two steps: (1) flotation costs are amortized over the life of the bond and the annual amortization charge is incorporated into revenue requirements, in much the same way that funds invested in utility plant are recovered through depreciation charges; (2) the unamortized portion of flotation costs is included in rate base, and a return is earned on the unamortized costs, in the same way that a return is earned on the undepreciated portion of a utility's plant. The recovery continues year after year until the recovery process is terminated, regardless of whether the utility raises new debt capital. This is analogous to the process of depreciation, which allows the recovery of funds invested in utility plant. The recovery continues whether the utility constructs new facilities or not.

Unlike the case of bonds, common stock has no finite life so that flotation costs cannot be amortized and therefore must be recovered by way of an upward adjustment to the allowed return on equity.

In theory, flotation costs could be expensed and recovered through rates as they are incurred. This procedure, although simple in implementation, is not considered appropriate, however, because the equity capital raised in a given stock issue remains on the utility's common equity account and continues to provide benefits to ratepayers indefinitely. It would be unfair to burden the current generation of ratepayers with the full costs of raising capital when the benefits of that capital extend indefinitely. The common practice of capitalizing rather than expensing eliminates the intergenerational transfers that would prevail if today's ratepayers were asked to bear the full burden of flotation costs of bond/stock issues in order to finance capital projects designed to serve future as well as current generations. Moreover, expensing flotation costs requires an estimate of the market pressure effect for each individual issue, which is likely to prove unreliable. A more reliable approach is to estimate market pressure for a large sample of stock offerings rather than for one individual issue.

An alternative regulatory treatment is to incorporate flotation costs into the rate base as an intangible asset. While this solves the intergenerational problem and compensates investors fairly for their investment, the method clashes with the "used and useful" principle of rate base inclusions. An intangible asset related to flotation costs is unlikely to be viewed as a used and useful asset in public service by regulators.

The conventional approach to flotation cost adjustment can be derived as follows. From the standard DCF model, the investor's required return on equity capital is expressed as:

$$K = D_1/P_0 + g \qquad (10\text{-}1)$$

If P_0 is regarded as the proceeds per share actually received by the company from which dividends and earnings will be generated, that is, P_0 equals B_0, the book value per share, then the company's required return is:

$$r = D_1/B_0 + g \qquad (10\text{-}2)$$

Denoting the percentage flotation costs f, the proceeds per share B_0 are related to market price P_0 as follows:

$$P - fP = B_0$$

$$P(1 - f) = B_0 \qquad (10\text{-}3)$$

Substituting Equation 10-3 into 10-2, we obtain:

$$r = D_1/P(1 - f) + g \qquad (10\text{-}4)$$

which is the utility's required return adjusted for flotation cost.[3]

[3] Another way to look at it is that in order to prevent dilution of book value per share, the market-to-book ratio must be at least $1/(1 - f)$. The Target Market-to-Book method discussed in Chapter 12 can be used to translate the DCF cost of equity figure into an appropriate allowed return on book equity. As shown in Chapter 12, the allowed return consistent with a target M/B ratio that allows for the recapture of flotation costs is:

$$r = M/B\,(K - g) + g$$

Equation 10-4 is often referred to as the "conventional approach" to flotation cost adjustment. Its use in regulatory proceedings by cost of capital witnesses is widespread. The formula is discussed in several college-level corporate finance textbooks, such as Brigham and Ehrhardt (2005).

EXAMPLE 10-1

For flotation costs of 5%, dividing the expected dividend by 0.95 will produce the adjusted cost of equity capital. For a dividend yield of 6%, for example, the magnitude of the adjustment is 32 basis points: .06 / .95 = .0632.

The following illustration adapted from Brigham, Aberwald, and Gapenski (1985) shows that: (1) even if no further stock issues are contemplated, the flotation adjustment is still permanently required to keep shareholders whole, and (2) flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years, even if no future financing is contemplated. The flotation cost adjustment process is shown in Tables 10-3 through 10-5 using illustrative market data.

The assumptions used in the computation are displayed in Table 10-3. The stock is selling in the market for $100, and investors expect the firm to pay a dividend of $6.00, which will grow at a rate of 5% thereafter. The traditional DCF cost of equity is thus $k = D/P + g = 6/100 + .05 = 11\%$, or $11.00 in the first year. 6% of the 11%, or $6.00, will come from dividends, so that the remaining 5%, or $5.00, must then come from capital gains. To get a capital gain of $5.00 from $4.75 of retained earnings, the earnings retained must clearly earn more than 11%. Therefore, if the firm sells one share of stock, incurring a flotation cost of 5%, the traditional DCF cost of equity adjusted for flotation cost is thus $ROE = D/P(1 - f) + g = .06 / .95 + .05 = 11.32\%$.

TABLE 10-3
ASSUMPTIONS

ISSUE PRICE =	$100.00
FLOTATION COST =	5.00%
DIVIDEND YIELD =	6.00%
GROWTH =	5.00%
EQUITY RETURN = (D/P + g)	**11.00%**
ALLOWED RETURN ON EQUITY = D/P(1 − f) + g)	**11.32%**

As shown in Table 10-4, the initial book value (rate base) is the net proceeds from the stock issue, which are $95, that is, the market price of $100 less the 5% flotation cost. The table demonstrates that only if the company is allowed to earn 11.32% on rate base will investors earn their cost of equity of 11.00%. Column 1 shows the initial common stock account, while Column 2 shows the cumulative retained earnings balance, starting at zero, and steadily increasing from the retention of earnings. Total equity in Column 3 is the sum of common stock capital and retained earnings. The stock price in Column 4 is obtained from the seminal DCF formula: $D_1/(k - g)$. Earnings per share in Column 6 is simply the allowed return of 11.32% times the total common equity base. Dividends start at $6.00 and grow at 5% thereafter, which they must do if investors are to earn an 11% return. The dividend payout ratio remains constant, as per the assumption of the DCF model. All quantities, stock price, book value, earnings, and dividends grow at a 5% rate, as shown at the bottom of the relevant columns.

Only if the company is allowed to earn 11.32% on equity do investors earn 11%. For example, if the company is allowed only 11.00%, the stock price drops from $105.00 to $104.70 in the second year, inflicting a loss on shareholders. This is shown in Table 10-5. The growth rate drops from 5% to 4.68%. Thus, investors only earn 10.68% on their investment. It is noteworthy that the adjustment is always required each and every year, whether or not new stock issues are sold in the future, and that the allowed return on equity must be earned on total equity, including retained earnings, for investors to earn the cost of equity.

Note also that the 11.32% return must be applied to the total equity capital invested, including the retained earnings component. To see this, consider the following scenario. In year 1, investors require 11% on their $100 investment, that is, $11.00. But the company only earns $10.75, of which it pays out $6.00 in dividends and retains the balance of $4.75. To give investors the $5.00 change in market value (5% capital gain) needed to add to the $6.00 dividend to produce the $11.00 total DCF return of 11%, the $4.75 must earn more than 11%, that is, it must earn 11.32%.

Flotation Cost and the Extended DCF Model

The flotation cost adjustment can also be approached in the context of the more general extended DCF model discussed in Chapter 8. Recall the extended DCF expression for cost of equity capital under the assumption of continuous external stock financing:

$$K = D_1/P + br + sv \qquad (10\text{-}5)$$

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The Capital Asset Pricing Model: Theory and Evidence

Eugene F. Fama and Kenneth R. French

The capital asset pricing model (CAPM) of William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). Four decades later, the CAPM is still widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. It is the centerpiece of MBA investment courses. Indeed, it is often the only asset pricing model taught in these courses.[1]

The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor—poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model. For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive "market portfolio" that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. Even if we take a narrow view of the model and limit its purview to traded financial assets, is it

[1] Although every asset pricing model is a capital asset pricing model, the finance profession reserves the acronym CAPM for the specific model of Sharpe (1964), Lintner (1965) and Black (1972) discussed here. Thus, throughout the paper we refer to the Sharpe-Lintner-Black model as the CAPM.

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legitimate to limit further the market portfolio to U.S. common stocks (a typical choice), or should the market be expanded to include bonds, and other financial assets, perhaps around the world? In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid.

We begin by outlining the logic of the CAPM, focusing on its predictions about risk and expected return. We then review the history of empirical work and what it says about shortcomings of the CAPM that pose challenges to be explained by alternative models.

The Logic of the CAPM

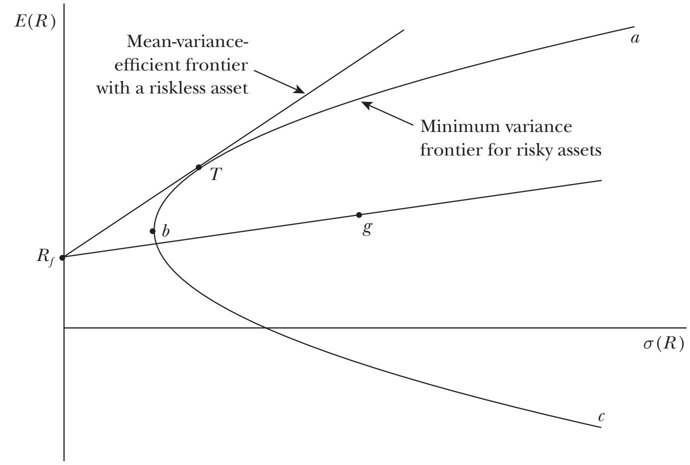
The CAPM builds on the model of portfolio choice developed by Harry Markowitz (1959). In Markowitz's model, an investor selects a portfolio at time $t - 1$ that produces a stochastic return at t. The model assumes investors are risk averse and, when choosing among portfolios, they care only about the mean and variance of their one-period investment return. As a result, investors choose "mean-variance-efficient" portfolios, in the sense that the portfolios 1) minimize the variance of portfolio return, given expected return, and 2) maximize expected return, given variance. Thus, the Markowitz approach is often called a "mean-variance model."

The portfolio model provides an algebraic condition on asset weights in mean-variance-efficient portfolios. The CAPM turns this algebraic statement into a testable prediction about the relation between risk and expected return by identifying a portfolio that must be efficient if asset prices are to clear the market of all assets.

Sharpe (1964) and Lintner (1965) add two key assumptions to the Markowitz model to identify a portfolio that must be mean-variance-efficient. The first assumption is *complete agreement*: given market clearing asset prices at $t - 1$, investors agree on the joint distribution of asset returns from $t - 1$ to t. And this distribution is the true one—that is, it is the distribution from which the returns we use to test the model are drawn. The second assumption is that there is *borrowing and lending at a risk-free rate*, which is the same for all investors and does not depend on the amount borrowed or lent.

Figure 1 describes portfolio opportunities and tells the CAPM story. The horizontal axis shows portfolio risk, measured by the standard deviation of portfolio return; the vertical axis shows expected return. The curve *abc*, which is called the minimum variance frontier, traces combinations of expected return and risk for portfolios of risky assets that minimize return variance at different levels of expected return. (These portfolios do not include risk-free borrowing and lending.) The tradeoff between risk and expected return for minimum variance portfolios is apparent. For example, an investor who wants a high expected return, perhaps at point *a*, must accept high volatility. At point *T*, the investor can have an interme-

Figure 1
Investment Opportunities



diate expected return with lower volatility. If there is no risk-free borrowing or lending, only portfolios above *b* along *abc* are mean-variance-efficient, since these portfolios also maximize expected return, given their return variances.

Adding risk-free borrowing and lending turns the efficient set into a straight line. Consider a portfolio that invests the proportion x of portfolio funds in a risk-free security and $1 - x$ in some portfolio *g*. If all funds are invested in the risk-free security—that is, they are loaned at the risk-free rate of interest—the result is the point R_f in Figure 1, a portfolio with zero variance and a risk-free rate of return. Combinations of risk-free lending and positive investment in *g* plot on the straight line between R_f and *g*. Points to the right of *g* on the line represent borrowing at the risk-free rate, with the proceeds from the borrowing used to increase investment in portfolio *g*. In short, portfolios that combine risk-free lending or borrowing with some risky portfolio *g* plot along a straight line from R_f through *g* in Figure 1.[2]

[2] Formally, the return, expected return and standard deviation of return on portfolios of the risk-free asset *f* and a risky portfolio *g* vary with x, the proportion of portfolio funds invested in *f*, as

$$R_p = xR_f + (1 - x)R_g,$$

$$E(R_p) = xR_f + (1 - x)E(R_g),$$

$$\sigma(R_p) = (1 - x)\sigma(R_g), \; x \leq 1.0,$$

which together imply that the portfolios plot along the line from R_f through *g* in Figure 1.

To obtain the mean-variance-efficient portfolios available with risk-free borrowing and lending, one swings a line from R_f in Figure 1 up and to the left as far as possible, to the tangency portfolio T. We can then see that all efficient portfolios are combinations of the risk-free asset (either risk-free borrowing or lending) and a single risky tangency portfolio, T. This key result is Tobin's (1958) "separation theorem."

The punch line of the CAPM is now straightforward. With complete agreement about distributions of returns, all investors see the same opportunity set (Figure 1), and they combine the same risky tangency portfolio T with risk-free lending or borrowing. Since all investors hold the same portfolio T of risky assets, it must be the value-weight market portfolio of risky assets. Specifically, each risky asset's weight in the tangency portfolio, which we now call M (for the "market"), must be the total market value of all outstanding units of the asset divided by the total market value of all risky assets. In addition, the risk-free rate must be set (along with the prices of risky assets) to clear the market for risk-free borrowing and lending.

In short, the CAPM assumptions imply that the market portfolio M must be on the minimum variance frontier if the asset market is to clear. This means that the algebraic relation that holds for any minimum variance portfolio must hold for the market portfolio. Specifically, if there are N risky assets,

$$\text{(Minimum Variance Condition for } M) \quad E(R_i) = E(R_{ZM}) + [E(R_M) - E(R_{ZM})]\beta_{iM}, \; i = 1, \ldots, N.$$

In this equation, $E(R_i)$ is the expected return on asset i, and β_{iM}, the market beta of asset i, is the covariance of its return with the market return divided by the variance of the market return,

$$\text{(Market Beta)} \quad \beta_{iM} = \frac{\mathrm{cov}(R_i, R_M)}{\sigma^2(R_M)}.$$

The first term on the right-hand side of the minimum variance condition, $E(R_{ZM})$, is the expected return on assets that have market betas equal to zero, which means their returns are uncorrelated with the market return. The second term is a risk premium—the market beta of asset i, β_{iM}, times the premium per unit of beta, which is the expected market return, $E(R_M)$, minus $E(R_{ZM})$.

Since the market beta of asset i is also the slope in the regression of its return on the market return, a common (and correct) interpretation of beta is that it measures the sensitivity of the asset's return to variation in the market return. But there is another interpretation of beta more in line with the spirit of the portfolio model that underlies the CAPM. The risk of the market portfolio, as measured by the variance of its return (the denominator of β_{iM}), is a weighted average of the covariance risks of the assets in M (the numerators of β_{iM} for different assets).

Thus, β_{iM} is the covariance risk of asset i in M measured relative to the average covariance risk of assets, which is just the variance of the market return.[3] In economic terms, β_{iM} is proportional to the risk each dollar invested in asset i contributes to the market portfolio.

The last step in the development of the Sharpe-Lintner model is to use the assumption of risk-free borrowing and lending to nail down $E(R_{ZM})$, the expected return on zero-beta assets. A risky asset's return is uncorrelated with the market return—its beta is zero—when the average of the asset's covariances with the returns on other assets just offsets the variance of the asset's return. Such a risky asset is riskless in the market portfolio in the sense that it contributes nothing to the variance of the market return.

When there is risk-free borrowing and lending, the expected return on assets that are uncorrelated with the market return, $E(R_{ZM})$, must equal the risk-free rate, R_f. The relation between expected return and beta then becomes the familiar Sharpe-Lintner CAPM equation,

$$\text{(Sharpe-Lintner CAPM)} \quad E(R_i) = R_f + [E(R_M) - R_f)]\beta_{iM},\ i = 1, \ldots, N.$$

In words, the expected return on any asset i is the risk-free interest rate, R_f, plus a risk premium, which is the asset's market beta, β_{iM}, times the premium per unit of beta risk, $E(R_M) - R_f$.

Unrestricted risk-free borrowing and lending is an unrealistic assumption. Fischer Black (1972) develops a version of the CAPM without risk-free borrowing or lending. He shows that the CAPM's key result—that the market portfolio is mean-variance-efficient—can be obtained by instead allowing unrestricted short sales of risky assets. In brief, back in Figure 1, if there is no risk-free asset, investors select portfolios from along the mean-variance-efficient frontier from a to b. Market clearing prices imply that when one weights the efficient portfolios chosen by investors by their (positive) shares of aggregate invested wealth, the resulting portfolio is the market portfolio. The market portfolio is thus a portfolio of the efficient portfolios chosen by investors. With unrestricted short selling of risky assets, portfolios made up of efficient portfolios are themselves efficient. Thus, the market portfolio is efficient, which means that the minimum variance condition for M given above holds, and it is the expected return-risk relation of the Black CAPM.

The relations between expected return and market beta of the Black and Sharpe-Lintner versions of the CAPM differ only in terms of what each says about $E(R_{ZM})$, the expected return on assets uncorrelated with the market. The Black version says only that $E(R_{ZM})$ must be less than the expected market return, so the

[3] Formally, if x_{iM} is the weight of asset i in the market portfolio, then the variance of the portfolio's return is

$$\sigma^2(R_M) = Cov(R_M, R_M) = Cov\left(\sum_{i=1}^{N} x_{iM}R_i,\ R_M\right) = \sum_{i=1}^{N} x_{iM}Cov(R_i,\ R_M).$$

premium for beta is positive. In contrast, in the Sharpe-Lintner version of the model, $E(R_{ZM})$ must be the risk-free interest rate, R_f, and the premium per unit of beta risk is $E(R_M) - R_f$.

The assumption that short selling is unrestricted is as unrealistic as unrestricted risk-free borrowing and lending. If there is no risk-free asset and short sales of risky assets are not allowed, mean-variance investors still choose efficient portfolios—points above *b* on the *abc* curve in Figure 1. But when there is no short selling of risky assets and no risk-free asset, the algebra of portfolio efficiency says that portfolios made up of efficient portfolios are not typically efficient. This means that the market portfolio, which is a portfolio of the efficient portfolios chosen by investors, is not typically efficient. And the CAPM relation between expected return and market beta is lost. This does not rule out predictions about expected return and betas with respect to other efficient portfolios—if theory can specify portfolios that must be efficient if the market is to clear. But so far this has proven impossible.

In short, the familiar CAPM equation relating expected asset returns to their market betas is just an application to the market portfolio of the relation between expected return and portfolio beta that holds in any mean-variance-efficient portfolio. The efficiency of the market portfolio is based on many unrealistic assumptions, including complete agreement and either unrestricted risk-free borrowing and lending or unrestricted short selling of risky assets. But all interesting models involve unrealistic simplifications, which is why they must be tested against data.

Early Empirical Tests

Tests of the CAPM are based on three implications of the relation between expected return and market beta implied by the model. First, expected returns on all assets are linearly related to their betas, and no other variable has marginal explanatory power. Second, the beta premium is positive, meaning that the expected return on the market portfolio exceeds the expected return on assets whose returns are uncorrelated with the market return. Third, in the Sharpe-Lintner version of the model, assets uncorrelated with the market have expected returns equal to the risk-free interest rate, and the beta premium is the expected market return minus the risk-free rate. Most tests of these predictions use either cross-section or time-series regressions. Both approaches date to early tests of the model.

Tests on Risk Premiums

The early cross-section regression tests focus on the Sharpe-Lintner model's predictions about the intercept and slope in the relation between expected return and market beta. The approach is to regress a cross-section of average asset returns on estimates of asset betas. The model predicts that the intercept in these regressions is the risk-free interest rate, R_f, and the coefficient on beta is the expected return on the market in excess of the risk-free rate, $E(R_M) - R_f$.

Two problems in these tests quickly became apparent. First, estimates of beta for individual assets are imprecise, creating a measurement error problem when they are used to explain average returns. Second, the regression residuals have common sources of variation, such as industry effects in average returns. Positive correlation in the residuals produces downward bias in the usual ordinary least squares estimates of the standard errors of the cross-section regression slopes.

To improve the precision of estimated betas, researchers such as Blume (1970), Friend and Blume (1970) and Black, Jensen and Scholes (1972) work with portfolios, rather than individual securities. Since expected returns and market betas combine in the same way in portfolios, if the CAPM explains security returns it also explains portfolio returns.[4] Estimates of beta for diversified portfolios are more precise than estimates for individual securities. Thus, using portfolios in cross-section regressions of average returns on betas reduces the critical errors in variables problem. Grouping, however, shrinks the range of betas and reduces statistical power. To mitigate this problem, researchers sort securities on beta when forming portfolios; the first portfolio contains securities with the lowest betas, and so on, up to the last portfolio with the highest beta assets. This sorting procedure is now standard in empirical tests.

Fama and MacBeth (1973) propose a method for addressing the inference problem caused by correlation of the residuals in cross-section regressions. Instead of estimating a single cross-section regression of average monthly returns on betas, they estimate month-by-month cross-section regressions of monthly returns on betas. The times-series means of the monthly slopes and intercepts, along with the standard errors of the means, are then used to test whether the average premium for beta is positive and whether the average return on assets uncorrelated with the market is equal to the average risk-free interest rate. In this approach, the standard errors of the average intercept and slope are determined by the month-to-month variation in the regression coefficients, which fully captures the effects of residual correlation on variation in the regression coefficients, but sidesteps the problem of actually estimating the correlations. The residual correlations are, in effect, captured via repeated sampling of the regression coefficients. This approach also becomes standard in the literature.

Jensen (1968) was the first to note that the Sharpe-Lintner version of the

[4] Formally, if x_{ip}, $i = 1, \ldots, N$, are the weights for assets in some portfolio p, the expected return and market beta for the portfolio are related to the expected returns and betas of assets as

$$E(R_p) = \sum_{i=1}^{N} x_{ip}E(R_i), \text{ and } \beta_{pM} = \sum_{i=1}^{N} x_{ip}\beta_{pM}.$$

Thus, the CAPM relation between expected return and beta,

$$E(R_i) = E(R_f) + [E(R_M) - E(R_f)]\beta_{iM},$$

holds when asset i is a portfolio, as well as when i is an individual security.

relation between expected return and market beta also implies a time-series regression test. The Sharpe-Lintner CAPM says that the expected value of an asset's excess return (the asset's return minus the risk-free interest rate, $R_{it} - R_{ft}$) is completely explained by its expected CAPM risk premium (its beta times the expected value of $R_{Mt} - R_{ft}$). This implies that "Jensen's alpha," the intercept term in the time-series regression,

$$\text{(Time-Series Regression)} \quad R_{it} - R_{ft} = \alpha_i + \beta_{iM}(R_{Mt} - R_{ft}) + \varepsilon_{it},$$

is zero for each asset.

The early tests firmly reject the Sharpe-Lintner version of the CAPM. There is a positive relation between beta and average return, but it is too "flat." Recall that, in cross-section regressions, the Sharpe-Lintner model predicts that the intercept is the risk-free rate and the coefficient on beta is the expected market return in excess of the risk-free rate, $E(R_M) - R_f$. The regressions consistently find that the intercept is greater than the average risk-free rate (typically proxied as the return on a one-month Treasury bill), and the coefficient on beta is less than the average excess market return (proxied as the average return on a portfolio of U.S. common stocks minus the Treasury bill rate). This is true in the early tests, such as Douglas (1968), Black, Jensen and Scholes (1972), Miller and Scholes (1972), Blume and Friend (1973) and Fama and MacBeth (1973), as well as in more recent cross-section regression tests, like Fama and French (1992).

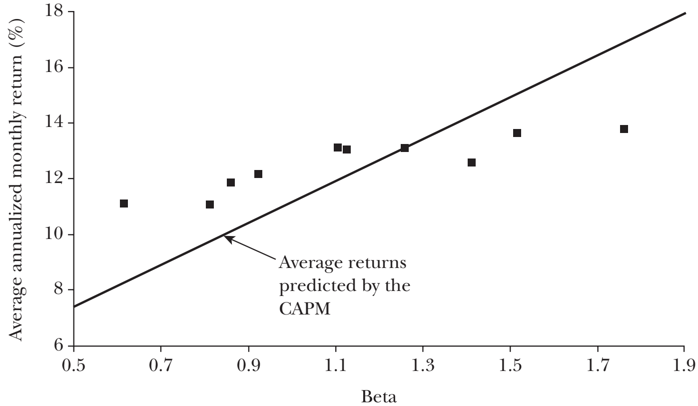
The evidence that the relation between beta and average return is too flat is confirmed in time-series tests, such as Friend and Blume (1970), Black, Jensen and Scholes (1972) and Stambaugh (1982). The intercepts in time-series regressions of excess asset returns on the excess market return are positive for assets with low betas and negative for assets with high betas.

Figure 2 provides an updated example of the evidence. In December of each year, we estimate a preranking beta for every NYSE (1928–2003), AMEX (1963–2003) and NASDAQ (1972–2003) stock in the CRSP (Center for Research in Security Prices of the University of Chicago) database, using two to five years (as available) of prior monthly returns.[5] We then form ten value-weight portfolios based on these preranking betas and compute their returns for the next twelve months. We repeat this process for each year from 1928 to 2003. The result is 912 monthly returns on ten beta-sorted portfolios. Figure 2 plots each portfolio's average return against its postranking beta, estimated by regressing its monthly returns for 1928–2003 on the return on the CRSP value-weight portfolio of U.S. common stocks.

The Sharpe-Lintner CAPM predicts that the portfolios plot along a straight

[5] To be included in the sample for year t, a security must have market equity data (price times shares outstanding) for December of $t - 1$, and CRSP must classify it as ordinary common equity. Thus, we exclude securities such as American Depository Receipts (ADRs) and Real Estate Investment Trusts (REITs).

Figure 2
Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on Prior Beta, 1928–2003



line, with an intercept equal to the risk-free rate, R_f, and a slope equal to the expected excess return on the market, $E(R_M) - R_f$. We use the average one-month Treasury bill rate and the average excess CRSP market return for 1928–2003 to estimate the predicted line in Figure 2. Confirming earlier evidence, the relation between beta and average return for the ten portfolios is much flatter than the Sharpe-Lintner CAPM predicts. The returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low. For example, the predicted return on the portfolio with the lowest beta is 8.3 percent per year; the actual return is 11.1 percent. The predicted return on the portfolio with the highest beta is 16.8 percent per year; the actual is 13.7 percent.

Although the observed premium per unit of beta is lower than the Sharpe-Lintner model predicts, the relation between average return and beta in Figure 2 is roughly linear. This is consistent with the Black version of the CAPM, which predicts only that the beta premium is positive. Even this less restrictive model, however, eventually succumbs to the data.

Testing Whether Market Betas Explain Expected Returns

The Sharpe-Lintner and Black versions of the CAPM share the prediction that the market portfolio is mean-variance-efficient. This implies that differences in expected return across securities and portfolios are entirely explained by differences in market beta; other variables should add nothing to the explanation of expected return. This prediction plays a prominent role in tests of the CAPM. In the early work, the weapon of choice is cross-section regressions.

In the framework of Fama and MacBeth (1973), one simply adds predetermined explanatory variables to the month-by-month cross-section regressions of returns on beta. If all differences in expected return are explained by beta, the average slopes on the additional variables should not be reliably different from zero. Clearly, the trick in the cross-section regression approach is to choose specific additional variables likely to expose any problems of the CAPM prediction that, because the market portfolio is efficient, market betas suffice to explain expected asset returns.

For example, in Fama and MacBeth (1973) the additional variables are squared market betas (to test the prediction that the relation between expected return and beta is linear) and residual variances from regressions of returns on the market return (to test the prediction that market beta is the only measure of risk needed to explain expected returns). These variables do not add to the explanation of average returns provided by beta. Thus, the results of Fama and MacBeth (1973) are consistent with the hypothesis that their market proxy—an equal-weight portfolio of NYSE stocks—is on the minimum variance frontier.

The hypothesis that market betas completely explain expected returns can also be tested using time-series regressions. In the time-series regression described above (the excess return on asset i regressed on the excess market return), the intercept is the difference between the asset's average excess return and the excess return predicted by the Sharpe-Lintner model, that is, beta times the average excess market return. If the model holds, there is no way to group assets into portfolios whose intercepts are reliably different from zero. For example, the intercepts for a portfolio of stocks with high ratios of earnings to price and a portfolio of stocks with low earning-price ratios should both be zero. Thus, to test the hypothesis that market betas suffice to explain expected returns, one estimates the time-series regression for a set of assets (or portfolios) and then jointly tests the vector of regression intercepts against zero. The trick in this approach is to choose the left-hand-side assets (or portfolios) in a way likely to expose any shortcoming of the CAPM prediction that market betas suffice to explain expected asset returns.

In early applications, researchers use a variety of tests to determine whether the intercepts in a set of time-series regressions are all zero. The tests have the same asymptotic properties, but there is controversy about which has the best small sample properties. Gibbons, Ross and Shanken (1989) settle the debate by providing an F-test on the intercepts that has exact small-sample properties. They also show that the test has a simple economic interpretation. In effect, the test constructs a candidate for the tangency portfolio T in Figure 1 by optimally combining the market proxy and the left-hand-side assets of the time-series regressions. The estimator then tests whether the efficient set provided by the combination of this tangency portfolio and the risk-free asset is reliably superior to the one obtained by combining the risk-free asset with the market proxy alone. In other words, the Gibbons, Ross and Shanken statistic tests whether the market proxy is the tangency portfolio in the set of portfolios that can be constructed by combining the market portfolio with the specific assets used as dependent variables in the time-series regressions.

Enlightened by this insight of Gibbons, Ross and Shanken (1989), one can see a similar interpretation of the cross-section regression test of whether market betas suffice to explain expected returns. In this case, the test is whether the additional explanatory variables in a cross-section regression identify patterns in the returns on the left-hand-side assets that are not explained by the assets' market betas. This amounts to testing whether the market proxy is on the minimum variance frontier that can be constructed using the market proxy and the left-hand-side assets included in the tests.

An important lesson from this discussion is that time-series and cross-section regressions do not, strictly speaking, test the CAPM. What is literally tested is whether a specific proxy for the market portfolio (typically a portfolio of U.S. common stocks) is efficient in the set of portfolios that can be constructed from it and the left-hand-side assets used in the test. One might conclude from this that the CAPM has never been tested, and prospects for testing it are not good because 1) the set of left-hand-side assets does not include all marketable assets, and 2) data for the true market portfolio of all assets are likely beyond reach (Roll, 1977; more on this later). But this criticism can be leveled at tests of any economic model when the tests are less than exhaustive or when they use proxies for the variables called for by the model.

The bottom line from the early cross-section regression tests of the CAPM, such as Fama and MacBeth (1973), and the early time-series regression tests, like Gibbons (1982) and Stambaugh (1982), is that standard market proxies seem to be on the minimum variance frontier. That is, the central predictions of the Black version of the CAPM, that market betas suffice to explain expected returns and that the risk premium for beta is positive, seem to hold. But the more specific prediction of the Sharpe-Lintner CAPM that the premium per unit of beta is the expected market return minus the risk-free interest rate is consistently rejected.

The success of the Black version of the CAPM in early tests produced a consensus that the model is a good description of expected returns. These early results, coupled with the model's simplicity and intuitive appeal, pushed the CAPM to the forefront of finance.

Recent Tests

Starting in the late 1970s, empirical work appears that challenges even the Black version of the CAPM. Specifically, evidence mounts that much of the variation in expected return is unrelated to market beta.

The first blow is Basu's (1977) evidence that when common stocks are sorted on earnings-price ratios, future returns on high E/P stocks are higher than predicted by the CAPM. Banz (1981) documents a size effect: when stocks are sorted on market capitalization (price times shares outstanding), average returns on small stocks are higher than predicted by the CAPM. Bhandari (1988) finds that high debt-equity ratios (book value of debt over the market value of equity, a measure of leverage) are associated with returns that are too high relative to their market betas.

Finally, Statman (1980) and Rosenberg, Reid and Lanstein (1985) document that stocks with high book-to-market equity ratios (B/M, the ratio of the book value of a common stock to its market value) have high average returns that are not captured by their betas.

There is a theme in the contradictions of the CAPM summarized above. Ratios involving stock prices have information about expected returns missed by market betas. On reflection, this is not surprising. A stock's price depends not only on the expected cash flows it will provide, but also on the expected returns that discount expected cash flows back to the present. Thus, in principle, the cross-section of prices has information about the cross-section of expected returns. (A high expected return implies a high discount rate and a low price.) The cross-section of stock prices is, however, arbitrarily affected by differences in scale (or units). But with a judicious choice of scaling variable X, the ratio X/P can reveal differences in the cross-section of expected stock returns. Such ratios are thus prime candidates to expose shortcomings of asset pricing models—in the case of the CAPM, shortcomings of the prediction that market betas suffice to explain expected returns (Ball, 1978). The contradictions of the CAPM summarized above suggest that earnings-price, debt-equity and book-to-market ratios indeed play this role.

Fama and French (1992) update and synthesize the evidence on the empirical failures of the CAPM. Using the cross-section regression approach, they confirm that size, earnings-price, debt-equity and book-to-market ratios add to the explanation of expected stock returns provided by market beta. Fama and French (1996) reach the same conclusion using the time-series regression approach applied to portfolios of stocks sorted on price ratios. They also find that different price ratios have much the same information about expected returns. This is not surprising given that price is the common driving force in the price ratios, and the numerators are just scaling variables used to extract the information in price about expected returns.

Fama and French (1992) also confirm the evidence (Reinganum, 1981; Stambaugh, 1982; Lakonishok and Shapiro, 1986) that the relation between average return and beta for common stocks is even flatter after the sample periods used in the early empirical work on the CAPM. The estimate of the beta premium is, however, clouded by statistical uncertainty (a large standard error). Kothari, Shanken and Sloan (1995) try to resuscitate the Sharpe-Lintner CAPM by arguing that the weak relation between average return and beta is just a chance result. But the strong evidence that other variables capture variation in expected return missed by beta makes this argument irrelevant. If betas do not suffice to explain expected returns, the market portfolio is not efficient, and the CAPM is dead in its tracks. Evidence on the size of the market premium can neither save the model nor further doom it.

The synthesis of the evidence on the empirical problems of the CAPM provided by Fama and French (1992) serves as a catalyst, marking the point when it is generally acknowledged that the CAPM has potentially fatal problems. Research then turns to explanations.

One possibility is that the CAPM's problems are spurious, the result of data dredging—publication-hungry researchers scouring the data and unearthing contradictions that occur in specific samples as a result of chance. A standard response to this concern is to test for similar findings in other samples. Chan, Hamao and Lakonishok (1991) find a strong relation between book-to-market equity (B/M) and average return for Japanese stocks. Capaul, Rowley and Sharpe (1993) observe a similar B/M effect in four European stock markets and in Japan. Fama and French (1998) find that the price ratios that produce problems for the CAPM in U.S. data show up in the same way in the stock returns of twelve non-U.S. major markets, and they are present in emerging market returns. This evidence suggests that the contradictions of the CAPM associated with price ratios are not sample specific.

Explanations: Irrational Pricing or Risk

Among those who conclude that the empirical failures of the CAPM are fatal, two stories emerge. On one side are the behavioralists. Their view is based on evidence that stocks with high ratios of book value to market price are typically firms that have fallen on bad times, while low B/M is associated with growth firms (Lakonishok, Shleifer and Vishny, 1994; Fama and French, 1995). The behavioralists argue that sorting firms on book-to-market ratios exposes investor overreaction to good and bad times. Investors overextrapolate past performance, resulting in stock prices that are too high for growth (low B/M) firms and too low for distressed (high B/M, so-called value) firms. When the overreaction is eventually corrected, the result is high returns for value stocks and low returns for growth stocks. Proponents of this view include DeBondt and Thaler (1987), Lakonishok, Shleifer and Vishny (1994) and Haugen (1995).

The second story for explaining the empirical contradictions of the CAPM is that they point to the need for a more complicated asset pricing model. The CAPM is based on many unrealistic assumptions. For example, the assumption that investors care only about the mean and variance of one-period portfolio returns is extreme. It is reasonable that investors also care about how their portfolio return covaries with labor income and future investment opportunities, so a portfolio's return variance misses important dimensions of risk. If so, market beta is not a complete description of an asset's risk, and we should not be surprised to find that differences in expected return are not completely explained by differences in beta. In this view, the search should turn to asset pricing models that do a better job explaining average returns.

Merton's (1973) intertemporal capital asset pricing model (ICAPM) is a natural extension of the CAPM. The ICAPM begins with a different assumption about investor objectives. In the CAPM, investors care only about the wealth their portfolio produces at the end of the current period. In the ICAPM, investors are concerned not only with their end-of-period payoff, but also with the opportunities they will have to consume or invest the payoff. Thus, when choosing a portfolio at time $t - 1$, ICAPM investors consider how their wealth at t might vary with future *state variables*, including labor income, the prices of consumption goods and the nature of portfolio opportunities at t, and expectations about the labor income, consumption and investment opportunities to be available after t.

Like CAPM investors, ICAPM investors prefer high expected return and low return variance. But ICAPM investors are also concerned with the covariances of portfolio returns with state variables. As a result, optimal portfolios are "multifactor efficient," which means they have the largest possible expected returns, given their return variances and the covariances of their returns with the relevant state variables.

Fama (1996) shows that the ICAPM generalizes the logic of the CAPM. That is, if there is risk-free borrowing and lending or if short sales of risky assets are allowed, market clearing prices imply that the market portfolio is multifactor efficient. Moreover, multifactor efficiency implies a relation between expected return and beta risks, but it requires additional betas, along with a market beta, to explain expected returns.

An ideal implementation of the ICAPM would specify the state variables that affect expected returns. Fama and French (1993) take a more indirect approach, perhaps more in the spirit of Ross's (1976) arbitrage pricing theory. They argue that though size and book-to-market equity are not themselves state variables, the higher average returns on small stocks and high book-to-market stocks reflect unidentified state variables that produce undiversifiable risks (covariances) in returns that are not captured by the market return and are priced separately from market betas. In support of this claim, they show that the returns on the stocks of small firms covary more with one another than with returns on the stocks of large firms, and returns on high book-to-market (value) stocks covary more with one another than with returns on low book-to-market (growth) stocks. Fama and French (1995) show that there are similar size and book-to-market patterns in the covariation of fundamentals like earnings and sales.

Based on this evidence, Fama and French (1993, 1996) propose a three-factor model for expected returns,

$$\text{(Three-Factor Model)} \quad E(R_{it}) - R_{ft} = \beta_{iM}[E(R_{Mt}) - R_{ft}] + \beta_{is}E(SMB_t) + \beta_{ih}E(HML_t).$$

In this equation, SMB_t (small minus big) is the difference between the returns on diversified portfolios of small and big stocks, HML_t (high minus low) is the difference between the returns on diversified portfolios of high and low B/M stocks, and the betas are slopes in the multiple regression of $R_{it} - R_{ft}$ on $R_{Mt} - R_{ft}$, SMB_t and HML_t.

For perspective, the average value of the market premium $R_{Mt} - R_{ft}$ for 1927–2003 is 8.3 percent per year, which is 3.5 standard errors from zero. The average values of SMB_t, and HML_t are 3.6 percent and 5.0 percent per year, and they are 2.1 and 3.1 standard errors from zero. All three premiums are volatile, with annual standard deviations of 21.0 percent $(R_{Mt} - R_{ft})$, 14.6 percent (SMB_t) and 14.2 percent (HML_t) per year. Although the average values of the premiums are large, high volatility implies substantial uncertainty about the true expected premiums.

One implication of the expected return equation of the three-factor model is that the intercept α_i in the time-series regression,

$$R_{it} - R_{ft} = \alpha_i + \beta_{iM}(R_{Mt} - R_{ft}) + \beta_{is}SMB_t + \beta_{ih}HML_t + \varepsilon_{it},$$

is zero for all assets *i*. Using this criterion, Fama and French (1993, 1996) find that the model captures much of the variation in average return for portfolios formed on size, book-to-market equity and other price ratios that cause problems for the CAPM. Fama and French (1998) show that an international version of the model performs better than an international CAPM in describing average returns on portfolios formed on scaled price variables for stocks in 13 major markets.

The three-factor model is now widely used in empirical research that requires a model of expected returns. Estimates of α_i from the time-series regression above are used to calibrate how rapidly stock prices respond to new information (for example, Loughran and Ritter, 1995; Mitchell and Stafford, 2000). They are also used to measure the special information of portfolio managers, for example, in Carhart's (1997) study of mutual fund performance. Among practitioners like Ibbotson Associates, the model is offered as an alternative to the CAPM for estimating the cost of equity capital.

From a theoretical perspective, the main shortcoming of the three-factor model is its empirical motivation. The small-minus-big (SMB) and high-minus-low (HML) explanatory returns are not motivated by predictions about state variables of concern to investors. Instead they are brute force constructs meant to capture the patterns uncovered by previous work on how average stock returns vary with size and the book-to-market equity ratio.

But this concern is not fatal. The ICAPM does not require that the additional portfolios used along with the market portfolio to explain expected returns "mimic" the relevant state variables. In both the ICAPM and the arbitrage pricing theory, it suffices that the additional portfolios are well diversified (in the terminology of Fama, 1996, they are multifactor minimum variance) and that they are sufficiently different from the market portfolio to capture covariation in returns and variation in expected returns missed by the market portfolio. Thus, adding diversified portfolios that capture covariation in returns and variation in average returns left unexplained by the market is in the spirit of both the ICAPM and the Ross's arbitrage pricing theory.

The behavioralists are not impressed by the evidence for a risk-based explanation of the failures of the CAPM. They typically concede that the three-factor model captures covariation in returns missed by the market return and that it picks up much of the size and value effects in average returns left unexplained by the CAPM. But their view is that the average return premium associated with the model's book-to-market factor—which does the heavy lifting in the improvements to the CAPM—is itself the result of investor overreaction that happens to be correlated across firms in a way that just looks like a risk story. In short, in the behavioral view, the market tries to set CAPM prices, and violations of the CAPM are due to mispricing.

The conflict between the behavioral irrational pricing story and the rational risk story for the empirical failures of the CAPM leaves us at a timeworn impasse. Fama (1970) emphasizes that the hypothesis that prices properly reflect available information must be tested in the context of a model of expected returns, like the CAPM. Intuitively, to test whether prices are rational, one must take a stand on what the market is trying to do in setting prices—that is, what is risk and what is the relation between expected return and risk? When tests reject the CAPM, one cannot say whether the problem is its assumption that prices are rational (the behavioral view) or violations of other assumptions that are also necessary to produce the CAPM (our position).

Fortunately, for some applications, the way one uses the three-factor model does not depend on one's view about whether its average return premiums are the rational result of underlying state variable risks, the result of irrational investor behavior or sample specific results of chance. For example, when measuring the response of stock prices to new information or when evaluating the performance of managed portfolios, one wants to account for known patterns in returns and average returns for the period examined, whatever their source. Similarly, when estimating the cost of equity capital, one might be unconcerned with whether expected return premiums are rational or irrational since they are in either case part of the opportunity cost of equity capital (Stein, 1996). But the cost of capital is forward looking, so if the premiums are sample specific they are irrelevant.

The three-factor model is hardly a panacea. Its most serious problem is the momentum effect of Jegadeesh and Titman (1993). Stocks that do well relative to the market over the last three to twelve months tend to continue to do well for the next few months, and stocks that do poorly continue to do poorly. This momentum effect is distinct from the value effect captured by book-to-market equity and other price ratios. Moreover, the momentum effect is left unexplained by the three-factor model, as well as by the CAPM. Following Carhart (1997), one response is to add a momentum factor (the difference between the returns on diversified portfolios of short-term winners and losers) to the three-factor model. This step is again legitimate in applications where the goal is to abstract from known patterns in average returns to uncover information-specific or manager-specific effects. But since the momentum effect is short-lived, it is largely irrelevant for estimates of the cost of equity capital.

Another strand of research points to problems in both the three-factor model and the CAPM. Frankel and Lee (1998), Dechow, Hutton and Sloan (1999), Piotroski (2000) and others show that in portfolios formed on price ratios like book-to-market equity, stocks with higher expected cash flows have higher average returns that are not captured by the three-factor model or the CAPM. The authors interpret their results as evidence that stock prices are irrational, in the sense that they do not reflect available information about expected profitability.

In truth, however, one can't tell whether the problem is bad pricing or a bad asset pricing model. A stock's price can always be expressed as the present value of expected future cash flows discounted at the expected return on the stock (Campbell and Shiller, 1989; Vuolteenaho, 2002). It follows that if two stocks have the same price, the one with higher expected cash flows must have a higher expected return. This holds true whether pricing is rational or irrational. Thus, when one observes a positive relation between expected cash flows and expected returns that is left unexplained by the CAPM or the three-factor model, one can't tell whether it is the result of irrational pricing or a misspecified asset pricing model.

The Market Proxy Problem

Roll (1977) argues that the CAPM has never been tested and probably never will be. The problem is that the market portfolio at the heart of the model is theoretically and empirically elusive. It is not theoretically clear which assets (for example, human capital) can legitimately be excluded from the market portfolio, and data availability substantially limits the assets that are included. As a result, tests of the CAPM are forced to use proxies for the market portfolio, in effect testing whether the proxies are on the minimum variance frontier. Roll argues that because the tests use proxies, not the true market portfolio, we learn nothing about the CAPM.

We are more pragmatic. The relation between expected return and market beta of the CAPM is just the minimum variance condition that holds in any efficient portfolio, applied to the market portfolio. Thus, if we can find a market proxy that is on the minimum variance frontier, it can be used to describe differences in expected returns, and we would be happy to use it for this purpose. The strong rejections of the CAPM described above, however, say that researchers have not uncovered a reasonable market proxy that is close to the minimum variance frontier. If researchers are constrained to reasonable proxies, we doubt they ever will.

Our pessimism is fueled by several empirical results. Stambaugh (1982) tests the CAPM using a range of market portfolios that include, in addition to U.S. common stocks, corporate and government bonds, preferred stocks, real estate and other consumer durables. He finds that tests of the CAPM are not sensitive to expanding the market proxy beyond common stocks, basically because the volatility of expanded market returns is dominated by the volatility of stock returns.

One need not be convinced by Stambaugh's (1982) results since his market proxies are limited to U.S. assets. If international capital markets are open and asset prices conform to an international version of the CAPM, the market portfolio should include international assets. Fama and French (1998) find, however, that betas for a global stock market portfolio cannot explain the high average returns observed around the world on stocks with high book-to-market or high earnings-price ratios.

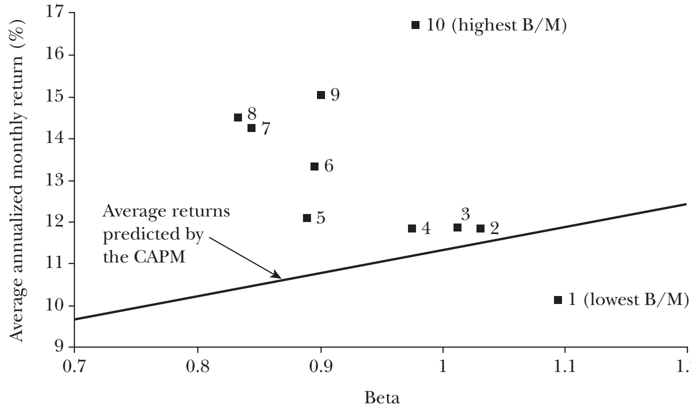
A major problem for the CAPM is that portfolios formed by sorting stocks on price ratios produce a wide range of average returns, but the average returns are not positively related to market betas (Lakonishok, Shleifer and Vishny, 1994; Fama and French, 1996, 1998). The problem is illustrated in Figure 3, which shows average returns and betas (calculated with respect to the CRSP value-weight portfolio of NYSE, AMEX and NASDAQ stocks) for July 1963 to December 2003 for ten portfolios of U.S. stocks formed annually on sorted values of the book-to-market equity ratio (B/M).[6]

Average returns on the B/M portfolios increase almost monotonically, from 10.1 percent per year for the lowest B/M group (portfolio 1) to an impressive 16.7 percent for the highest (portfolio 10). But the positive relation between beta and average return predicted by the CAPM is notably absent. For example, the portfolio with the lowest book-to-market ratio has the highest beta but the lowest average return. The estimated beta for the portfolio with the highest book-to-market ratio and the highest average return is only 0.98. With an average annualized value of the riskfree interest rate, R_f, of 5.8 percent and an average annualized market premium, $R_M - R_f$, of 11.3 percent, the Sharpe-Lintner CAPM predicts an average return of 11.8 percent for the lowest B/M portfolio and 11.2 percent for the highest, far from the observed values, 10.1 and 16.7 percent. For the Sharpe-Lintner model to "work" on these portfolios, their market betas must change dramatically, from 1.09 to 0.78 for the lowest B/M portfolio and from 0.98 to 1.98 for the highest. We judge it unlikely that alternative proxies for the market portfolio will produce betas and a market premium that can explain the average returns on these portfolios.

It is always possible that researchers will redeem the CAPM by finding a reasonable proxy for the market portfolio that is on the minimum variance frontier. We emphasize, however, that this possibility cannot be used to justify the way the CAPM is currently applied. The problem is that applications typically use the same

[6] Stock return data are from CRSP, and book equity data are from Compustat and the Moody's Industrials, Transportation, Utilities and Financials manuals. Stocks are allocated to ten portfolios at the end of June of each year t (1963 to 2003) using the ratio of book equity for the fiscal year ending in calendar year $t - 1$, divided by market equity at the end of December of $t - 1$. Book equity is the book value of stockholders' equity, plus balance sheet deferred taxes and investment tax credit (if available), minus the book value of preferred stock. Depending on availability, we use the redemption, liquidation or par value (in that order) to estimate the book value of preferred stock. Stockholders' equity is the value reported by Moody's or Compustat, if it is available. If not, we measure stockholders' equity as the book value of common equity plus the par value of preferred stock or the book value of assets minus total liabilities (in that order). The portfolios for year t include NYSE (1963–2003), AMEX (1963–2003) and NASDAQ (1972–2003) stocks with positive book equity in $t - 1$ and market equity (from CRSP) for December of $t - 1$ and June of t. The portfolios exclude securities CRSP does not classify as ordinary common equity. The breakpoints for year t use only securities that are on the NYSE in June of year t.

Figure 3
Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on B/M, 1963–2003



market proxies, like the value-weight portfolio of U.S. stocks, that lead to rejections of the model in empirical tests. The contradictions of the CAPM observed when such proxies are used in tests of the model show up as bad estimates of expected returns in applications; for example, estimates of the cost of equity capital that are too low (relative to historical average returns) for small stocks and for stocks with high book-to-market equity ratios. In short, if a market proxy does not work in tests of the CAPM, it does not work in applications.

Conclusions

The version of the CAPM developed by Sharpe (1964) and Lintner (1965) has never been an empirical success. In the early empirical work, the Black (1972) version of the model, which can accommodate a flatter tradeoff of average return for market beta, has some success. But in the late 1970s, research begins to uncover variables like size, various price ratios and momentum that add to the explanation of average returns provided by beta. The problems are serious enough to invalidate most applications of the CAPM.

For example, finance textbooks often recommend using the Sharpe-Lintner CAPM risk-return relation to estimate the cost of equity capital. The prescription is to estimate a stock's market beta and combine it with the risk-free interest rate and the average market risk premium to produce an estimate of the cost of equity. The typical market portfolio in these exercises includes just U.S. common stocks. But empirical work, old and new, tells us that the relation between beta and average return is flatter than predicted by the Sharpe-Lintner version of the CAPM. As a result, CAPM estimates of the cost of equity for high beta stocks are too high (relative to historical average returns) and estimates for low beta stocks are too low (Friend and Blume, 1970). Similarly, if the high average returns on value stocks (with high book-to-market ratios) imply high expected returns, CAPM cost of equity estimates for such stocks are too low.[7]

The CAPM is also often used to measure the performance of mutual funds and other managed portfolios. The approach, dating to Jensen (1968), is to estimate the CAPM time-series regression for a portfolio and use the intercept (Jensen's alpha) to measure abnormal performance. The problem is that, because of the empirical failings of the CAPM, even passively managed stock portfolios produce abnormal returns if their investment strategies involve tilts toward CAPM problems (Elton, Gruber, Das and Hlavka, 1993). For example, funds that concentrate on low beta stocks, small stocks or value stocks will tend to produce positive abnormal returns relative to the predictions of the Sharpe-Lintner CAPM, even when the fund managers have no special talent for picking winners.

The CAPM, like Markowitz's (1952, 1959) portfolio model on which it is built, is nevertheless a theoretical tour de force. We continue to teach the CAPM as an introduction to the fundamental concepts of portfolio theory and asset pricing, to be built on by more complicated models like Merton's (1973) ICAPM. But we also warn students that despite its seductive simplicity, the CAPM's empirical problems probably invalidate its use in applications.

■ *We gratefully acknowledge the comments of John Cochrane, George Constantinides, Richard Leftwich, Andrei Shleifer, René Stulz and Timothy Taylor.*

[7] The problems are compounded by the large standard errors of estimates of the market premium and of betas for individual stocks, which probably suffice to make CAPM estimates of the cost of equity rather meaningless, even if the CAPM holds (Fama and French, 1997; Pastor and Stambaugh, 1999). For example, using the U.S. Treasury bill rate as the risk-free interest rate and the CRSP value-weight portfolio of publicly traded U.S. common stocks, the average value of the equity premium $R_{Mt} - R_{ft}$ for 1927–2003 is 8.3 percent per year, with a standard error of 2.4 percent. The two standard error range thus runs from 3.5 percent to 13.1 percent, which is sufficient to make most projects appear either profitable or unprofitable. This problem is, however, hardly special to the CAPM. For example, expected returns in all versions of Merton's (1973) ICAPM include a market beta and the expected market premium. Also, as noted earlier the expected values of the size and book-to-market premiums in the Fama-French three-factor model are also estimated with substantial error.

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Chapter 4
Basic Building Blocks of the Cost of Equity Capital – Size Premium

Size as a Predictor of Equity Returns

The size effect is based on the empirical observation that companies of smaller size are associated with greater risk and, therefore, have greater cost of capital. The "size" of a company is one of the most important risk elements to consider when developing cost of equity capital estimates for use in valuing a business simply because size has been shown to be a *predictor* of equity returns. In other words, there is a significant (negative) relationship between size and historical equity returns – as size *decreases*, returns tend to *increase*, and vice versa.[4.1]

Traditionally, researchers have used market value of equity (market capitalization, or simply "market cap") as a measure of size in conducting historical rate of return studies. However, as we discuss later in this chapter, market cap is not the only measure of size that can be used to predict return, nor is it necessarily the best measure of size to use.

Much of the research of the size effect relies on the data provided by the Center for Research in Security Prices (CRSP) databases at the University of Chicago. The CRSP database includes U.S. equity total returns (capital appreciation plus dividends) going back to 1926.

The CRSP databases enabled researchers to look at stocks with different characteristics and analyze how their returns differed. One of the first characteristics that researchers analyzed was large-market-capitalization (large-cap) companies versus small-market-capitalization (small-cap) companies.

For example, a 1981 study by Rolf Banz examined the returns of New York Stock Exchange (NYSE) small-cap companies compared to the returns of NYSE large-cap companies over the period 1926–1975.[4.2] What Banz found was that the returns of small-cap companies were *greater* than the returns for large-cap companies. Banz's 1981 study is often cited as the first comprehensive study of the size effect.

4.1 This chapter is excerpted in part from Shannon P. Pratt and Roger J. Grabowski, *Cost of Capital: Applications and Examples* 5th ed. (Hoboken, NJ: John Wiley & Sons, 2014).

4.2 Rolf W. Banz, "The Relationship between Return and Market Value of Common Stocks", *Journal of Financial Economics* (March 1981): 3–18. This paper is often cited as the first comprehensive study of the size effect.

Possible Explanations for the Greater Returns of Smaller Companies

Some valuation analysts treat small firms as equivalent to scaled-down large firms. This is likely an erroneous assumption.

There are theoretical reasons for the greater returns of smaller companies (i.e., the "size effect"), which might include: (i) small stocks are less liquid (with higher associated transaction costs), (ii) small stocks are riskier and harder to diversify, (iii) small stocks have higher betas which often are underestimated, (iv) investors must do more analysis per dollar invested, (v) investment data is less available.[4.3]

Valuation analysts also cite more practical reasons that small firms have risk characteristics that differ from those of large firms. For example, large firms may have greater ability to enter the market of the small firm and take market share away. Large companies likely have more resources to "weather the storm" in economic downturns. Large firms can generally spend more cash on R&D, advertising, and typically even have greater ability to hire the "best and brightest". Larger firms may have greater access to capital, broader management depth, and less dependency on just a few customers. A larger number of analysts typically follow large firms relative to small firms, so there is probably more information available about large firms. Small firms have fewer resources to fend off competition and redirect themselves after changes in the market occur.[4.4]

Any one of these differences (not an all-encompassing list) would tend to *increase* investors' required rate of return to induce them to invest in small companies rather than investing in large companies.

The size effect is not without controversy, nor is this controversy something new. Traditionally, small companies are believed to have greater required rates of return than large companies because small companies are inherently riskier. It is not clear, however, whether this is due to size itself, or to other factors closely related to or correlated with size (e.g., liquidity).[4.5] The qualification that Banz noted in his 1981 article remains pertinent today:

> *"It is not known whether size* [as measured by market capitalization] *per se is responsible for the effect or whether size is just a proxy for one or more true unknown factors correlated with size."*

In this chapter, we first present empirical evidence for the size effect, followed by a discussion of common criticisms of the size effect.

4.3 Credit: Roger Ibbotson.

4.4 M. S. Long and J. Zhang, "Growth Options, Unwritten Call Discounts and Valuing Small Firms", EFA 2004 Maastricht Meetings Paper no. 4057, March 2004. Available at http://www.ssrn.com/abstract=556203.

4.5 Even after controlling for size, research suggests that liquidity is still a systematic factor and a predictor of returns. See Roger G. Ibbotson, Zhiwu Chen, Daniel Y.-J. Kim, and Wendy Y. Hu, "Liquidity as an Investment Style", *Financial Analysts Journal* Vol 69(3): 30–44, May/June 2013, and Roger G. Ibbotson, Ph.D. and Daniel Y.-J. Kim, Ph.D., "Liquidity as an Investment Style: 2018 Update". Copies available at www.zebracapm.com. Most recently (2019), Ibbotson and colleagues Thomas M. Idzorek, CFA, Paul D. Kaplan, CFA, and James X. Xiong, CFA published a new Chartered Financial Analyst® (CFA) Institute Research Foundation monograph entitled, Popularity: A Bridge Between Classical and Behavioral Finance (available for download at https://www.cfainstitute.org/en/research/foundation/2018/popularity-bridge-between-classical-and-behavioral-finance or go to the CFA website at cfainstitute.org and search for "popularity".

The Size Effect: Empirical Evidence

Summary statistics over the 1926–2019 period for CRSP NYSE/NYSE MKT/NASDAQ[4.6] deciles 1–10 are shown in Exhibit 4.1. As size (in this case, as measured by market cap) *decreases*, return tends to *increase*. For example, the annual arithmetic mean return of decile 1 (the largest-cap companies) was 11.25% over the 1926–2019 period, while the annual arithmetic mean return of decile 10 (the smallest-cap companies) was 19.87%. Note that this increased return comes at a price: risk (as measured by standard deviation) increases from 18.83% for decile 1 to 41.89% for decile 10. The relationship between risk and return is a fundamental principle of finance and for estimating the cost of capital.

Exhibit 4.1: Summary Statistics of Annual Returns (CRSP NYSE/NYSE MKT/NASDAQ Deciles) 1926–2019

Decile	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)
1-Largest	9.53%	11.25%	18.83%
2	10.63%	12.86%	21.33%
3	11.08%	13.57%	23.16%
4	10.89%	13.79%	25.31%
5	11.32%	14.39%	25.91%
6	11.31%	14.68%	26.87%
7	11.60%	15.35%	28.75%
8	11.39%	15.84%	32.52%
9	11.44%	16.71%	36.65%
10-Smallest	13.08%	19.87%	41.89%

Source of underlying data: CRSP U.S. Stock Database and CRSP U.S. Indices Database ©2020. Center for Research in Security Prices, LLC (CRSP®). All rights reserved. CRSP® is a registered trademark and service mark of Center for Research in Security Prices, LLC and has been licensed for use by Duff & Phelps, LLC. The Duff & Phelps publications and services are not sponsored, sold or promoted by CRSP®, its affiliates or its parent company. To learn more about CRSP, visit www.crsp.com. CRSP NYSE/NYSE MKT/NASDAQ deciles 1–10. Used with permission. All rights reserved. Calculations performed by Duff & Phelps, LLC.

The Size Effect Over Longer Periods

Exhibit 4.2 illustrates the size effect. As size (measured by market cap in this case) *decreases*, return tends to *increase*. For example, an investment of $1 in CRSP decile 1 (comprised of the largest companies) at the end of 1925 would have grown to $5,179 by the end of 2019, and an investment in CRSP decile 6 (comprised of medium-sized companies) would have grown to $23,579. However, an investment of $1 in CRSP decile 10 (comprised of the smallest companies) would have grown to $104,551 over the same period.

4.6 On October 1, 2008, NYSE Euronext acquired the American Stock Exchange (AMEX). The "NYSE MKT" is the former American Stock Exchange, or AMEX. The CRSP standard market-cap-based NYSE/AMEX/NASDAQ indices are now called the NYSE/NYSE MKT/NASDAQ indices.

Exhibit 4.2: Terminal Index Values of CRSP NYSE/NYSE MKT/NASDAQ Deciles 1–10
Index (Year-end 1925 = $1.00)
January 1926–December 2019

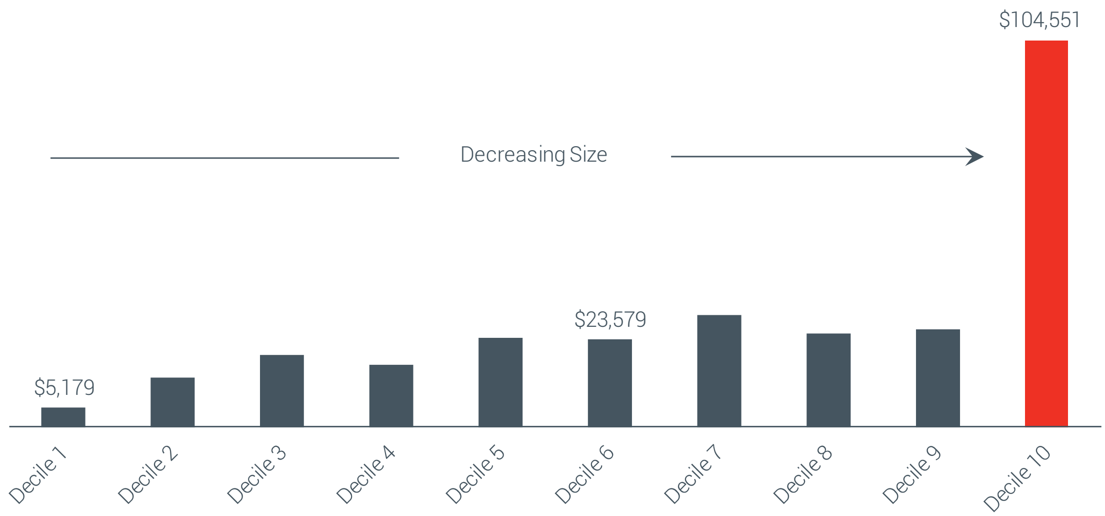

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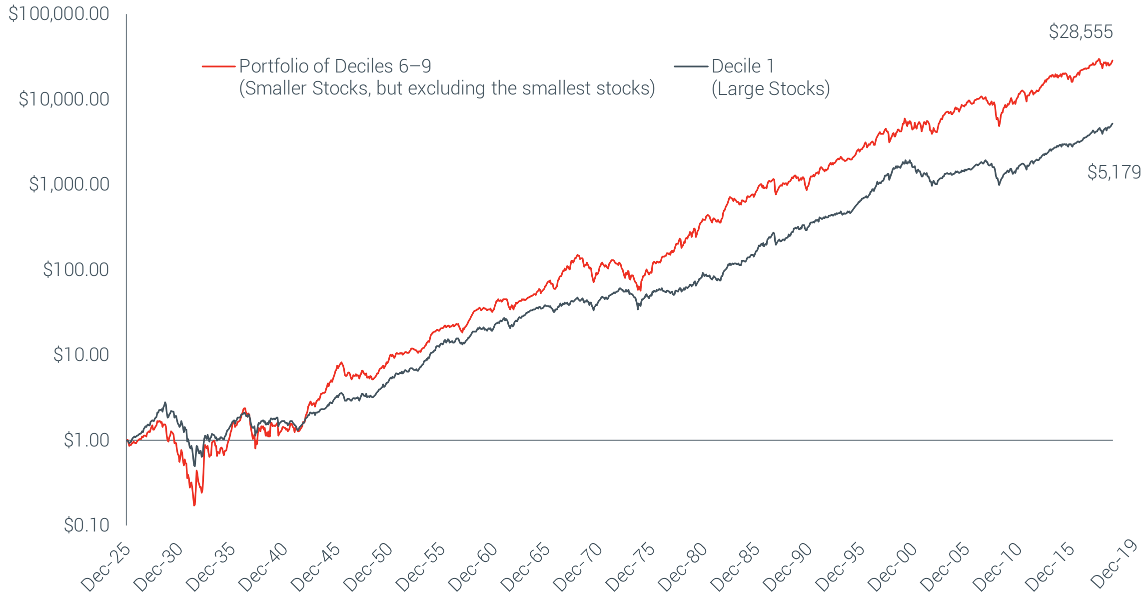
Exhibit 4.2 illustrates two other important concepts. The first is that the size effect is not "linear" – the size effect is clearly concentrated in the smallest-cap companies.[4.7]

The second is that over longer periods of time the size effect is *not* just evident for the smallest companies, but is evident for all but the largest groups of companies, including companies with a market capitalization in excess of several billions of dollars.

To illustrate this, decile 1 (large-cap companies) is compared to a portfolio comprised of equal parts of deciles 6–9 in Exhibit 4.3. An investment of $1 in decile 1 at the end of 1925 would have grown to $5,179 by the end of 2019, while an investment of $1 in a portfolio comprised of equal parts of deciles 6–9 at the end of 1925 would have grown to $28,555 by the end of 2019 (remember decile 10, which is comprised of the smallest-cap companies, is *excluded* from this analysis). Even with decile 10 *excluded*, the portfolio made up of deciles 6–9 outperformed large-cap companies over the 1926–2019 period.

[4.7] Some researchers have suggested that the size effect is concentrated in even smaller firms than discussed here. Horowitz, Loughran, and Savin found that if "...firms less than $5 million in value are excluded from the sample universe...", the size effect becomes insignificant, at least as measured over the 1963–1997 time period. Joel L. Horowitz, Tim Loughran, and N.E. Savin, "The disappearing size effect", *Research in Economics* (2000), 83–100.

Exhibit 4.3: Terminal Index Values of CRSP NYSE/NYSE MKT/NASDAQ Decile 1 and a Portfolio Comprised of equal parts of Deciles 6–9
Index (Year-end 1925 = $1.00)
January 1926–December 2019



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Small-cap companies do not always outperform large-cap companies. As a matter of fact, small-cap companies' shorter-term behavior relative to large-cap companies can be quite erratic, so analyzing small-cap companies' performance relative to large-cap companies' performance over varying holding periods may be instructive in revealing longer-term trends.

In Exhibit 4.4, the percentage of periods in which small-cap companies outperformed large-cap companies is analyzed over 1-, 5-, 10-, 20- and 30-year holding periods. As the holding period is increased, small-cap companies tend to outperform large-cap companies in a greater number of periods. In other words, the *longer* small-cap companies are given to "race" against large-cap companies, the greater the chance that small-cap companies outpace their larger counterparts. For example, small-cap companies outperformed large-cap companies 82.1% of the time over all 20-year holding periods from January 1926 through December 2019. In contrast, large-cap companies outperformed small-cap companies only 17.9% over the same holding and time period.

Exhibit 4.4: Percentage of Periods that Small-cap Companies Outperform Large-cap Companies over 1-, 5-, 10-, 20-, and 30-year Holding Periods (1926–2019)

Holding Period	1-year	5-years	10-years	20-years	30-years
Small-cap Companies Outperform (%)	52.4%	55.3%	69.4%	82.1%	91.3%
Large-cap Companies Outperform (%)	47.6%	44.7%	30.6%	17.9%	8.7%

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The Size Effect Tends to Stabilize Over Time

It may be instructive to examine the tendencies of small-cap stocks' performance versus large-cap stocks' performance over time periods with *fixed* starting dates and *variable* ending dates. This will help to see what happens as more time periods are added (and thus the importance of "unusual" time periods is diminished).

In Exhibit 4.5, the average difference in annual returns for small-cap companies minus large-cap companies was calculated for periods with fixed starting dates of 1926 (the first year data is available from CRSP), 1963 (the Risk Premium Report Study are calculated over the time period 1963–2019), and 1982 (the year following publication of Banz's 1981 article).[4.8]

On the far left side of Exhibit 4.5 for the series "Fixed Beginning Date Starting 1926", the first data point is the average difference in annual return for small-cap companies minus large-cap companies in 1926, the second data point (moving to the right) is the average difference in annual return for small-cap companies minus large-cap companies over the period 1926–1927, and then 1926–1928, etc., until the final data point on the far right is the average difference in annual return for small-cap companies minus large-cap companies over the period 1926–2019.

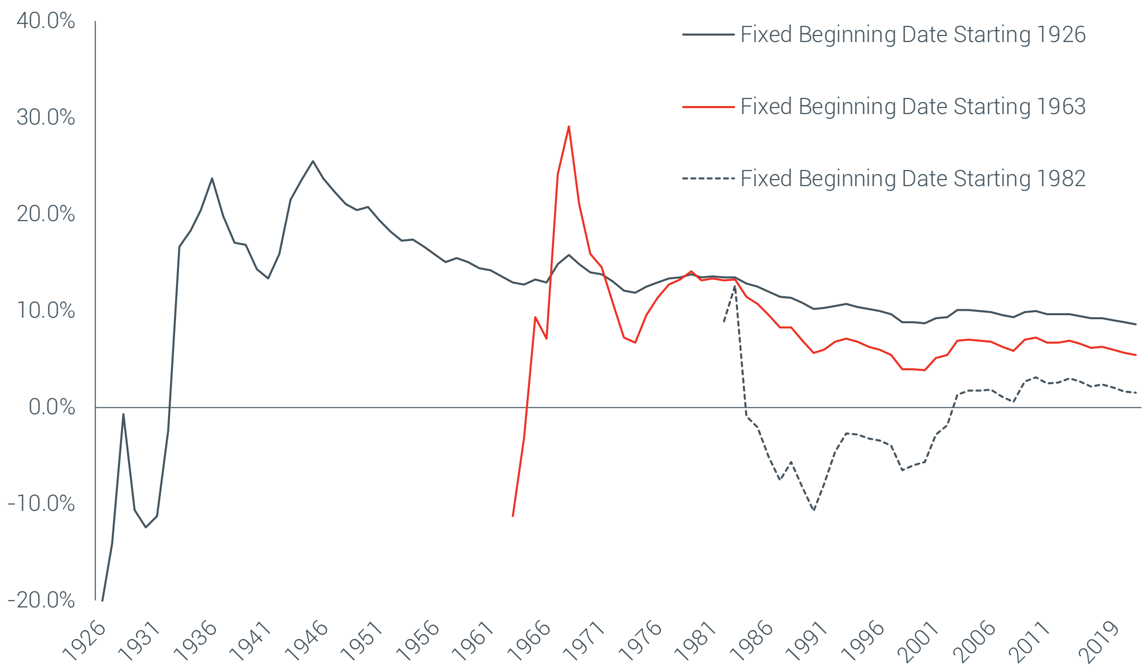
The same analysis is displayed for "Fixed Beginning Date Starting 1963", with the leftmost data point being the average difference in annual return for small-cap companies minus large-cap companies in 1963, and then (again, moving to the right) the average difference in annual return for small-cap companies minus large-cap companies over the periods 1963–1964, 1963–1965, etc., until the final data point on the far right is the average difference in annual return for small-cap companies minus large-cap companies over the period 1963–2019.

And finally, the same analysis for "Fixed Beginning Date 1982" is shown, with the leftmost data point being the average difference in annual return for small-cap companies in 1982, and the rightmost data point being the average difference in annual return for small-cap companies minus large-cap companies over the period 1982–2019.

4.8 Banz, Rolf W. "The Relationship between Return and Market Value of Common Stocks". *Journal of Financial Economics* (March 1981): 3–18. Banz's 1981 article demonstrated that smaller-cap stocks exhibited significantly greater performance over larger-cap stocks over the period from 1926 to 1975.

Exhibit 4.5 suggests that while the size effect measured over shorter time periods may be quite erratic (and even negative at times), there seems to be an overall tendency toward stability as time periods are added and the longer the period over which it is measured (regardless of the start date). Further, this stability seems to be reached in "positive territory" (the rightmost points in Exhibit 4.5), suggesting a positive size effect over time.

Exhibit 4.5: CRSP Decile 10 minus Decile 1, Average Difference in Annual Returns
Fixed beginning date, variable ending dates
1926–2019, 1963–2019, 1982–2019



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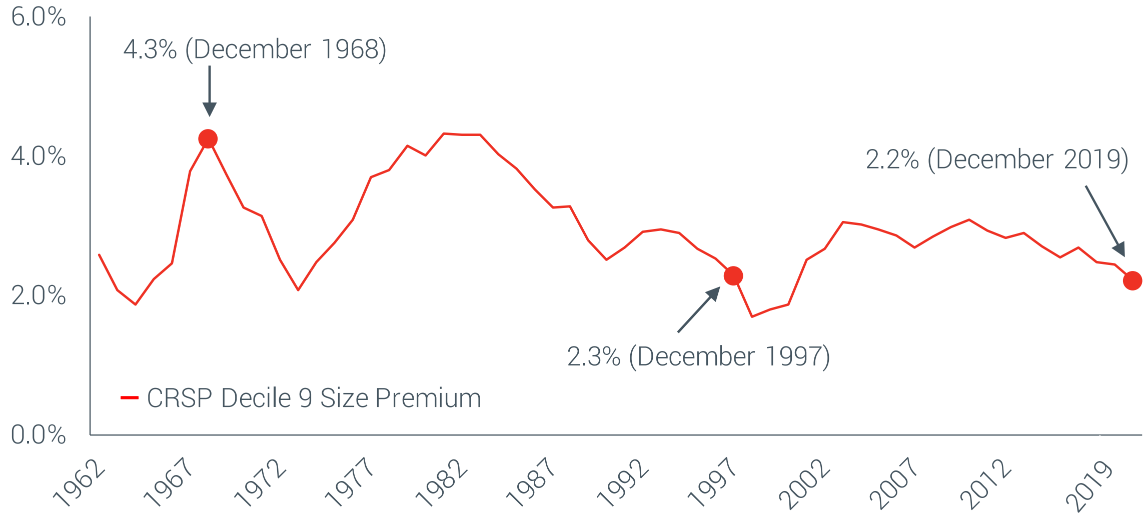
The Size Effect Changes Over Time

The variability of the size effect is illustrated in Exhibit 4.6. In Exhibit 4.6, the size premium for CRSP decile 9 (comprised of the smallest companies) is calculated as of each year-end from 1962–2019 using the same methodology and data set as is currently used in the Cost of Capital Navigator in the CRSP Deciles Size Study (and the same methodology and data set used previously in (i) the former *SBBI® Valuation Yearbook*, and (ii) Duff & Phelps' *Valuation Handbook – U.S. Guide to Cost of Capital*, and now in the online Cost of Capital Navigator at dpcostofcapital.com, which replaced the *Valuation Handbook – U.S. Guide to Cost of Capital* in 2018).

For example, a hypothetical *Valuation Handbook* published in 1969 would have used data available from 1926–1968 to calculate CRSP decile 9's size premium, and this would have resulted in a size premium of approximately 4.3%. In a hypothetical *1998 Valuation Handbook – U.S. Guide to Cost of Capital*, using data from 1926–1997, the size premium for CRSP decile 9 would have been approximately 2.3%. And, in the 2019 Cost of Capital Navigator using data from 1926–2019, the size premium for CRSP decile 9 is 2.2%.

Exhibit 4.6: CRSP Decile 9 Size Premium
Year-end 1962 to Year-end 2019



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These examples provide evidence that the size effect is *cyclical*. That cyclicality is part of the risk of small companies; if small size companies *always* performed better than large companies, small size companies would be *less* risky than large-cap companies, not riskier. This is true even though the expected returns are higher for small-cap companies in the long-term. By analogy, bond returns occasionally outperform stock returns. For example, over the 10-year period ending December 2011, long-term U.S. government bonds returned 133.2% and the S&P 500 Index return 33.4%, yet few would contend that over time the expected return on bonds is greater than the expected return on stocks.[4.9]

[4.9] Source of underlying data: Morningstar *Direct* database. Calculations performed by Duff & Phelps, LLC.

Criticisms of the Size Effect

The size effect is *not* without controversy, though, and various commentators question its validity. In fact, some commentators contend that the historical data are so flawed that valuation analysts can dismiss all research results that support the size effect. For example, is the size effect merely the result of not measuring beta correctly? Are there market anomalies that simply cause the size effect to appear? Is size just a proxy for one or more factors correlated with size, suggesting that valuation analysts should use those factors directly rather than size to measure risk? Is the size effect hidden because of unexpected events?

Is the Size Effect the Result of Incorrectly Measuring Betas?

Some commentators have held that the size effect is in part a function of underestimating betas for troubled firms (which tend to populate the smaller deciles where size is measured by market cap). Including troubled companies could cause the size premium to be overestimated in the CRSP 10th decile and the subdeciles 10a (and its upper and lower halves 10w and 10x) and 10b (and its upper and lower halves 10y and 10z), which are populated with the smallest companies as measured by market cap.

The most commonly used size premia is derived based on an ordinary least squares regression (OLS) beta. We examine two alternative methods of calculating the beta in order to compute a size premia, sum betas and annual betas.

Effects of the Size Premia when Using OLS Betas, Annual Betas, and Sum Betas

Smaller companies generally trade more infrequently and exhibit more of a lagged price reaction (relative to the market) than do larger companies. One of the ways of capturing this lag movement is called "sum" beta. Sum betas are designed to compensate for the more infrequent trading of smaller company stocks.

The sum beta estimates are greater for smaller companies than OLS betas, which are derived using non-lagged market benchmark data. The net result of the *greater* sum betas (or greater annual betas) is *smaller* size premia.

In Exhibit 4.7a, OLS betas and sum betas are calculated for the CRSP standard deciles 1–10. The OLS betas and sum betas for the portfolios comprised of larger companies are approximately the same.

In Exhibit 4.7a, OLS betas, and sum betas are calculated for the CRSP standard deciles 1–10. The OLS betas and sum betas for the portfolios comprised of larger companies are approximately the same. As we move from Decile 1 (comprised of the largest companies) to Decile 10 (comprised of the smallest companies), sum betas become increasing larger than their OLS counterparts. For example, the OLS beta for decile 1 is 0.92, and the sum beta for decile 1 is also 0.92. The sum beta for decile 10, however (1.68), is significantly larger than the OLS beta for decile 10 (1.39).

All things held the same, the larger sum beta of decile 10 implies a smaller size premia (2.92%) than implied for its OLS beta counterpart (4.99%) (see Exhibit 4.7b). Sum betas tend to be larger for smaller companies than when using OLS betas. As a result, they tend to be less plagued by the overestimation problem due to incorrectly measuring beta.

Exhibit 4.7a: OLS Betas and Sum Betas, and their Respective Implied Size Premia, for CRSP NYSE/NYSE MKT/NASDAQ Deciles 1–10, as of December 31, 2019

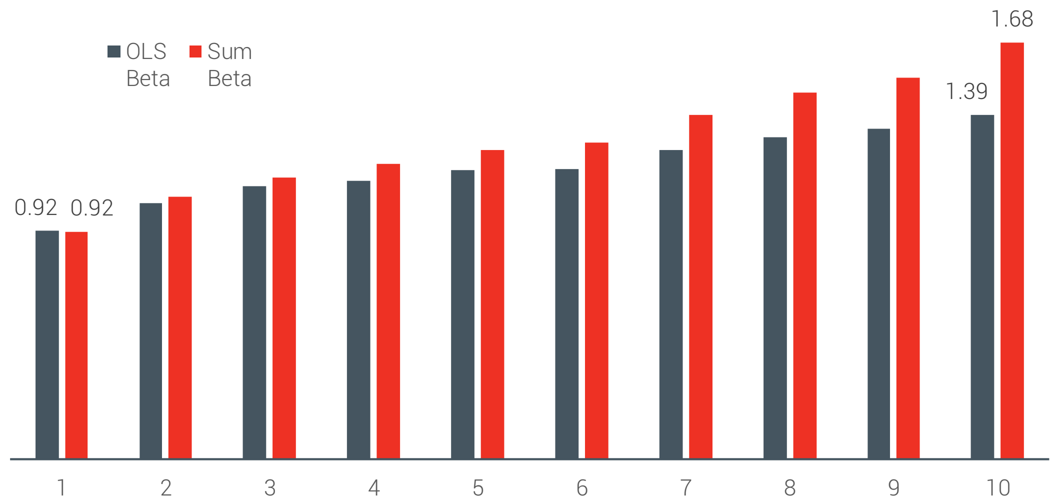
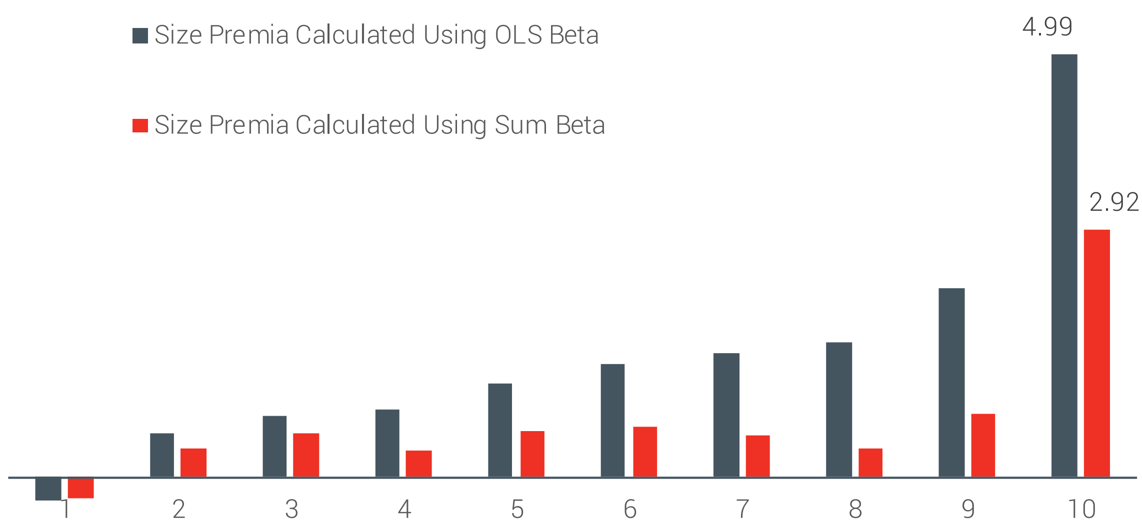


Exhibit 4.7b: Size Premia Calculated Using OLS Betas and Sum Betas, for CRSP NYSE/NYSE MKT/NASDAQ Deciles 1–10, as of December 31, 2019



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In applying the capital asset pricing model (CAPM) (particularly for smaller businesses), we are looking for the most *accurate* estimate, and not the most *expedient* one. If you use an OLS beta for a small company by multiplying the OLS beta times the equity risk premium (ERP) estimate and adding an OLS-based size premium, you may not arrive at as accurate an estimate of the cost of equity capital as by multiplying a sum beta times the ERP estimate and adding a sum-beta-based size premium. You should be using the most accurate estimate of beta and the most accurate measure of the appropriate size premium. Having said that, whatever type of beta you ultimately choose to employ, you should match the source of the size premium (OLS or sum beta) with the type of beta estimate you have chosen for your subject company.

For example, for internal consistency, one should use a size premium derived using an OLS beta when the subject company beta is an OLS beta, and one should use a size premium derived using sum betas when the subject company beta is a sum beta (Exhibit 4.8).

Exhibit 4.8: Potential Impact on Cost of Equity Capital; Matching (or Mismatching) the Type of Beta Used in the CAPM Equation to the Type of Beta Used to Develop the Size Premium

Beta Used to Develop Size Premia	Beta Used in CAPM Equation: OLS Beta	Beta Used in CAPM Equation: Sum Beta
OLS Beta	A – even –	B Higher COE
Sum Beta	C Lower COE	D – even –

The resulting cost of equity capital resulting in the "matched" cases (Case A and Case D) do not necessarily have to equal (and likely will not), but they will tend to be within a reasonable range of each other. Using Cases B and C may lead to an incorrect estimate of cost equity capital. To be clear, we recommend using sum betas for the development of size premia, and to also use sum beta within the CAPM, (particularly if dealing with smaller companies), because sum betas tend to better explain the returns of smaller companies. However, in cases in which you do use OLS betas in CAPM, you should use an OLS beta derived size premium.

Data Issues

Critics of the size effect point out various issues with the data used, resulting in anomalies that people mistakenly have observed as the size effect. These data issues may include seasonality, bid/ask bounce bias, and delisting bias, among others.[4.10] In the following sections, we discuss the different compositions of portfolios in the CRSP Deciles Size Study data set and the Risk Premium Report Study data set.

Composition of the Smallest CRSP Deciles

We divided the CRSP 10th decile into subdeciles 10a and 10b (10a is the top half of the 10th decile, and 10b is the bottom half of the 10th decile) and further divided subdecile 10a into 10w and 10x, and subdecile 10b into 10y and 10z. This is the same breakdown of CRSP decile 10 that was previously presented in (i) the former Ibbotson Associates/Morningstar *SBBI® Valuation Yearbook,* and (ii) Duff & Phelps' *Valuation Handbook – U.S. Guide to Cost of Capital,* and now in the online Cost of Capital Navigator, which replaced the *Valuation Handbook – U.S. Guide to Cost of Capital* in 2018.

As of December 31, 2019, the reported size premium for the smallest 5% of companies by market capitalization as represented by CRSP subdecile 10b is 8.02%, and the size premium for the next smallest 5% of companies (as represented by CRSP subdecile 10a) is 3.49%, a difference of 4.53%.

What kind of companies populate subdeciles 10b and its top and bottom halves, 10y and 10z? The CRSP Deciles Size Study include all companies with no exclusion of speculative (e.g., start-up) or distressed companies whose market capitalization may be small because they are speculative or distressed. The inclusion of speculative or distressed companies in the database is one basis for criticism of the size effect. Exhibit 4.9 and Exhibit 4.10 display information about the types of companies that are included in decile 10y and decile 10z, respectively.[4.11]

4.10 For a complete discussion of these issues, please refer to Pratt and Grabowski, op.cit.: Chapter 15A, "Other Data Issues Regarding the Size Effect".

4.11 Exhibits 4.9 and 4.10 are as of September 2019 rather than December 2019 in order to mimic how the CRSP standard market-cap based portfolios are formed. The CRSP deciles portfolio compositions are reset quarterly (March, June, September, December), and then portfolio returns are calculated for these portfolio compositions over the *subsequent* quarter. As of December 2019, the most recent "reset" is September 2019.

Exhibit 4.9: Breakdown of Decile 10y Companies: Market Value of Equity between $62.612 and $120.178 million
September 30, 2019

Decile 10y	Market Value of Equity (in $millions)	Book Value of Equity (in $millions)	5-Year Average Net Income (in $millions)	Market Value of Invested Capital (in $millions)
95th Percentile	$116.965	$273.980	$12.747	$689.387
75th Percentile	102.170	91.188	3.361	172.148
50th Percentile	83.922	60.055	(5.934)	110.295
25th Percentile	70.292	25.012	(26.516)	86.475
5th Percentile	62.198	(25.986)	(48.265)	64.054

Decile 10y	Total Assets (in $millions)	5-Year Average EBITDA (in $millions)	Sales (in $millions)	Return on Book Equity (%)
95th Percentile	$1,157.626	$123.167	$1,113.930	25.7
75th Percentile	594.034	17.912	195.919	8.1
50th Percentile	126.477	(1.297)	47.486	(8.6)
25th Percentile	54.650	(20.222)	17.148	(65.3)
5th Percentile	13.370	(38.518)	2.333	(167.7)

Decile 10y	OLS Beta	Sum Beta
95th Percentile	2.48	2.77
75th Percentile	1.20	1.51
50th Percentile	0.52	0.82
25th Percentile	0.16	0.36
5th Percentile	0.01	0.07

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Exhibit 4.10: Breakdown of Decile 10z Companies: Market Value of Equity between $1.973 and $62.199 million
September 30, 2019

Decile 10z	Market Value of Equity (in $millions)	Book Value of Equity (in $millions)	5-Year Average Net Income (in $millions)	Market Value of Invested Capital (in $millions)
95th Percentile	$57.024	$103.409	$3.824	$241.805
75th Percentile	41.792	36.820	(0.771)	60.471
50th Percentile	26.444	15.583	(6.846)	35.658
25th Percentile	12.213	6.283	(17.109)	17.488
5th Percentile	4.548	(3.358)	(29.786)	6.894

Decile 10z	Total Assets (in $millions)	5-Year Average EBITDA (in $millions)	Sales (in $millions)	Return on Book Equity (%)
95th Percentile	$474.681	$23.884	$388.961	12.3
75th Percentile	91.740	2.431	66.759	(2.5)
50th Percentile	34.663	(3.055)	23.655	(46.5)
25th Percentile	15.799	(11.348)	6.205	(117.8)
5th Percentile	4.971	(23.206)	0.822	(215.1)

Decile 10z	OLS Beta	Sum Beta
95th Percentile	2.88	3.29
75th Percentile	1.61	2.00
50th Percentile	1.07	1.11
25th Percentile	0.54	0.53
5th Percentile	0.30	0.19

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From these data we can conclude:

- Betas used for calculating the size premium for subdecile 10y and subdecile 10z (using the OLS method of calculating betas) generally *understate* the beta, and therefore *overstate* the size premium. Note the small betas for companies in the 25th and 5th percentiles.

- Subdecile 10y and subdecile 10z are populated by many large (but highly leveraged) companies with small market capitalizations that probably do not match the characteristics of financially healthy but small companies (see "Total Assets", 95th percentile measures).

Stocks of the *troubled* companies included in the data probably are trading like call options (unlimited upside, limited downside). Even if you were to use the sum beta method, the beta estimates would likely be underestimated and the size premium overstated (see "Return on Book Equity", 25th percentile and 5th percentile).

Before using the size premium data for 10b or its top and bottom halves, 10y and 10z, the valuation analyst likely should determine if the mix of companies that comprise the subdeciles are indeed comparable to the subject company.

Composition of the Smallest Risk Premium Report Studies Portfolio

The Risk Premium Report Studies use a different methodology from the CRSP Deciles Size Studies. The Risk Premium Report Studies screen out speculative start-ups, distressed (i.e., bankrupt) companies, and other high-financial-risk companies. These studies measure beta using the sum beta method. This methodology was chosen to counter the criticism of the size effect by some that the size premium is a function of the high rates of return for speculative companies and distressed companies in the data set.

The Risk Premium Report Studies use the sum beta method to measure the size premium because it finds that betas of small companies in the data set (even after removing speculative, distressed, and other high-financial-risk companies) are underestimated if one uses the OLS method of estimating betas. Even after eliminating speculative, distressed, and other high-financial-risk companies and using the sum beta in measuring size, we still observe the size effect for a more recent period (since 1963).

The Risk Premium Report Study include a total of eight size measures, including six that are not based on market capitalization. Exhibit 4.11 shows the breakdown of companies in the Risk Premium Report Study in portfolio 25 (portfolio 25 is comprised of the smallest companies) for each of the eight size measures.

If the subject company is not highly levered, the companies in portfolio 25 may be more comparable to a small subject company, and therefore the size premium data for portfolio 25 may be more appropriate to use when dealing with very small companies.

Exhibit 4.11: Size Measure of Companies That Comprise Portfolio 25 of the Risk Premium Report Study
December 31, 2019

Portfolio 25	Market Value of Equity (in $millions)	Book Value of Equity (in $millions)	5-Year Average Net Income (in $millions)	Market Value of Invested Capital (in $millions)
Largest Company	$346.585	$187.069	$12.961	$439.393
95th Percentile	329.802	179.189	12.220	414.209
75th Percentile	235.400	135.075	8.441	307.248
50th Percentile	125.179	80.325	4.853	182.977
25th Percentile	55.321	38.712	2.222	72.063
5th Percentile	18.357	14.922	0.301	25.086
Smallest Company	3.766	8.224	0.028	9.643

Portfolio 25	Total Assets (in $millions)	5-Year Average EBITDA (in $millions)	Sales (in $millions)	Number of Employees
Largest Company	$364.117	$43.622	$344.600	750
95th Percentile	339.038	40.055	317.697	700
75th Percentile	282.617	29.905	226.905	516
50th Percentile	162.848	16.719	113.459	284
25th Percentile	64.519	7.278	51.107	119
5th Percentile	26.638	2.284	22.465	10
Smallest Company	12.853	0.622	5.919	3

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Financial services companies (i.e., SIC code 6; those companies in finance, insurance, or real estate) are *excluded* from Risk Premium Report Study portfolios, primarily because some of the financial data used in the Risk Premium Report Study is difficult to apply to companies in the financial sector (e.g., "sales" at commercial banks). In addition, financial services companies tend to support a much higher ratio of debt-to-equity than do other industries, and so including them with non-financial firms may be an apples-to-oranges comparison that could lead to improperly skewed results. Moreover, companies in the financial services sector were poorly represented during the early years of the Standard & Poor's *Compustat* database.

Because companies in SIC code 6 are excluded from the set of companies used to perform the analyses presented in the Risk Premium Report, the data should not be used by an analyst estimating the cost of equity capital for a financial services company or other company in SIC code 6.

We also publish accounting-based fundamental risk information about the companies that comprise the 25 size-ranked portfolios for *each* of the eight size measures analyzed in the Risk Premium Report Study. This information includes:

- Five-year average operating income margin
- Coefficient of variation in operating income margin
- Coefficient of variation in return on book equity

The first statistic measures profitability, and the latter two statistics measure volatility of earnings.

This information provides the analyst with two important capabilities:

1. Additional tools to determine if the mix of companies that comprise the Risk Premium Report's portfolios are indeed comparable to the subject company.
2. The opportunity to gauge whether an increase (or decrease) adjustment to a risk premium or size premium (and thus cost of equity capital) is indicated, based on the company-specific differences of the subject company's fundamental risk and the average fundamental risk of companies that make up the portfolios from which the risk premia are derived. (for more information, see the section entitled "Comparative Risk Study" in Chapter 10).

Has the Size Effect Disappeared in More Recent Periods?

Some research has suggested that in more recent years the size effect is greatly diminished, or has disappeared altogether. Often, 1981 is identified as the year after which the size effect has either diminished or disappeared. The primary reason for this is that in 1981 Banz examined the returns of NYSE small-cap companies compared to the returns of NYSE large-cap companies over the period 1926–1975, and found that there was a negative relationship between size–as measured by market capitalization–and return (i.e., as market capitalization *decreases*, returns *increase*). In effect, Banz is said to have "let the cat out of the bag" that small-cap companies offered greater returns, and that attracted more investment in small-cap companies. Prices were bid up, thus reducing overall returns for this asset class.

Hou and van Dijk posited that the apparent disappearance of the size effect after the early 1980s was due to cash flow shocks. Realized returns for small companies were generally less than expected because of negative cash flow shocks, and realized returns for large companies were generally greater than expected because of positive cash flow shocks.[4.12] What caused these unexpected cash flow shocks?

The number of newly public firms in the United States increased dramatically in the 1980s and 1990s compared with prior periods, and the profitability and survival rate of the newly public firms

4.12 Kewei Hou and Mathijs A. van Dijk, "Resurrecting the size effect: Firm size, profitability shocks, and expected stock returns", Ohio State University Fisher College of Business working paper, March 31, 2014. Copy available at: https://ssrn.com/abstract=1536804.

was generally less than the profitability and survival rates for firms that went public in previous years. After adjusting realized returns for the cash flow shocks, the result was that returns of small firms on a pro forma basis exceeded the returns of large firms by approximately 10% per annum, consistent with the size premium in prior periods.

A more direct reason often cited for a diminished size effect in more recent years was possibly most succinctly stated by Horowitz, Loughran, and Savin, who suggested that "it is quite possible that as investors became aware of the size effect, small firm prices increased (thus lowering subsequent returns)".[4.13] This conjecture may be supported by the sheer number of small-cap companies that have come into existence since Banz's 1981 article that demonstrated that small-cap companies exhibited significantly greater performance over the period from 1926 to 1975. [4.14]

In a more recent study, the authors found the size effect exists and is statistically significant when one accounts for quality differences among companies. They found that a key variable in explaining the changing size effect over time is the markets pricing of firm quality (as measured by profitability, stability, growth and safety) versus junk. They find that this relationship has a far stronger explanatory power than other factors (relationship of size to the market, value, or momentum). This finding holds whether size is measured by market capitalization or non-market based ("fundamental") measures. Further, this finding holds for each of the 30 industries and 23 countries studied. Further, they found that the size effect holds in periods where other researchers have claimed the size effect has disappeared. The authors also found that the size effect holds not only during the month of January (the "January effect") but through other months as well.[4.15]

In another recent study the author finds that when one examines established (i.e., companies that are not start-up), profitable companies and not financially distressed, there is strong evidence supporting the size effect including in periods where other researchers have claimed the size effect has disappeared.[4.16]

Size Effect: The Big Picture On Small versus Large

We performed analyses to investigate which of two hypothetical investors would have ended up with more money in their pocket over various holding periods within the full range of monthly CRSP decile data (January 1926–December 2019):

- "Investor A" invests only in large-cap companies
- "Investor B" only invests in small-cap companies.

4.13 Joel L. Horowitz, Tim Loughran, and N.E. Savin, "The disappearing size effect", *Research in Economics* (2000), page 98.
4.14 Banz, Rolf W. "The Relationship between Return and Market Value of Common Stocks". *Journal of Financial Economics* (March 1981): 3–18. Professor Banz's 1981 article is often cited as the first comprehensive study of the size effect.
4.15 Asness, Clifford S., Andrea Frazzini, Ronen Israel, Tobias J. Moskowitz, and Lasse Heje Pedersen, "Size Matters, If You Control Your Junk," Journal of Financial Economics 129 (2018): 479-509.
4.16 Grabowski, Roger J., "The Size Effect Continues to Be Relevant When Estimating the Cost of Capital," Business Valuation Review 37 (3) (2018).

To do this, we first calculated the terminal index value of $1.00 invested for every possible combination of monthly start-dates and end-dates for CRSP decile 1 (comprised of the largest-cap companies) and CRSP decile 10 (comprised of the smallest-cap companies) over the January 1926 to December 2019 period.[4.17] The total number of monthly start-dates and end-dates combinations between January 1926 and December 2019 is 636,756.

We then subtracted the terminal index value of large-cap companies from the terminal index value of small-cap companies for *each* of the 636,756 start-date/end-date combinations. If the terminal index value of small-cap companies was *greater* than the terminal index value of large-cap companies, this would indicate small-cap companies earned a *higher* return over that period for the investor.

Example: $1.00 invested in large-cap companies from January 1926 would have grown to $5,179.41 by the end of December 2019. Alternatively, $1.00 invested in small-cap companies from January 1926 would have grown to $104,550.91 by the end of December 2019. Investing in small-cap companies would have resulted in $99,371.50 ($104,550.91 – $5,179.41) *more* money in your pocket than investing in large-cap companies over this period.

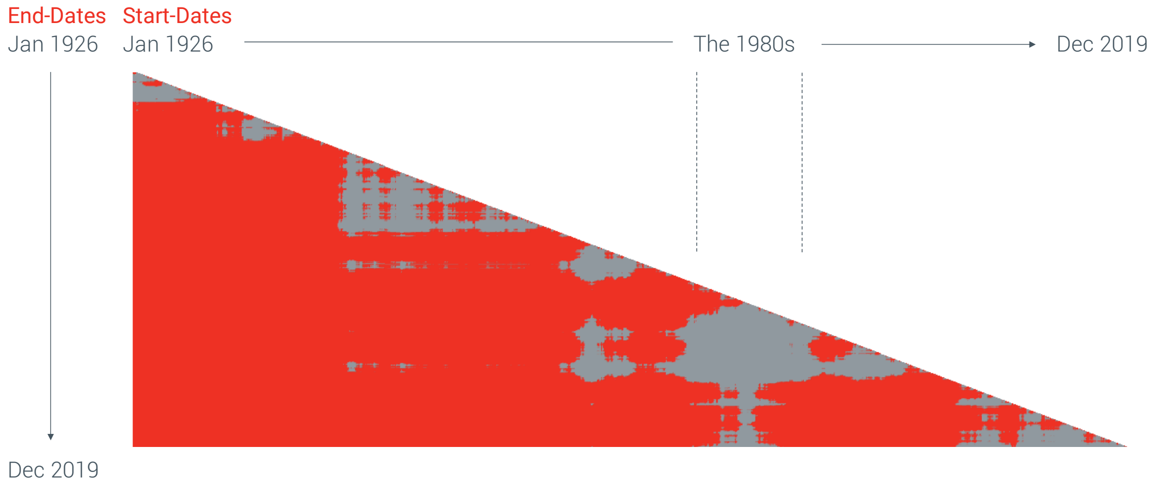
These calculations were performed for *every* possible monthly start-date and end-date combination between January 1926 and December 2019. The result of this analysis was that small-cap companies outperformed large-cap companies in 536,452 of the cases (84.2%), and large-cap companies outperformed small-cap companies in 100,304 cases (15.8%).

These results are shown in Exhibit 4.12, where the difference in the terminal index value between small-cap companies and large-cap companies for all 636,756 possible start-date/end-date combinations from January 1926 to December 2019 are mapped. In Exhibit 4.12, if the terminal index value for small-cap companies is *greater* than the terminal index value for large-cap companies over a start-date/end-date combination (i.e., small-cap companies outperformed large-cap companies over that period), it is shown in red (536,452 cases). Alternatively, if the terminal index value for small-cap companies is *less* than the terminal index value for large-cap companies over a start-date/end-date combination (i.e., large-cap companies outperformed small-cap companies over that period), it is shown in gray (100,304 cases).

The significance of the large gray area in Exhibit 4.12 under start-dates that begin in the 1980s will be discussed in more detail later in this chapter.

4.17 The terminal index value in all cases presented here is the amount that $1 invested on the start-date would have grown to (or decreased to) as of the end-date. All terminal index values in this section are calculated geometrically.

Exhibit 4.12: CRSP Decile 10 (small-cap companies) Terminal Index Values *Minus* CRSP Decile 1 (large-cap companies) Terminal Index Values for 636,756 Start-Date/End-Date Combinations; Red = Small-Cap Companies Outperformed Large-Cap Companies Over the Period, Gray = Large-Cap Companies Outperformed Small-Cap Companies Over the Period
January 1926–December 2019



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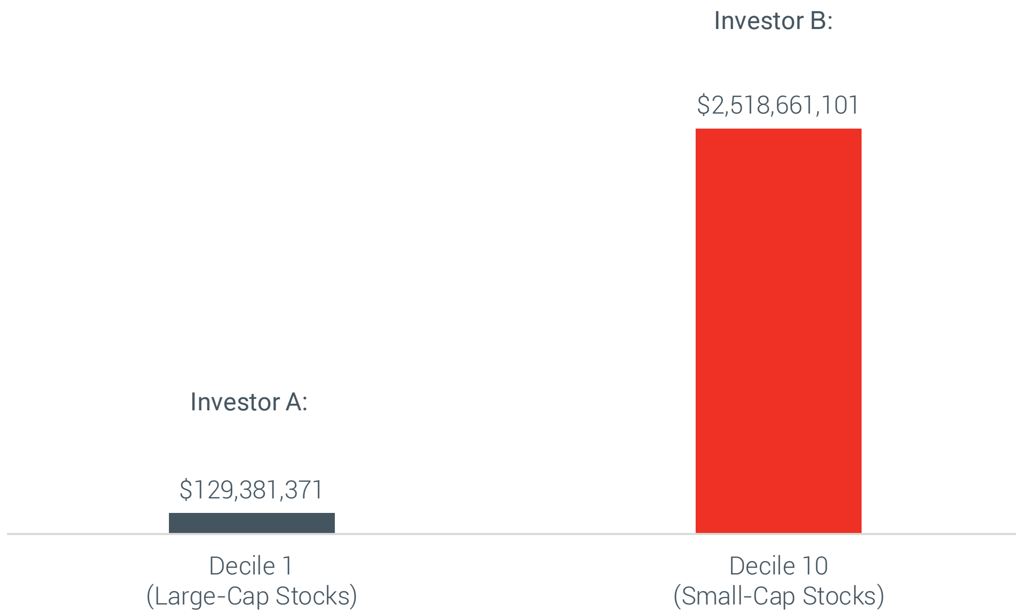
The results in Exhibit 4.12 are merely a record of whether small-cap companies outperformed large-cap companies, or vice versa, over the 636,756 possible start-date/end-date periods, with no regard to the *magnitude* of the outperformance. The "magnitude" of overperformance can be illustrated with the following example.

If hypothetical Investor A, who invests only in CRSP Decile 1 (comprised of the *largest* companies), had invested $1 in *each* of the 636,756 possible start-date/end-date investment horizons between January 1926 and December 2019, her $636,756 total investment would have grown to $129,381,370.60 (i.e., $129.4 million, see Exhibit 4.13).

Alternatively, if hypothetical Investor B, who invests only in CRSP Decile 10 (comprised of the *smallest* companies), had invested $1 in each of the 636,756 possible start-date/end-date investment horizons between January 1926 and December 2019, his $636,756 total investment would have grown to $2,518,661,101 (i.e., $2.5 billion).

Investor B, who invested only in small companies, ends up with 19.5 times as much money in his pocket ($2,518,661,101÷ $129,381,370.60) than Investor B, who only invests in large companies.

Exhibit 4.13: Proceeds From an Investment of $1 in *Each* of the 636,756 Possible Start-Date/End-Date Investment Horizons Between January 1926 and December 2019; "Investor A" invests only in large-cap stocks, "Investor B" invests only in small-cap stocks



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Size Effect: A Closer Examination

In Exhibit 4.14, a more detailed summary of these results is shown, where the holding periods are limited to *exactly* 1 month, 5-years, 10-years, 20-years, and 30-years, instead of all 636,756 possible start-date and end-date combinations. The entire January 1926–December 2019 period is examined, as well as three more recent start date windows: April 1981–December 2019, January 1990–December 2019, and January 2000–December 2019. All three of these three more recent periods are *after* Banz wrote his March 1981 article that identified the size effect, and so they are labeled "Post Banz".

In Exhibit 4.14 the number of periods examined is shown first, followed by the outperformance percentage of the total periods in parentheses.

Exhibit 4.14: Small-cap Companies' Performance minus Large-cap Companies' Performance Over Periods of Exactly 1, 60, 120, 240, and 360 Months
January 1926–December 2019

Holding Period	All Dates Jan 1926–Dec 2019	Post Banz Apr 1981–Dec 2019	Post Banz Jan 1990–Dec 2019	Post Banz Jan 2000–Dec 2019
Exactly 1 month				
Small Stocks Outperform	531 (47%)	213 (46%)	174 (48%)	123 (51%)
Large Stocks Outperform	597 (53%)	252 (54%)	186 (52%)	117 (49%)
Exactly 60 months (5 years)				
Small Stocks Outperform	591 (55%)	177 (44%)	172 (57%)	108 (60%)
Large Stocks Outperform	478 (45%)	229 (56%)	129 (43%)	73 (40%)
Exactly 120 months (10 years)				
Small Stocks Outperform	700 (69%)	187 (54%)	187 (78%)	88 (73%)
Large Stocks Outperform	309 (31%)	159 (46%)	54 (22%)	33 (27%)
Exactly 240 months (20 years)				
Small Stocks Outperform	730 (82%)	179 (79%)	121 (100%)	1 (100%)
Large Stocks Outperform	159 (18%)	47 (21%)	0 (0%)	0 (0%)
Exactly 360 months (30 years)				
Small Stocks Outperform	702 (91%)	92 (87%)	1 (100%)	–
Large Stocks Outperform	67 (9%)	14 (13%)	0 (0%)	–

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In the top row of Exhibit 4.14 (in which the holding period is restricted to a single month), large-cap companies outperformed small-cap companies in the January 1926–December 2019 period (53%), and in the "Post-Banz" April 1981–December 2019 and January 1990–December 2019 time horizons (54% and 52%, respectively). In the more recent January 2000–December 2019 time horizon small-cap companies outperformed 51% of the time.

As the holding period is increased, and the time that small-cap companies and large-cap companies are given to "race" against each other is lengthened, small-cap stocks tend to *increasingly* outperform large-cap stocks. For example, over the entire range January 1926–December 2019 (see leftmost column of Exhibit 4.14), as the holding period is increased to 60 months (5-years), to 120 months (10-years), to 240 months (20-years) and finally to 360 months (30-years), small stocks increasingly outperform large stocks (55%, 69%, 82%, and 91% of the time, respectively).

This same pattern of *increasing* outperformance of small stocks as the holding period is *increased* can also be seen in the three "Post Banz" periods.

The 1980s and the Size Effect

To examine the significance of the large gray area under start-dates that begin in the 1980s previously alluded to in Exhibit 4.12, we performed the following analysis:

1. All possible and *identical* "240-month x 240-month" sized wedges that exist in the larger "wedge" shown in Exhibit 4.12 were identified. Over the time period January 1926–December 2019, the number of possible and identical 240-month x 240-month sized wedges in Exhibit 4.12 is 889.[4.18]

2. We calculated the proceeds from our hypothetical **Investor A** investing $1 in *each* of the 28,920 possible and identical start-date/end-date investment horizons in *each* of the "240-month x 240-month" sized wedges (Investor A invests only in CRSP Decile 1, which is comprised of the largest companies).

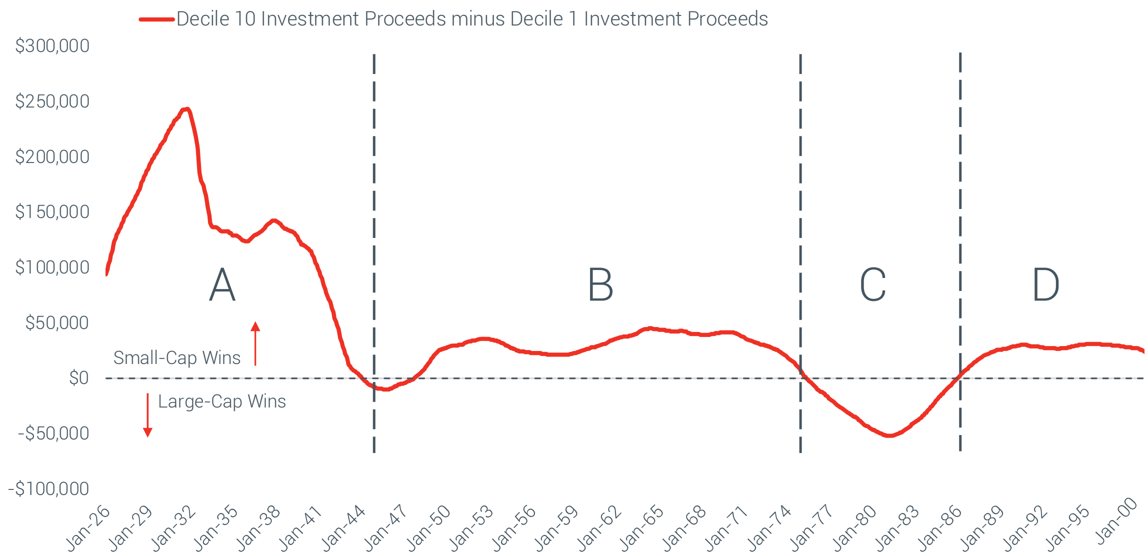
3. We calculated the proceeds from our hypothetical **Investor B** investing $1 in *each* of the 28,920 possible and identical start-date/end-date investment horizons in *each* of the "240-month x 240-month" sized wedges (Investor B invests only in CRSP Decile 10, which is comprised of the smallest companies).

4. Finally, for each of the 889 "240-month x 240-month" sized wedges, Investor A's "large-cap company" investment proceeds were subtracted from Investor B's "small-cap company" investment proceeds.

The results of this analysis are shown in Exhibit 4.15. (Next Page)

[4.18] By "identical", we mean (i) each wedge is exactly 240 months x 240 months (20 years) in size, and (ii) the possible start-date/end-date combinations within each of the 889 "240-month x 240-month wedges" are identical in number (28,920), and (iii) each of the 28,920 possible start-date/end-date combinations within each of the 889 "240-month x 240-month wedges" has an *exact* equivalent possible start-date/end-date combination in each of the other 889 "240-month x 240-month wedges". Thus, for each of the 889 wedges, the number of periods measured and the length of those periods is exactly identical to the number of periods and length of periods in each of the other 889 wedges.

Exhibit 4.15: Investor A's "large-cap company" Investment Proceeds Subtracted from Investor B's "small-cap company" Investment Proceeds for Each Possible and Identical "240-month x 240-month" Sized Wedge from January 1926–December 2019



***Note:** January 2000 is the last "start month" for which a "240-month x 240-month" sized wedge could be calculated ending Dec. 31, 2019*

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Each of the 889 points that comprise the solid red line in Exhibit 4.15: (i) is made up of the results of 28,920 separate investments of $1 in *each* of 28,920 start-date/end-date time periods in the given "240-month x 240-month" wedge being examined, and (ii) is directly comparable to every other point in the graph. In other words, there are a lot of observations in Exhibit 4.15, and those observations are all comparable to each other in an "apples to apples" fashion.

In Exhibit 4.15, if the investment proceeds of investing in small-cap companies are *greater* than the investment proceeds of investing in large-cap companies, the red line is *above* the dashed horizontal "$0" line. Alternatively, if the investment proceeds of investing in small-cap companies are *less* than the investment proceeds of investing in large-cap companies, the red line is *below* the dashed horizontal "$0" line.

There are at least four observations about the results shown in Exhibit 4.15:

- **Observation 1:** Small-cap companies usually win. Investor B's "small-cap company" investment proceeds were *greater* than Investor A's "large-cap company" investment proceeds in 717 (80.7%) of the 889 identical "240-month x 240-month" wedges examined.
- **Observation 2:** Small-cap companies outperformed large-cap companies to a greater degree in *earlier* periods (see area "A" in Exhibit 4.15)[4.19] than they did in *later* periods (see areas "B", "C", and "D").
- **Observation 3:** Small-cap companies performed *poorly* relative to large-cap companies in the "240-month x 240-month" wedges that overlap the 1980s (see area "C" in Exhibit 4.15).
- **Observation 4:** As soon as the influence from the 1980s is in the rear-view mirror, small-cap companies seem to regain their footing, and the size effect in area "D" seems to return to what it was in area "B".[4.20]

Controlling for Small-Cap Companies' Significant Outperformance of Large-Cap Companies in Earlier Periods

This section started with the question of whether the size effect has disappeared in more recent periods. The empirical evidence presented thus far suggests that the size premia is likely alive and well, even in the periods following the 1981 publication of Rolf Banz's seminal article.[4.21] However, the evidence also suggests that the size effect may be of *diminished* strength in more recent years, especially when compared to very early periods.

For example, one of the four observations about the results in Exhibit 4.15 was that small-cap companies outperformed large-cap companies to a greater degree in the *earlier* periods of 1926–1945 (see area "A" in Exhibit 4.15) than they did in *later* periods. One might reasonably reckon that "most" of the size effect over the 1926–2019 time horizon happened in the earlier years, as represented by the 20-year period from 1926–1945 (see area "A" in Exhibit 4.15), and that if these early years were controlled for (i.e., "excluded ") in the calculations of size premia, that the size premia might be severely weakened, or disappear altogether.

4.19 Area "A" represents the first 20 years of Exhibit 4.15 (i.e., 1926–1945). "1926–1945" was arbitrarily selected to represent the earlier years in Exhibit 4.15. For example, 1926–1944 (or even 1943) could just as easily have been selected; 1926–1945 was selected because it is a round 20-year period.

4.20 Dimson, Marsh and Staunton address this in a recent paper: "Over the period 1984–1997, the small-cap premium turned negative; although, ironically, after we highlighted the demise of the size effect, U.S. small caps performed very well over the first decade of the 21st century in both relative and absolute terms." See: Elroy Dimson, Paul Marsh and Mike Staunton, *The Journal of Portfolio Management* Special QES Issue 2017, 43 (5) 15-37; DOI: https://doi.org/10.3905/jpm.2017.43.5.015.

4.21 Banz, Rolf W. "The Relationship between Return and Market Value of Common Stocks". *Journal of Financial Economics* (March 1981): 3–18. Professor Banz's 1981 article is often cited as the first comprehensive study of the size effect.

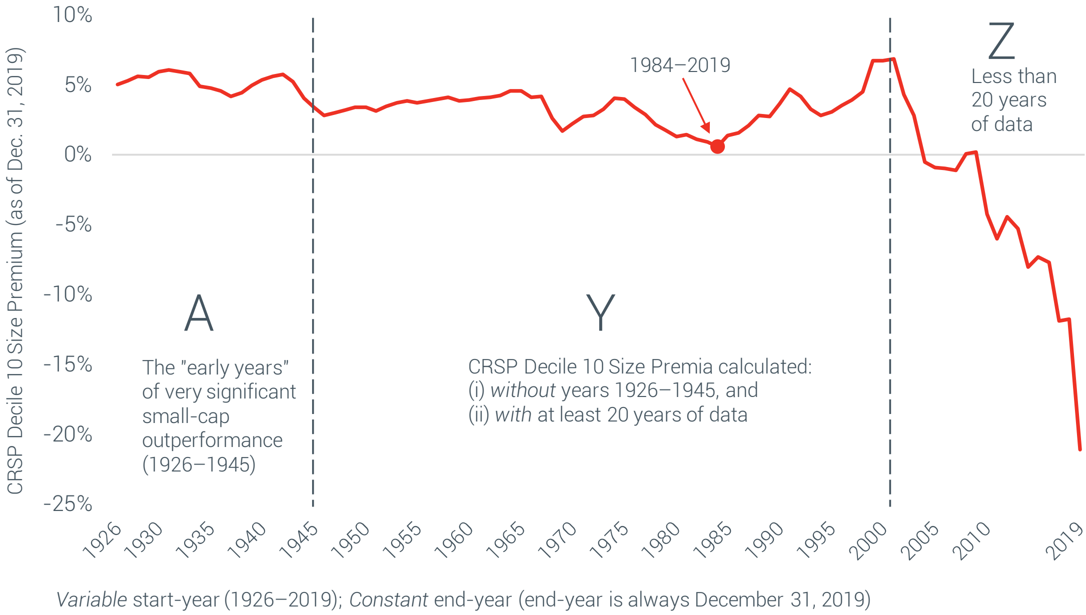
We tested to see what would happen if the first 20 years (1926–1945), a period during which the size effect was stronger than it was in later periods, were *excluded* from the calculations of 2019 year-end size premia. In Exhibit 4.16, the results of this analysis are shown. The solid red line in Exhibit 4.16 is the size premium for CRSP Decile 10, as of December 31, 2019, calculated as if the CRSP data started in *each* year from 1926–2019 (instead of just 1926).

For example, the leftmost point in Exhibit 4.16 is the size premium for CRSP Decile 10 calculated over the time period 1926–2019 (94 years). The second-most leftmost point in is the size premium for CRSP Decile 10 as of December 31, 2019 calculated over the time period 1927–2019 (93 years), the third-most leftmost point is the size premium for CRSP Decile 10 as of December 31, 2019 calculated over the time period 1928–2019 (92 years), etc., etc., until the *rightmost* point in Exhibit 4.16 is the size premium for Decile 10 as of December 31, 2019 calculated over the time period 2019–2019 (1 year).

Area "A" in Exhibit 4.16 is the equivalent of area "A" from Exhibit 4.15. Area "A" in both exhibits is represented by the "early years" of 1926–1945, during which small-cap companies' outperformance of large-cap was significantly greater than it was in later periods. In area "A" in Exhibit 4.16, the year-end 2019 CRSP Decile 10 size premia is calculated with start-years of 1926–1945, and a *constant* end-year of 2019.

Area "Z" of Exhibit 4.16 is the year-end 2019 CRSP Decile 10 size premia as of December 31, 2019 calculated with start-years of 2001–2019, and a *constant* end-year of 2019. Each of the calculations in area Z includes less than 20 years of data, and is therefore excluded from any further analysis because of the short time horizon over which they are calculated.

Exhibit 4.16: CRSP Decile 10 Size Premium Calculated Through 2019 (in each case), and *Different* Start-Years (1926–2019)



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The real area of interest in Exhibit 4.16 is area "Y". In area "Y" the year-end 2019 CRSP Decile 10 size premia is calculated with start-years of 1946–2000, and a *constant* end-year of 2019. Note that the 94 points that comprise the red line in Exhibit 4.16 are *not* "apples to apples" comparable, because the time horizon over which each point is calculated is *different* (94 years, 93 years, 92 years,...etc.). However, the size premia in area "Y" are each calculated with *at least* 20 years of data.[4.22]

All of the size premia in area "Y" are also calculated *without* any data from 1926–1945, the area "A" years in which small-cap companies' outperformance of large-cap companies was significantly greater than it was in later periods. In other words, the huge small-cap outperformance of the 1926–1945 period has been "controlled for" (i.e., excluded) in all size premia calculations in area "Y".

The resulting CRSP Decile 10 size premia calculated area "Y" are all positive, even after controlling for the huge small-cap outperformance of the "early years" in area "A". As a matter of fact, all but one data point (i.e., the year-end 2019 CRSP Decile 10 size premia calculated using data from 1984–2019) within area "Y", had a calculated size premium higher than the mean (i.e., average)

[4.22] The leftmost point in Area Y in Exhibit 4.16 is the CRSP Decile 10 size premium calculated using data from 1946–2019 (74 years); the rightmost point in Area Y in Exhibit 4.16 is the CRSP Decile 10 size premium calculated using data from 2000–2019 (20 years). The next calculation (2000–2018) has less than 20 years of data (19 years) and therefore falls into area "Z". Area "Z" results are excluded from any further analysis in this section because of the short time horizon over which they are calculated.

minus two standard deviations. In other words, with the one exception noted, all the size premium observations calculated in area "Y" were in excess of the lower-bound 95% confidence interval (mean minus two standard deviations), with the indicated size premia always being positive (greater than 0.0%).

These analyses suggest:

- The size effect is cyclical. Sometimes small-cap companies outperform large-cap companies, and sometimes large-cap companies outperform small-cap companies.[4.23]

- The longer the holding period over which small-cap companies and large-cap companies are given to "race" against each other, the more likely it is that small-cap companies will outperform large-cap companies.[4.24]

- This implies that over the longer-term (which is the default period over which most business valuations are done), the size effect is indeed a significant factor that should likely be accounted for in the development of cost of capital estimates.

- The 1980s were not kind to small capitalization stocks. During this period, the size effect likely was on a cyclical low, or even significantly negative.

- After the influence from the 1980s is in the rear-view mirror, small-cap companies seem to regain their footing, and the size effect seems to return to levels similar to those in the decades preceding the 1980s.

- The evidence suggests that the size effect has diminished in strength in more recent years, especially when compared to the "early years" 1926–1945, during which small-cap companies outperformed large-cap companies by a large magnitude.

- The size effect is still significant even *after* controlling for the huge small-cap outperformance of the "early years" 1926–1945.

Relationship of Size and Liquidity

Liquidity affects the cost of capital. For this purpose, *liquidity* refers to the speed at which a large quantity of a security can be traded with a minimal impact on the price and at the lowest cost. Banz's 1981 musing as to whether "...size per se is responsible for the effect or whether size is just a proxy for one or more true unknown factors correlated with size" may have been cannily prescient. Research on returns as related to "size" is abundant, but over time a growing body of work investigating the impact of "liquidity" on returns has emerged.

4.23 See: Roger J. Grabowski, "The Size Effect – It Is Still Relevant", *Business Valuation Review*, Volume 35, Number 2, Summer 2016.

4.24 Empirically, estimation error of premiums goes down with the square root of time, unlike beta or standard deviation estimation error which goes down by the square root of the number of observations. Thus, there can be long periods of negative results for positive premiums. See also: Fama, Eugene F. and French, Kenneth R., "Long-Horizon Returns" (November 20, 2017). Chicago Booth Research Paper No. 17-17; Fama-Miller Working Paper. Available at: SSRN: https://ssrn.com/abstract=2973516 or http://dx.doi.org/10.2139/ssrn.2973516 and Fama, Eugene F. and French, Kenneth R., "Volatility Lessons" (November 1, 2017). Chicago Booth Research Paper No. 17-33; Fama-Miller Working Paper. Available at: SSRN: https://ssrn.com/abstract=3081101.

Capital market theory also assumes liquidity of investments. Many of the observations about risk and return are drawn from information for liquid investments. Investors desire liquidity and require greater returns for illiquidity. But the degree of liquidity is one of the risk factors for all investments. Any discussion of a liquidity premium, therefore, would be incomplete without accounting for underlying stock risks before considering relative liquidity.

Stocks of small companies generally do not have the same level of liquidity as large-company stocks. This is likely a function of the mix of shareholders and underlying risk characteristics. Many institutional investors do not own stocks in small companies because they have too much money to invest. Were they to invest as little as 1% of their available funds in a small company, they would be likely to control the company. Institutional investors generally want liquidity to move into and out of positions in a single firm. Therefore, one does not see the breadth of investors investing in small-company stocks.

Further, small companies are followed by only a small window of analysts, if at all. This makes it more difficult for investors to evaluate small firms.

Is the size premium simply the result of differences in liquidity? If one is valuing a small business, that business, if it were publicly traded, would likely never have the same breadth of shareholders as a large publicly traded company, and whatever impact the relative illiquidity of small companies has on the cost of capital will carry over to any small business.

Some analysts have suggested that the size effect should be set aside because various studies have ignored transaction costs in measuring rates of return. The analysts point out that small stocks often have higher transaction costs than large stocks. In addition, the historical size premium can be greatly reduced if one makes certain assumptions about transaction costs and holding periods. However, in applying the income approach to valuation, analysts typically use projected net cash flows that do not make any adjustment for an investor's hypothetical transaction costs. It may be that small stocks are priced in a way that increases the rates of return so as to reward investors for the costs of executing a transaction. If so, it would be a distortion to express the discount rate on a net-of-transaction-cost basis while the net cash flow projections are on a before-transaction-cost basis.

Academic studies support the hypotheses that illiquidity is a factor in pricing and returns of stocks and that returns of small firms are more sensitive to market liquidity. Moreover, any reasonable adjustment for transaction costs should recognize that investors can mitigate these costs on an annual basis by holding their stocks for a longer period. In fact, investors in small companies tend to have longer holding periods than investors in large companies.

First, let's examine some of the research.

As early as 1986, Amihud and Mendelson, demonstrated that "...market-observed average returns are an increasing function of the spread..." (i.e., less liquid stocks, as measured by a larger bid-ask spread, outperform more liquid stocks), and further concluded that the "...higher yields required on higher-spread stocks give firms an incentive to increase the liquidity of their securities, thus reducing their opportunity cost of capital".[4.25]

In a 2013 article, Ibbotson, Chen, Kim, and Hu suggested that while the typical measures of liquidity employed in the literature are each "...highly correlated with company size", they demonstrate that liquidity, as measured by annual stock turnover, "...is an economically significant investment style that is just as strong, but distinct from traditional investment styles such as size, value/growth, and momentum".[4.26] Analyzing the performance of a broad universe of U.S. stocks from 1972–2011, the authors go on to say that "...there is an incremental return from investing in less liquid stocks even after adjusting for the market, size, value/growth, and momentum factors", and conclude that "...equity liquidity is the missing equity style".

The authors identify two main sources of the greater returns of less liquid stocks. The first is that "investors like liquidity and dislike illiquidity", and "...a premium has to be paid for any characteristic that investors demand, and a discount must be given for any characteristic investors seek to avoid". Thus, "...the investor in less liquid stocks gets lower valuations, effectively buying stocks at a discount".

As we discussed in Chapter 2, one can think of risk in terms of popularity. For example, illiquidity is typically considered a risk, and less liquid stocks are considered less popular. One can classify less liquid stocks as less popular than brand name stocks that are in the news, having more analyst coverage and greater trading volume. Similarly, the size premium can be thought of as a risk measure that encompasses both illiquidity risk and underlying business risk; small capitalization stocks are typically less popular.

In a 2018 update to the 2013 article, Ibbotson and Kim examine market data from 1972–2017 and conclude that liquidity, as measured by stock turnover, meets the four criteria that characterize a benchmark investment style that William F. Sharpe defined in a 1992 article: (i) "identifiable before the fact", (ii) "not easily beaten", (iii) "a viable alternative", and (iv) "low in cost":[4.27, 4.28]

4.25 Amihud, Yakov and Haim Mendelson, 1986, "Asset Pricing and the Bid-Ask Spread", *Journal of Financial Economics* 17, 223–249.

4.26 See Roger G. Ibbotson, Zhiwu Chen, Daniel Y.-J. Kim, and Wendy Y. Hu, "Liquidity as an Investment Style", *Financial Analysts Journal* Vol. 69(3): 30–44, May/June 2013. Copy available at www.zebracapm.com.

4.27 The "2018 update to the 2013 article" is Roger G. Ibbotson and Daniel Y.-J.Kim, "Liquidity as an Investment Style, 2018 Update", February 13, 2018. The section on the 2018 update herein is largely excerpted from Roger G. Ibbotson and Daniel Y.-J.Kim's writing in same. Copies of the 2018 update are available at www.zebracapm.com. Roger Ibbotson is Professor Emeritus of Finance, Yale School of Management, and Chairman, Zebra Capital Management, LLC. Daniel Y.-J.Kim is Director of Research, Zebra Capital Management, LLC.

4.28 Sharpe, William F., 1992, "Asset Allocation: Management Style and Performance Measurement". *Journal of Portfolio Management*, Vol. 18, No. 2 (Winter):7–19.

Identifiable Before the Fact: Given that Ibbotson and Kim's measure of liquidity was the previous year's turnover of the stock, the liquidity measure used is (by definition) "*identifiable before the fact*".[4.29]

Not Easily Beaten: Ibbotson and Kim then compared the 1st quartile returns of the various styles, and these all outperformed the equally weighted market portfolio. The returns from the low liquidity quartile were comparable to the other styles, beating size and momentum, but trailing value. They consider all four styles to be "*not easily beaten*".

A Viable Alternative: Ibbotson and Kim examined double sort portfolios comparing liquidity with size, value, and momentum in four-by-four matrices. The impact of liquidity on returns was somewhat stronger than size and momentum, and roughly comparable to value. It was also additive to each style. Thus they determined that liquidity was "*a viable alternative*" to size, value, and momentum.

Low in Cost: Ibbotson and Kim demonstrated that less liquid portfolios could be formed "*at low cost*". The portfolios they examined were formed only once per year, and 64.27% of the stocks stayed in the same quartile. The high-performing low quartile had 78.55% of the stocks stay in that quartile. Thus the liquidity portfolios themselves exhibit low turnover, which can keep their costs low.

Ibbotson and Kim demonstrate that liquidity is "a viable alternative" to each of the three other well established styles (size, value/growth, and momentum) by focusing on distinguishing turnover from size, value, and momentum by constructing "double-sort" quartile portfolios that combine liquidity with each of the other styles (in turn). In each of these analyses, the "liquidity effect" held regardless of size, value/growth, and momentum groupings.

For example, it is often presumed that investing in less liquid stocks is equivalent to investing in small-cap stocks. To determine if liquidity is effectively a proxy for size, they constructed equally weighted double-sort portfolios in capitalization and turnover quartiles. Exhibit 4.17 reports the annualized geometric mean (compound) return, arithmetic mean return, and standard deviation of returns along with the average number of stocks in each intersection portfolio.

4.29 Other liquidity measures could have met that criteria as well, but Ibbotson and Kim chose turnover because it was simple, easy to measure, and has a significant impact on returns.

Exhibit 4.17: Summary Statistics of Size and Liquidity "Double Sort" Quartile Portfolios 1972–2019

	Low Liquidity	Mid-Low Liquidity	Mid-High Liquidity	High Liquidity	Liquidity Effect (%)
Micro-Cap					
Geometric Mean (%)	15.44	15.28	9.42	-0.65	**16.09**
Arithmetic Mean (%)	17.74	18.79	14.47	4.39	
Standard Deviation (%)	22.54	28.36	34.05	32.81	
Avg. Number of Stocks	348	181	122	96	
Small-Cap					
Geometric Mean (%)	15.25	14.22	11.91	5.69	**9.56**
Arithmetic Mean (%)	16.85	16.67	15.10	9.70	
Standard Deviation (%)	19.19	23.43	26.57	29.72	
Avg. Number of Stocks	198	201	173	175	
Mid-Cap					
Geometric Mean (%)	13.68	13.65	12.74	8.14	**5.54**
Arithmetic Mean (%)	15.01	15.31	14.80	11.56	
Standard Deviation (%)	17.50	19.51	21.35	27.09	
Avg. Number of Stocks	128	177	204	240	
Large-Cap					
Geometric Mean (%)	11.43	12.33	11.84	8.95	**2.48**
Arithmetic Mean (%)	12.64	13.45	13.35	11.81	
Standard Deviation (%)	16.17	15.46	17.74	24.31	
Avg. Number of Stocks	73	188	249	237	
Size Effect (%)	**4.01**	**2.95**	**-2.42**	**-9.60**	

Source: Compound annual returns (%) from 1972–2019. Calculated by Zebra Capital Management at www.zebracapm.com. This is an update to the research published in Ibbotson, Roger G., and Daniel Y.-J Kim, "Liquidity as an Investment Style: 2018 Update," available at www.zebracapm.com. Updated version of: Ibbotson, Roger G., Chen, Zhiwu, Kim, Daniel Y.-J., and Hu, Wendy Y. "Liquidity as an Investment Style," *Financial Analysts Journal*, May/June 2013, updated with 2013–2017 data.

Across the micro-cap quartile in Exhibit 4.17, the low-liquidity portfolio earned a geometric mean return of 15.44% per year in contrast to the high-liquidity portfolio returning –0.65 per year, suggesting that the liquidity effect is the *strongest* (16.09%) among micro-cap stocks, and then declines from small- to mid- to large-cap stocks. Note that the micro-caps row contains both the *highest* return and the *lowest* returns.

Across the large-cap quartile, the low- and high-liquidity portfolios returned 11.43% and 8.95% respectively, producing a liquidity effect of 2.48%.

Within the two mid-size portfolios, the liquidity return spread is also significant. Therefore, size does not capture liquidity (i.e., the liquidity premium *holds* regardless of size group). Conversely, the size effect does *not* hold across all liquidity quartiles, especially in the highest turnover quartile (-9.60%).

A "heat map" of the size and liquidity "double sort" quartile portfolios is presented in Exhibit 4.18. In Exhibit 4.18, the deeper the red, the *higher* the return, and the darker the gray, the *lower* the return. For example, the *highest* return over the 1972–2019 period was produced by low-liquidity/micro-cap stocks (15.44%). Alternatively, the *lowest* return was produced by high-liquidity/micro-cap stocks (-.65%).

Exhibit 4.18: Heat Map of Size and Liquidity "Double Sort" Quartile Portfolios (%), Compound Annual Returns
1972–2019

Low Liquidity → High Liquidity

Micro-Cap	15.44	15.28	9.42	-0.65
↓	15.25	14.22	11.91	5.69
↓	13.68	13.65	12.74	8.14
Large-Cap	11.43	12.33	11.84	8.95

Source: Compound annual returns (%) from 1972–2019 Calculated by Zebra Capital Management at www.zebracapm.com. This is an update to the research published in Ibbotson, Roger G., and Daniel Y.-J Kim, "Liquidity as an Investment Style: 2018 Update," available at www.zebracapm.com. Updated version of: Ibbotson, Roger G., Chen, Zhiwu, Kim, Daniel Y.-J., and Hu, Wendy Y. "Liquidity as an Investment Style," *Financial Analysts Journal*, May/June 2013, updated with 2013–2017 data.

In the 2018 update on liquidity, Ibbotson and Kim reach four broad conclusions: (i) liquidity should be given equal standing to size, value/growth, and momentum as an investment style, (ii) liquidity, as measured by stock turnover, is an economically significant indicator of long run returns, (iii) returns from liquidity are sufficiently different from the other styles, so that it is not merely a substitute, and finally, (iv) a stock's liquidity is relatively stable over time, with changes in liquidity associated with changes in valuation.

Ashok Abbott also investigated the relative importance of the size and liquidity risk factors.[4.30] The author used a multi-factor model including a trading cost measure and a liquidity premium factor to assess the absolute contribution for each factor individually, as well as in combination with

4.30 Ashok Bhardwaj Abbott (2015). Available from the author.
4.31 A measure of an individual stock's liquidity, with higher levels signifying that the current order flow in the market can absorb larger volumes of trading without significantly affecting prices.

other factors, to form an estimate of the combined contribution of the factors considered in the estimate of the cost of equity capital.[4.31]

Abbott found significant negative relationships between the size of the companies as measured by market value of equity and his trading cost measure; stocks of larger firms can be traded at a lower cost. He found a similar relationship between liquidity and cost of trading. As stocks become more liquid, trading costs and price impact both decline, as suggested by theory.

The Risk Premium Report Study demonstrates that size and fundamental risk of small companies are correlated (discussed in chapter 10). This leads one to consider that size may, in part at best, be a coincident indicator of fundamental company risk.

That same relationship may be creating the liquidity effect. That is, the underlying risks of small companies being greater than those of larger companies may cause investors to shy away from small companies, valuing their liquidity. Thus, reduced liquidity may also be a coincident indicator of fundamental risk.

In measuring the appropriate size premium when estimating the cost of equity capital for a division or reporting unit of a large public company or a closely held business, one need not separate the portion of the size premium that may be attributable to an illiquidity factor. One is estimating the cost of capital as if the market were pricing the risks of the subject business based on the average risk of other companies of comparable size including any portion of the risks due to illiquidity.

Conclusion

The results confirm that liquidity impacts returns across styles and locations. Investing in less liquid securities generates higher returns. Liquidity seems to be an investment style that is different from size or value. This result seems to hold up in almost any equity market subset and in any location.

This section is an excerpt from a new Chartered Financial Analyst® (CFA) Institute Research Foundation monograph entitled, "Popularity: A Bridge Between Classical and Behavioral Finance" by Roger G. Ibbotson and colleagues Thomas M. Idzorek, CFA, Paul D. Kaplan, CFA, and James X. Xiong, CFA.[4.32, 4.33]

4.31 A measure of an individual stock's liquidity, with higher levels signifying that the current order flow in the market can absorb larger volumes of trading without significantly affecting prices.

4.32 Copyright 2018, CFA Institute Research Foundation. Reproduced from Popularity: A Bridge between Classical and Behavioral Finance with permission from CFA Institute Research Foundation. All rights reserved.

4.33 Available for download at: https://www.cfainstitute.org/en/research/foundation/2018/popularity-bridge-between-classical-and-behavioral-finance, or go to the CFA website at cfainstitute.org and search for "popularity"

4.34 Ibbotson, R.G., Idzorek, T.H. "Dimensions of Popularity," Journal of Portfolio Management, Vol. 40 No. 5, (Special 40th Anniversary Issue 2014), P. 68–74.

What's Next?

For many years, academics have sought to explain and understand asset prices, with a strong emphasis on market premiums and market anomalies. These premiums and anomalies can be explained by social or behavioral phenomenon in many settings. In a 2014 article, Roger Ibbotson and Tom Idzorek said, "Most of the best-known market premiums and anomalies can be explained by an intuitive and naturally occurring (social or behavioral) phenomenon observed in countless settings: popularity.[4.34]

Popularity

The existence of various market premiums and anomalies is well established in the finance literature. To date, however, no single agreed-upon explanation for them has emerged. Investment finance is largely divided into two camps, classical and behavioral. Classical finance is based mainly on the idea that investors are risk averse, so market premiums are generally interpreted as risk premiums. In behavioral finance, premiums are considered to be the result of either cognitive errors that investors systematically make or preferences for company or security characteristics that might not be related to risks. We believe that most of the best-known market premiums and anomalies can be explained by an intuitive and naturally occurring (social or behavioral) phenomenon observed in countless settings: popularity.

What Is Popularity?

Popularity is the condition of being admired, sought after, well-known, and/or accepted. A wide range of possible categories – people, food, fashion, music, places to live, types of pet, vacation destinations, television shows, and so on – contain an implicit popularity spectrum or rank. Each of the categories has various criteria for estimating popularity.

For our purposes, the quality of the ranking criteria is not important; what is important is that any given category comprises a natural ordering in which some constituents are more popular than others. Such relative popularity evolves over time. Some aspects of popularity are systematic, or more or less permanent (for example, modern society seems to prefer thin to fat, tall to short). Other aspects of popularity may be transitory or exist only as fads (for example, necktie width, high -waisted jeans, men wearing wigs). Whether the result of systematic trends or idiosyncratic evolution, these rankings are in flux. Some popular items become relatively less popular, and some of the unpopular items become relatively more popular. While unsustainable, some popular items will temporarily become even more popular. For example, liquidity is permanently popular, but on a relative basis during times of market distress, it is especially sought after. Society places a greater relative value (monetary or otherwise) on the more popular items.

[4.34] Ibbotson, R.G., Idzorek, T.H. "Dimensions of Popularity," Journal of Portfolio Management, Vol. 40 No. 5, (Special 40th Anniversary Issue 2014), P. 68–74.

In *Popularity: A Bridge Between Classical and Behavioral Finance*, popularity refers to investor preferences – that is, how much an asset is liked or disliked. Of course, the primary preference for investors is to seek returns. Investors do not know what the returns will be, but they can distinguish one asset from another in terms of their observable characteristics, for which they may have clearly defined preferences. Thus, even with the same set of expected cash flows, investors may have more demand for one asset over another, which gives the preferred asset a higher current price and a lower expected return. An asset could be liked (or disliked) for *rational* or *irrational* reasons.[4.35] In this way, popularity spans ideas from both classical and behavioral finance, thus providing a bridge between the two camps.

In classical finance, the primary preference, beyond maximizing expected return, is to take less risk. This fact has given rise to various models that usually assume no other preferences. In the most well-known model, the capital asset pricing model (CAPM), the only "priced" characteristic is exposure to undiversifiable market risk. We consider a broader set of preferences that lead to other priced characteristics, which might include the rational preferences to reduce catastrophic losses, increase liquidity, be tax efficient, and so on. We also consider preferences that might be more in line with what the literature considers "behavioral," such as desiring to hold companies with strong brands, investments with strong past price increases, or companies that have strong ESG (environmental, social, and governance) characteristics.

The popularity framework presented in *Popularity: A Bridge Between Classical and Behavioral Finance* includes a generalization of a wide range of characteristics in classical finance and behavioral finance that influence how investors value securities. We can classify these characteristics into two broad categories with two subcategories each as follows:

Classical

- **Risks.** In classical finance, risk usually refers to fluctuations in asset values, but risk can be interpreted more broadly as any risks to which a rational investor, who assumes away any real-world frictions in the holding and trading of securities, would be averse. Thus, risks may be multidimensional, including various types of stock or bond risks, or may arise from catastrophic events.

- **Frictional.** These characteristics are often assumed away in classical finance, but a rational investor would consider them. Examples include taxes, trading costs, and asset divisibility.

[4.35] Throughout *Popularity: A Bridge Between Classical and Behavioral Finance*, we describe preferences, or the reasons for preferences, as being either rational or irrational. Rational reasons for preferences are those considered in classical finance, broadly defined. The reasons include expected returns, risk liquidity, taxes, and trading costs. Generally, rational preferences are pecuniary. Irrational reasons for preferences generally are those identified in behavioral finance and result from the various biases and heuristics identified in that literature. Irrational preferences are generally nonpecuniary. Although Ibbotson, Diermeier, and Siegel (1984) acknowledged the possibility of nonpecuniary security characteristics playing a role in asset pricing (such as in the art market), their focus was on pecuniary characteristics that we consider to be subject to rational preferences. Our popularity framework extends their idea to irrational preferences.

Behavioral

- **Psychological.** Investors consider these characteristics because of their psychological impact. For example, buying a company with a small carbon footprint might make an investor feel good.

- **Cognitive.** Investors consider these factors or fail to accurately interpret such factors because of systematic cognitive errors. For example, investors may overvalue the importance of a company's brand when evaluating its stock because they do not realize that the value of the brand is already embedded in the market price of the stock.

Our fourfold classification of security characteristics partially overlaps with the threefold classification in Statman (2017), in which investors are described as holding securities for utilitarian, expressive, and emotional rea-sons. Utilitarian reasons correspond to risk and frictional characteristics, and expressive In and emotional reasons correspond to psychological characteristics.

In *Popularity: A Bridge Between Classical and Behavioral Finance*, we focus primarily on the stock market, although we believe the concepts can be applied to fixed-income securities, real estate, and numerous other real assets. Periodically, as necessary, we attempt to distinguish between characteristics of a company and characteristics of the security in question – both of which can have attributes that are more or less popular among investors. Assets are priced not only by their expected cash flows but also by the popularity of the other characteristics associated with the company or security. The less popular stocks have lower prices (relative to the expected discounted value of their cash flows), thus higher expected returns. Popularity can be related to risk (an unpopular characteristic), and it can also be related to other rational preferences. But popularity can also be related to behavioral concepts. For instance, investors may want to brag about their past winners (or purchase recent winners – for example, in the practice called "window dressing") or hold recognizable securities that are consistent with their social values. Any aspect that can affect the popularity of a stock will affect its demand and thus its price.[4.36]

Popularity is a bridge between classical finance and behavioral finance because both types of finance rely on preferences. Popularity is an expression of these preferences, whether they are rational, irrational, or somewhere in between.[4.37] Popularity does not make a value judgment but, instead, takes pref-erences as a given and recognizes that preferences can change over time. *Popularity: A Bridge Between Classical and Behavioral Finance* is presented in an equilibrium framework, so asset prices and expected returns reflect the aggregate impact of investor preferences.

4.36 By demand, we mean the sum of the demand of all market participants.

4.37 The same preference may be rational for one investor and irrational for another investor. For example, it is rational for a taxable investor to consider tax efficiency and irrational for nontaxable investor to seek out tax efficient investments.

Key Things to Remember about the Size Premium

- The size effect is based on the empirical observation that companies of smaller size are associated with greater risk and, therefore, have greater costs of capital. In other words, there is a significant (negative) relationship between the size and historical equity returns – as size *decreases*, returns tend to *increase*, and vice versa.

- Traditionally, small companies are believed to have greater required rates of return than large companies because small companies are inherently riskier. It is not clear, however, whether this is due to size itself, or to another factor closely related to size.

- The size effect is not evident just for the smallest companies; it is evident for all but the largest groups of companies, including companies with a market capitalization in excess of several billions of dollars. However, the size effect is greatest with the smallest companies.

- Small-cap companies tend to outperform large-cap companies over longer periods. The longer the period over which small-cap companies and large-cap companies are given to "race" against each other, the more likely it is that small-cap companies will outperform large-cap companies. The size effect tends to stabilize over time.

- Use sum betas for the development of size premia, and use sum beta within the CAPM (particularly if dealing with very small companies), because sum betas tend to better explain the returns of smaller companies. However, in cases in which you do use OLS betas in CAPM, you should use an OLS-beta derived size premium.

- Risk Premium Report portfolios do not include start-up and high-financial-risk companies. The returns on these companies could be expected to be high because of their risk, not because of their size.

- Despite many criticisms of the size effect, it continues to be observed in data sources. Further, observation of the size effect is consistent with a modification of the pure CAPM. Studies have shown the limitations of beta as a sole measure of risk. The size premium is an empirically derived correction to the pure CAPM.

- The 1980s were not kind to small capitalization stocks. During this period, the size effect likely was on a cyclical low, or even significantly negative.

- After the influence from the 1980s is in the rear-view mirror, small-cap companies seem to regain their footing, and the size effect seems to return to levels similar to those in the decades preceding the 1980s.

- The evidence suggests that the size effect has diminished in strength in more recent years, especially when compared to the "early years" 1926–1945, during which small-cap companies outperformed large-cap companies by a large degree.

- The size effect is still significant even after controlling for the huge small-cap outperformance of the "early years" 1926–1945.

- If the valuation analyst is estimating the cost of equity capital of a closely held subject company on an "as if publicly" basis, the valuation assumption is that the subject company would have liquidity (if it was public) to approximately the average of comparable size public companies. The size premium in the Cost of Capital Navigator are appropriate to use in developing the cost of equity capital without separating the size effect from the liquidity effect.

- The size effect is not without controversy, nor is this controversy something new. Traditionally, small companies are believed to have greater required rates of return than large companies because small companies are inherently riskier. It is not clear, however, whether this is due to size itself, or to other factors closely related to or correlated with size (e.g., liquidity).

- One can think of risk in terms of popularity. Characteristics of investments that investors *desire* are "popular", while characteristics of investments that investors do *not* desire are not popular. All other things being equal, assets with popular characteristics will be priced higher and have lower returns than assets with unpopular characteristics, which will be priced lower and have higher returns. Popularity can include all sorts of other characteristics that do not fit well into the risk and return paradigm.

- Most recently (2019), Ibbotson and colleagues Thomas M. Idzorek, CFA, Paul D. Kaplan, CFA, and James X. Xiong, CFA published a new Chartered Financial Analyst® (CFA) Institute Research Foundation monograph entitled, *Popularity: A Bridge Between Classical and Behavioral Finance* (available for download at https://www.cfainstitute.org/en/research/foundation/2018/popularity-bridge-between-classical-and-behavioral-finance).[4.38]

[4.38] Or, go to the CFA website at cfainstitute.org and search for "popularity".

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9

Capital Budgeting and Risk

Long before the development of modern theories linking risk and expected return, smart financial managers adjusted for risk in capital budgeting. They realized intuitively that, other things being equal, risky projects are less desirable than safe ones. Therefore financial managers demanded a higher rate of return from risky projects, or they based their decisions on conservative estimates of the cash flows.

Various rules of thumb are often used to make these risk adjustments. For example, many companies estimate the rate of return required by investors in their securities and use the **company cost of capital** to discount the cash flows on all new projects. Since investors require a higher rate of return from a very risky company, such a firm will have a higher company cost of capital and will set a higher discount rate for its new investment opportunities. For example, in Table 8-1 we estimated that investors expected a rate of return of .163 or about 16.5 percent from Microsoft common stock. Therefore, according to the company cost of capital rule, Microsoft should have been using a 16.5 percent discount rate to compute project net present values.[1]

This is a step in the right direction. Even though we can't measure risk or the expected return on risky securities with absolute precision, it is still reasonable to assert that Microsoft faced more risk than the average firm and, therefore, should have demanded a higher rate of return from its capital investments.

But the company cost of capital rule can also get a firm into trouble if the new projects are more or less risky than its existing business. Each project should be evaluated at its *own* opportunity cost of capital. This is a clear implication of the value-additivity principle introduced in Chapter 7. For a firm composed of assets A and B, the firm value is

$$\text{Firm value} = PV(AB) = PV(A) + PV(B) = \text{sum of separate asset values}$$

Here PV(A) and PV(B) are valued just as if they were mini-firms in which stockholders could invest directly. Investors would value A by discounting its forecasted cash flows at a rate reflecting the risk of A. They would value B by discounting at a rate reflecting the risk of B. The two discount rates will, in general, be different.

[1]Microsoft did not use any significant amount of debt financing. Thus its cost of capital is the rate of return investors expect on its common stock. The complications caused by debt are discussed later in this chapter.

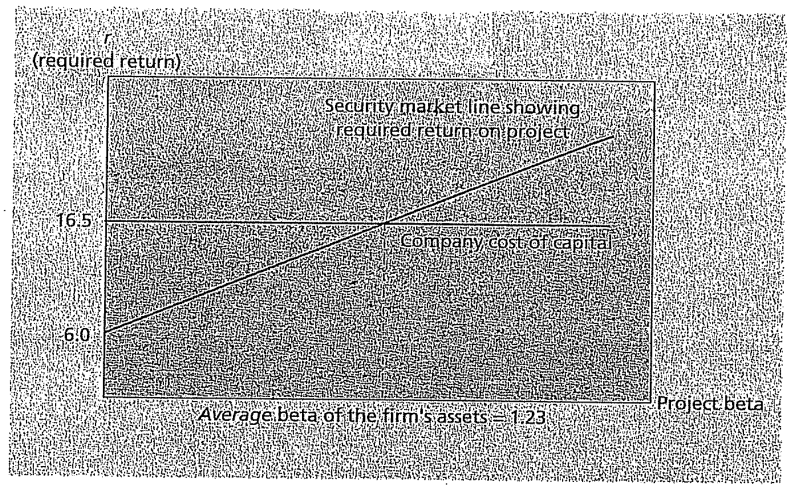

Figure 9-1 A comparison between the company cost of capital rule and the required return under the capital asset pricing model. Microsoft's company cost of capital is about 16.5 percent. This is the correct discount rate only if the project beta is 1.23. In general, the correct discount rate increases as project beta increases. Microsoft should accept projects with rates of return above the security market line relating required return to beta.

If the firm considers investing in a third project C, it should also value C as if C were a mini-firm. That is, the firm should discount the cash flows of C at the expected rate of return that investors would demand to make a separate investment in C. *The true cost of capital depends on the use to which the capital is put.*

This means that Microsoft should accept any project that more than compensates for the *project's beta.* In other words, Microsoft should accept any project lying above the upward-sloping line that links expected return to risk in Figure 9-1. If the project has a high risk, Microsoft needs a higher prospective return than if the project has a low risk. Now contrast this with the company cost of capital rule, which is to accept any project *regardless of its risk* as long as it offers a higher return than the *company's* cost of capital. In terms of Figure 9-1, the rule tells Microsoft to accept any project above the horizontal cost-of-capital line, i.e., any project offering a return of more than 16.5 percent.

It is clearly silly to suggest that Microsoft should demand the same rate of return from a very safe project as from a very risky one. If Microsoft used the company cost of capital rule, it would reject many good low-risk projects and accept many poor high-risk projects. It is also silly to suggest that just because Duke Power has a low company cost of capital, it is justified in accepting projects that Microsoft would reject. If you followed such a rule to its seemingly logical conclusion, you would think it possible to enlarge the company's investment opportunities by investing a large sum in Treasury bills. That would make the common stock safe and create a low company cost of capital.[2]

The notion that each company has some individual discount rate or cost of capital is widespread, but far from universal. Many firms require different returns from different categories of investment. For example, discount rates might be set as follows:

[2]If the present value of an asset depended on the identity of the company that bought it, present values would not add up. Remember, a good project is a good project is a good project.

Category	Discount Rate
Speculative ventures	30%
New products	20%
Expansion of existing business	15% (company cost of capital)
Cost improvement, known technology	10%

The capital asset pricing model is widely used by large corporations to estimate the discount rate. It states

$$\text{Expected project return} = r = r_f + (\text{project beta})(r_m - r_f)$$

To calculate this, you have to figure out the project beta. Before thinking about the betas of individual projects, we will look at some problems you would encounter in using beta to estimate a company's cost of capital. It turns out that beta is difficult to measure accurately for an individual firm: Much greater accuracy can be achieved by looking at an average of similar companies. But then we have to define *similar*. Among other things, we will find that a firm's borrowing policy affects its stock beta. It would be misleading, e.g., to average the betas of Chrysler, which has been a heavy borrower, and General Motors, which has generally borrowed less.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business but *not* for those projects that are safer or riskier than the company's average. The problem is to judge the relative risks of the projects available to the firm. To handle that problem, we will need to dig a little deeper and look at what features make some investments riskier than others. After you know *why* AT&T stock has less market risk than, say, Ford Motor, you will be in a better position to judge the relative risks of capital investment opportunities.

There is still another complication: Project betas can shift over time. Some projects are safer in youth than in old age; others are riskier. In this case, what do we mean by *the* project beta? There may be a separate beta for each year of the project's life. To put it another way, can we jump from the capital asset pricing model, which looks out one period into the future, to the discounted-cash-flow formula that we developed in Chapters 2 and 6 for valuing long-lived assets? Most of the time it is safe to do so, but you should be able to recognize and deal with the exceptions.

We will use the capital asset pricing model, or CAPM, throughout this chapter. But don't infer that the CAPM is the last word on risk and return. The principles and procedures covered in this chapter work just as well with other models such as arbitrage pricing theory (APT). For example, we could have started with an APT estimate of the expected rate of return on Microsoft stock; the discussion of company and project costs of capital would have followed exactly.

9.1 MEASURING BETAS

Suppose that you were considering an across-the-board expansion by your firm. Such an investment would have about the same degree of risk as the existing business. Therefore you should discount the projected flows at the company cost of capital. To estimate that, you could begin by estimating the beta of the company's stock.

An obvious way to measure the beta of the stock is to look at how its price has responded in the past to market movements. For example, in Figure 9-2*a* and *b* we have plotted monthly rates of return from AT&T and Hewlett-Packard against mar-

Thus we could view the project as offering an expected payoff of .5(1500) + .5(0) = 750, or $750,000, at $t = 1$ on a $125,000 investment at $t = 0$. Of course, the certainty equivalent of the payoff is less than $750,000, but the difference would have to be very large to justify rejecting the project. For example, if the certainty equivalent is half the forecasted cash flow and the risk-free rate is 7 percent, the project is worth $225,500:

$$\begin{aligned} \text{NPV} &= C_0 + \frac{\text{CEQ}_1}{1 + r_f} \\ &= -125 + \frac{.5(750)}{1.07} = 225.5, \text{ or } \$225{,}500 \end{aligned}$$

This is not bad for a $125,000 investment—and quite a change from the negative NPV that management got by discounting all future cash flows at 25 percent.

A Common Mistake

You sometimes hear people say that because distant cash flows are "riskier," they should be discounted at a higher rate than earlier cash flows. That is quite wrong: Using the same risk-adjusted discount rate for each year's cash flow implies a larger deduction for risk from the later cash flows. The reason is that the discount rate compensates for the risk borne *per period*. The more distant the cash flows, the greater the number of periods and the larger the *total* risk adjustment.

It makes sense to use a single risk-adjusted discount rate as long as the project has the same market risk at each point in its life. But look out for exceptions like the electric mop project, where market risk changes as time passes.

9-6 SUMMARY

In Chapter 8 we set out some basic principles for valuing risky assets. In this chapter we have shown you how to apply these principles to practical situations.

The problem is easiest when you believe that the project has the same market risk as the company's existing assets. In this case, the required return equals the required return on a portfolio of the company's securities. This is called the *company cost of capital*.

Capital asset pricing theory states that the required return on any asset depends on its risk. In this chapter we have defined risk as beta and used the capital asset pricing model to calculate expected returns.

The most common way to estimate the beta of a stock is to figure out how the stock price has responded to market changes in the past. Of course, this will give you only an estimate of the stock's true beta. You may get a more reliable figure if you calculate an industry beta for a group of similar companies.

Suppose that you now have an estimate of the stock's beta. Can you plug that into the capital asset pricing model to find the company's cost of capital? No, the stock beta may reflect both business and financial risk. Whenever a company borrows money, it increases the beta (and the expected return) of its stock. Remember, the company cost of capital is the expected return on a portfolio of all the firm's securities, not just the common stock. You can calculate it by estimating the expected return on each of the securities and then taking a weighted average of these separate returns. Or you can calculate the beta of the portfolio of securities and then plug this *asset beta* into the capital asset pricing model.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business. Many firms, however, use the company cost of capital to discount the forecasted cash flows on all new projects. This is a dangerous procedure. In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is *project risk* that counts. Of course the company cost of capital is fine as a discount rate for average-risk projects. It is also a useful starting point for estimating discount rates for safer or riskier projects.

We cannot give you a neat formula that will allow you to estimate project betas, but we can give you some clues. First, avoid adding fudge factors to discount rates to offset worries about bad project outcomes. Adjust cash-flow forecasts to give due weight to bad outcomes as well as good; *then* ask whether the chance of bad outcomes adds to the project's market risk. Second, you can often identify the characteristics of a high- or low-beta project even when the project beta cannot be calculated directly. For example, you can try to figure out how much the cash flows are affected by the overall performance of the economy: Cyclical investments are generally high-beta investments. You can also look at the project's operating leverage: Fixed production charges work like fixed debt charges; i.e., they increase beta.

There is one more fence to jump. Most projects produce cash flows for several years. Firms generally use the same risk-adjusted rate r to discount each of these cash flows. When they do this, they are implicitly assuming that cumulative risk increases at a constant rate as you look further into the future. That assumption is usually reasonable. It is precisely true when the project's future beta will be constant, i.e., when risk *per period* is constant.

But exceptions sometimes prove the rule. Be on the alert for projects where risk clearly does *not* increase steadily. In these cases, you should break the project into segments within which the same discount rate can be reasonably used. Or you should use the certainty-equivalent version of the DCF model, which allows separate risk adjustments to each period's cash flow.

APPENDIX: USING THE CAPITAL ASSET PRICING MODEL TO CALCULATE CERTAINTY EQUIVALENTS

When calculating present value, you can take account of risk in either of two ways. You can discount the expected cash flow C_1 by the risk-adjusted discount rate r:

$$\text{PV} = \frac{C_1}{1 + r}$$

Alternatively, you can discount the certainty-equivalent cash flow CEQ_1 by the risk-free rate of interest r_f:

$$\text{PV} = \frac{\text{CEQ}_1}{1 + r_f}$$

In this appendix we show how you can derive CEQ_1 from the capital asset pricing model.

We know from our present value formula that $1 + r$ equals the expected dollar payoff on the asset divided by its present value:

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traded, then we cannot calculate the firm's beta. For the privately owned firm, we might use the so-called "pure play" CAPM technique. This involves finding a firm in the same line of business that does have public equity, estimating its beta, and then using this beta as a proxy for that of the small business in question.

To illustrate the pure play approach, again consider BTG. The firm is not publicly traded, so we cannot estimate its beta. However, data are available on more established firms, such as Genentech and Genetic Industries, so we could use their betas as representative of the biological and genetic engineering industry. Of course, these firms' betas would have to be subjectively modified to reflect their larger sizes and more established positions, as well as to take account of the differences in the nature of their products and their capital structures as compared to those of BTG. Still, as long as there are public companies in similar lines of business available for comparison, the estimates of their betas can be used to help estimate the cost of capital of a firm whose equity is not publicly traded. Note that a "liquidity premium" as discussed in Chapter 3 would also have to be added to reflect the illiquidity of the small, nonpublic firm's stock.

Flotation Costs for Small Issues

When external equity capital is raised, flotation costs increase the cost of equity capital beyond what it would be for internal funds. These external flotation costs are especially significant for smaller firms, and they can substantially affect capital budgeting decisions involving external equity funds. To illustrate this point, consider a firm that is expected to pay constant dividends forever, and hence whose growth rate is zero. In this case, if F is the percentage flotation cost, then the cost of equity capital is $k_e = D_1/[P_0(1 - F)]$. The higher the flotation cost, the higher the cost of external equity.

How big is F? According to the latest Securities and Exchange Commission data, the average flotation cost of large common stock offerings (more than $50 million) is only about 4 percent. For a firm that is expected to provide a 15 percent dividend yield (that is, $D_1/P_0 = 15\%$), the cost of equity is $15\%/(1 - 0.04)$, or 15.6 percent. However, the SEC's data on small stock offerings (less than $1 million) show that flotation costs for such issues average about 21 percent. Thus, the cost of equity capital in the preceding example would be $15\%/(1 - 0.21)$, or about 19 percent. When we compare this to the 15.6 percent for large offerings, it is clear that a small firm would have to earn considerably more on the same project than a large firm. Small firms are therefore at a substantial disadvantage because of the effects of flotation costs.

The Small-Firm Effect

A number of researchers have observed that portfolios of small-firm stocks have earned consistently higher average returns than those of large-firm stocks; this is called the "small-firm effect." On the surface, it would seem to be advantageous to the small firm to provide average returns in the stock market that are higher than those of large firms. In reality, it is bad news for the small firm; what the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of large firms. Therefore, the cost of equity capital is higher for small firms. This compounds the high flotation cost problem noted above.

It may be argued that stocks of small firms are riskier than those of large ones and that this accounts for the differences in returns. It is true that academic research usually finds that betas are higher on average for small firms than for large ones. However, the larger returns for small firms remain larger even after adjusting for the effects of their higher risks as reflected in their beta coefficients.

The small-firm effect is an anomaly in the sense that it is not consistent with the CAPM theory. Still, higher returns reflect a higher cost of capital, so we must conclude that smaller firms do have higher capital costs than otherwise similar larger firms. The manager of a small firm should take this factor into account when estimating his or her firm's cost of equity capital. In general, the cost of equity capital appears to be about four percentage points higher for small firms (those with market values of less than $20 million) than for large, New York Stock Exchange firms with similar risk characteristics.

INTERMEDIATE FINANCIAL MANAGEMENT

9E

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Cost of Newly Issued Common Stock, or External Equity, r_e

The **cost of new common equity,** r_e, or external equity, is higher than the cost of equity raised internally by reinvesting earnings, r_s, because of flotation costs involved in issuing new common stock. What rate of return must be earned on funds raised by selling new stock to make issuing stock worthwhile? To put it another way, what is the cost of new common stock?

The answer for a constant growth stock is found by applying this formula:

$$r_e = \frac{D_1}{P_0(1 - F)} + g \quad \text{[10-9]}$$

In Equation 10-9, F is the **percentage flotation cost** incurred in selling the new stock, so $P_0(1 - F)$ is the net price per share received by the company.

Assuming that Axis has a flotation cost of 10 percent, its cost of new outside equity is computed as follows:

$$\begin{aligned} r_e &= \frac{\$1.24}{\$23(1 - 0.10)} + 8.0\% \\ &= \frac{\$1.24}{\$20.70} + 8.0\% \\ &= 6.0\% + 8.0\% = 14.0\% \end{aligned}$$

Investors require a return of $r_s = 13.4\%$ on the stock.[16] However, because of flotation costs the company must earn *more* than 13.4 percent on the net funds obtained by selling stock if investors are to receive a 13.4 percent return on the money they put up. Specifically, if the firm earns 14 percent on funds obtained by issuing new stock, then earnings per share will remain at the previously expected level, the firm's expected dividend can be maintained, and, as a result, the price per share will not decline. If the firm earns less than 14 percent, then earnings, dividends, and growth will fall below expectations, causing the stock price to decline. If the firm earns more than 14 percent, the stock price will rise.

As we noted earlier, most analysts use the CAPM to estimate the cost of equity. Suppose the CAPM cost of equity for Axis is 13.8 percent. How could the analyst incorporate flotation costs? In the example above, application of the DCF methodology gives a cost of equity of 13.4 percent if flotation costs are ignored and a cost of equity of 14.0 percent if flotation costs are included. Therefore, flotation costs add 0.6 percentage point to the cost of equity (14.0 − 13.4 = 0.6). To incorporate flotation costs into the CAPM estimate, you would add the 0.6 percentage point to the 13.8 percent CAPM estimate, resulting in a 14.4 percent estimated cost of external equity. As an alternative, you could find the average of the CAPM, DCF, and bond-yield-plus-risk-premium costs of equity ignoring flotation costs, and then add to it the 0.6 percentage point due to flotation costs.

[16] If there were no flotation costs, $r_s = \frac{\$1.24}{\$23} + 8.0\% = 13.4\%$.

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THE IMPACT OF DECOUPLING ON THE COST OF CAPITAL OF PUBLIC UTILITIES

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WORKING PAPER DRAFT

THE IMPACT OF DECOUPLING ON THE COST OF CAPITAL OF PUBLIC UTILITIES

ABSTRACT

Public utilities are implementing various forms of regulatory mechanisms that decouple revenues from commodity sales. The major motivation is to provide utilities with an incentive to encourage their customers to use less of the commodity that they sell. Stable revenues combined with lower costs from reduced sales could increase the utility's net income. A major question is whether such regulatory incentives affect investor-perceived risk, which would then affect the cost of common equity. Intuitively, business risk should be reduced with the stabilization of revenues which should intuitively translate into a lower cost of common equity. However, the results of the empirical tests performed in this paper consistently show that decoupling has no measurable impact on the cost of common equity and risk. The paper performs empirical tests of the electric, electric and gas, and water utility industries to determine the impacts of decoupling on the cost of common equity. The generalized consumption asset pricing model (GCAPM) is used as this approach estimates the impacts on stock returns and their volatilities within the same model.

Keywords: Public Utilities, Decoupling, Cost of Capital, Energy Efficiency

JEL Classification: G12, L94, L95

1. Introduction

Beginning with the 1970's, energy price and supply shocks and the National Energy Conservation Policy Act of 1978, energy utilities in the US began to focus on reducing the demand for energy rather than develop more supply to meet consumers' energy needs. Likewise, regulatory policy has forced water utilities to encourage the reduction in water use due to promote water conservation and the efficient use of water. A major impediment for investor-owned utilities to encourage consumer energy and water efficiency was the profit disincentive associated with revenue reductions generated by falling sales volumes. Therefore, various regulatory policy mechanisms were developed to provide utilities with a financial incentive to encourage the reduction of energy and water use. Revenues were decoupled from sales volumes so that reductions in sales volumes could potentially stabilize profits rather than reduce them. Decoupling revenues from sales volumes was first implemented in California in 1982. Although decoupling did not gain momentum outside of California for decades afterward, it has been recently implemented in various state jurisdictions across the US for electric, natural gas local distribution, and water companies. A key consideration has been raised in many rate proceedings and policy discussions regarding the impact of decoupling on the investment risk of a public utility. Since decoupling disassociates revenues with sales volumes, it generates an increasingly stable level of revenues and therefore is perceived to lower investment risk, which would translate to a lower cost of common equity capital. This topic has been the subject of only a few investigations so far by Wharton and Vilbert (2015) and Vilbert, Wharton, Zhang and Hall (2016) {collectively referred to as Wharton, et. al (2015, 2016)}. Moody's (2011) has estimated the change in business risk and credit metrics due to decoupling, but not the impacts on the cost of capital.

Wharton, et. al. (2015, 2016) developed an index of decoupling exposure for public utility stocks and utility holding company stocks and estimated the after-tax weighted average cost of capital (ATWACC) for the public utility stocks using the dividend discount model to estimate the cost of common equity. They regressed the ATWACC on an index of decoupling intensity and observe the slope to estimate the impact. Although the slope of the regression is negative, it is not statistically significant. They concluded that decoupling has no statistically significant measurable impact on the utility cost of common equity. They found that decoupling may reduce revenue volatility but it may not reduce investment risk and may actually exacerbate risk as decoupling is used to promote other regulatory policy goals. Wharton, et. al. (2015, 2016) concluded that on a net basis, decoupling may increase investment risk of utilities.

Chu and Sappington (2013) developed a social welfare model that investigated under what conditions a utility would provide a welfare maximizing level of energy efficiency services to its consumers. They consider the use of decoupling and find that, generally, decoupling alone is not sufficient to induce utilities to provide the socially optimal level of energy efficiency services. One problem is that energy efficiency resources cause a rebound effect {Khazzoom (1980, 1987)} whereby lower utility bills causes consumers to increase their energy use as they buy more comfort with the savings.

Chu and Sappington (2013) also discuss that if the price of electricity is above private marginal cost, falling sales reduces the utility's profits.[1] Depending on specific conditions facing a utility, decoupling may not generate a profit motive for utilities to reduce sales with energy or water efficiency. Rather, utilities could be placed into a position to deliver a predicted amount of energy savings that are expected by the regulators, but may not have a profit motive other than the avoidance of regulatory penalties for not meeting a goal. Reductions in peak loads and the commodity sales impacts of energy efficiency are difficult and expensive to estimate such efficiency, introducing an additional regulatory risk that may result in exposure to regulatory financial penalties due to the uncertainties associated with such efficiency estimation. This disincentive has become a major topic relative to alternative ratemaking mechanisms as the growth in electricity sales appears to be less correlated with the growth rate in the US GDP and are growing more slowly than the general economy has in recent years. Figure 1 shows that electricity use is expected to experience an annual average growth rate of 0.9% compared with a 2.4% US GDP annual growth rate between 2011 and 2040, according to the US EIA forecast from 2013.

Brennan (2010) also develops a social welfare model to derive conditions for utilities to be incented to provide energy efficiency services and shows that decoupling must separate the revenues from the generation of electricity and not just the revenues and sales from the

[1] The authors of this study are hard-pressed to find where this is the case for a public utility.

distribution of electricity, which leads to a highly complex form of electricity pricing regulation, rather than just the separation of sales to the consumer and the bills that they pay.

Since decoupling is rapidly being adopted as a regulatory policy tool {EEI (2015)}, questions are arising in rate proceedings about the impacts on the cost of capital. Due to the importance of the topic and lack of related literature, we investigate the impact of decoupling on the investor perceived risk of public utilities and resultant cost of common equity capital. The next section discusses the models and approaches used to estimate the impacts. Section 3 discusses the data and empirical results. Section 4 presents concluding remarks and suggests future paths for related research.

2. The Modeling Approaches

This paper uses the generalized consumption asset pricing model (GCAPM) developed by Michelfelder and Pilotte (2011). This model is based on generalizing variants of intertemporal capital asset pricing models. The literature that discusses the development of the model based on more restrictive versions is voluminous and summarized by Michelfelder and Pilotte (2011) and therefore is not repeated. The GCAPM was empirically applied by Michelfelder and Pilotte (2011) to the full spectrum of assets on the US Treasury yield curve. The model does not have restrictions on the risk aversion parameter in the specification of the investor's utility function. It allows for a negative relation between rate of return and volatility.[2] This relation applies to assets that have prices that move countercyclical to the business cycle. Additionally, it prices the risk actually faced by the investor and does not assume that all unsystematic risk is diversified away. This is a key foundation of the standard CAPM yet there is no perfect portfolio that removes all idiosyncratic risk. The risk may be muted but is not completed alleviated and therefore the standard CAPM generally understates the cost of common equity. The priced risk in the GCAPM is based on the level of risk actually faced by the investor, not the risk theoretically proscribed by the CAPM. The GCAPM also does not rely on the assumption that financial markets are efficient.

[2] Some investors are willing to pay (give up return) for more volatility in the asset's return rather than less if the pattern of the volatility is desired. For example, gold returns have a tendency to spike upward during recessions and downturns in stock markets. Therefore, gold can diversify and offset the reduction in income to human assets. Therefore, systematic upward spikes in gold prices increase volatility. Such increases in volatility are generally associated with reductions in the market returns to gold. Such assets with negative relations among returns and

Ahern, Hanley, and Michelfelder (2011) find that the CAPM generates lower costs of common equity than the GCAPM. Michelfelder (2015) applied the GCAPM to estimate the cost of common equity capital to public utilities and also concluded that the CAPM does not price all risk faced by the investor and that the CAPM understates the cost of common equity for public utilities. The GCAPM is specified as:

$$E_t[R_{i,t+1}] - R_{f,t} = -\frac{vol_t[M_{t+1}]}{E_t\left[M_{t+1}\right]} vol_t[R_{i,t+1}] corr_t[M_{t+1}, R_{i,t+1}], \qquad (1)$$

where the anticipated risk premium on an asset *i* depends upon the conditional volatility of the asset, $R_{i,t+1}$ is the ex ante return on asset *i*, $R_{f,t}$ is the rate of return on a risk-free asset at time *t*, M_{t+1} is the stochastic discount factor (SDF), vol_t is the conditional volatility of the rate of return and, $corr_t$ is the conditional correlation coefficient. The SDF is the intertemporal marginal rate of substitution in consumption. That is, it is the ratio of expected to current marginal utility of consumption. This is an important factor to discuss as this model specification allows for the empirical estimation to determine if decoupling causes the utility to have stable revenues with falling sales and therefore increased profits. If this is the case for a utility in a recession, then the public utility stock could be a business cycle hedge. The SDF is specified as:

$$M_{t+1} = \left(\frac{1}{1+k}\right)\frac{U_{c,t+1}}{U_{c,t}}, \qquad (2)$$

where the U_c's are the marginal utilities of consumption and *k* the discount rate for the period from *t* to *t+1*. The ratio rises if expected consumption falls below the current level due to the standard concave shape of the investor's utility function. This property allows the model to accommodate the business cycle (represented by consumption expenditures) hedging property of an asset.

If the conditional volatility of intertemporal consumption rises, investors will price a greater risk premium into the asset. The sign of the relation between risk premium and its conditional volatility is defined by the correlation ($corr_t$) of the risk premium and the SDF. The sign of risk premium-to-volatility relation is opposite to the correlation sign of the asset return

volatility are business cycle hedges.

and the ratio of the marginal utilities. A decline in business cycle consumption increases investor's marginal utility. An asset that generates positive returns when the business cycle is in a contraction with falling consumption is a business cycle hedge. Therefore, a negative risk premium-to-volatility slope identifies the asset is a business cycle hedge.

This property allows us to infer whether the decoupling may cause a utility stock to be a business cycle hedge. If profits rise as the GDP declines with lower commodity sales and stable revenues, the stock price could systematically rise when the business cycle is contracting.[3] A public utility with a strong level of decoupling could conceivably have stable revenues during a contraction in the business cycle. Therefore, profits may rise when commodity sales fall generated by consumer efficiency and due to the contracting business cycle.

To calibrate our model, we performed a simple test of this property by estimating the GCAPM with the risk premium on gold (percent change in the price of gold per troy ounce minus a risk-free rate). Gold is commonly known to be a business cycle and stock market hedging asset. The correlation coefficient between the quarterly percent changes in the price of gold and real GDP (data have no cost and are publicly available from the St. Louis Federal Reserve Database) from 1968 to 2017 is -0.058. Hillier, Draper, and Faff (2006) show that gold is a stock market hedge, especially during abnormally high period of stock market volatility. We used the US gold commodity cash price data and futures price data to estimate the GCAPM. The risk-premium-to-volatility slope was either negative and significant or insignificant using daily and monthly data and rolling time frames for estimation. These results are meant to be a calibration test for the methods in this paper for testing and detecting an obvious hedging asset. All empirical results on gold discussed are available upon request.

The GCAPM can be applied to any asset that is traded in a financial market and therefore can be applied to all traded public utility stocks. The GCAPM also has the advantage that the decoupling impact on changes in stock returns as well as the conditional volatility of these returns can be estimated separately within the same model using the GARCH-in-Mean (GARCH-M) method that was initially developed for asset model estimation.

Decoupling should theoretically lower the variance of the operating cash flows of a

[3] One of the most effective "energy efficiency tools" to generate energy use reduction is a recession. Although the energy-use-US-GDP correlation has declined, it remains substantially positive {EIA (2013), Figure 1 herein, www.eia.gov/todayinenergy/detail.php?id=10491}.

public utility due to the increased stability of revenues {Moody's (2011)}. The variance of operating cash flows should be driven mainly by the variance of costs as follows. Operating Cash Flows (*OCF*) is Revenues (*R*) – Cost (*C*) therefore the variance of *OCF* is $VAR\ (R - C) = VAR\ (R) + VAR\ (C) + 2COV\ (R,C)$. Since the volatility of revenues is theoretically equal to zero with decoupling and the covariance of revenues and costs is zero as revenues do not vary, volatility of *OCF* is purely driven by costs only as $VAR\ (R - C) = VAR\ (C)$ and $VAR\ (C) < VAR\ (R) + VAR\ (C) + 2COV\ (R,C)$ as $VAR\ (R) = 0$ and $COV\ (R,C) = 0$ with decoupling. This is essentially the model used by Moody's (2011) which found that utilities with decoupling had a reduction in their business risk as measured by the change in business risk as the change in the standard deviation of the growth rate in gross profit before and after decoupling.

We also estimate changes in investment risk from decoupling by estimating the change in the annual CAPM beta. The annual beta is a measure of systematic risk that should more sensitive to regime changes for a stock relative to the five-year betas that are typically employed to assess investment risk. Beta should decline with decoupling.[4]

The only other studies on the impact of decoupling on the utility cost of capital, which was done by Wharton, et.al. (2015, 2016), estimated the impact of decoupling on the cost of capital for the overall electric utility industry. That paper also addressed the issue that decoupled utilities may represent substantially less than the entire portfolio of assets reflected in the stock price of the holding company. They used the standard dividend discount model to estimate the cost of common equity capital portion of their weighted average cost of capital estimates. They regressed this cost of capital on an intensity index of decoupling for each publicly traded electric utility stock as one regression to estimate the industry impact. They found no statistically significant impact of decoupling on the cost of capital.

The present study estimates the impact on the decoupled firm individually rather than an industry as a whole. We use the GCAPM and changes in beta before and after the

[4]Systematic risk is defined as $\beta_i = \rho_{i,m}\ \sigma_i / \sigma_m$, where $\rho_{i,m}$ is the correlation coefficient of the individual stock (*i*) and the market (*m*) total rate of return and σ_i and σ_m are the standard deviations of the individual stock and market returns, respectively. Defining variables with superscript "*D*", to denote decoupling, $\sigma^D{}_i$ and $\rho^D{}_{i,m}$ are lower as the volatility of the utility's returns are lower with decoupling and the utility's return has a lower correlation with the market return as the utility's revenues and profits are decoupled from the business cycle. Therefore systematic risk is lower with decoupling and defined as $\beta^D{}_i = \rho^D{}_{i,m}\ \sigma^D{}_i / \sigma_m$. Therefore, $\beta^D{}_i$ is less than β_i as $\rho^D{}_{i,m}\ \sigma^D{}_i / \sigma^D{}_m < \rho_{i,m}\ \sigma_i / \sigma_m$.

implementation of decoupling to estimate the impact on risk and the cost of capital.

3. Data, Empirical Modeling and Analysis

The GCAPM is estimated with the GARCH-in-Mean method.[5] GARCH-M specifies the conditional risk premium as a linear function of its conditional volatility, which is the specification of the GCAPM in equation (1). Since the returns data contain ARCH effects (available upon request), another benefit of using GARCH-M is that it improves the efficiency of the estimates. Engle, Lilein, and Robins (1987) developed GARCH-M method and used it to estimate the relation between US Treasury and corporate bond risk premiums and their volatilities.

Two versions of the GCAPM-GARCH-M model are estimated. The first includes a binary variable that reflects the implementation of decoupling for the specific utility (*D = 1* if decoupled, *0* otherwise) in the risk premium equation only. The second has the same variable in the volatility equation of the GARCH-M model only. These specifications provide separate empirical estimates of the impacts of decoupling on stock returns and volatility. As essentially event studies, these and all financial market-based event studies face the question of when the event impacted asset prices. Asset prices can reflect forthcoming events before they are implemented. One example that is relevant for this paper is when decoupling implementation was announced in a utility's regulatory decision. We find that using the date of implementation is a conservative approach to estimating the impact as it is most likely the latest date that a decoupling impact would be detected in a stock price and much of the impact may already have

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[5] The GARCH-M model for this paper is specified as:

$$R_{i,t+1} - R_{f,t} = \alpha_{i,t}\sigma^2_{i,t+1} + \varepsilon_{i,t+1}\,,$$

$$\sigma^2_{i,t+1} = \beta_0 + \beta_1\sigma^2_{i,t} + \beta_2\varepsilon^2_{i,t} + \eta_{i,t+1}\,,$$

where the dependent variable of the first equation is the conditional risk premium on asset *i*, and $\sigma^2_{i,t+1}$ is the conditional variance of the risk premium for asset *i*. $\varepsilon_{i,t}$ and $\eta_{i,t+1}$ are the error terms for the mean and volatility equations. The parameter, α_i, is the risk-premium-to-volatility slope. It is specified from equation (1) as:

$$\alpha_{i,t} = -\frac{vol_t[M_{t+1}]}{E_t[M_{t+1}]}corr_t[M_{t+1}, R_{i,t+1}]$$

It is positive for most assets that are not business cycle hedges as $corr_t$ is negative. A rising (falling) *M* {rising (falling) expected marginal utility from falling (rising) consumption in a recession} is associated with a fall (rise) in returns. The above empirical model specifies a 0 intercept in the risk premium equation as does the GCAPM. The estimation results support the 0 intercept specification (results available upon request).

been priced in the asset. However, if a utility's revenues have been decoupled from sales to the extent that revenues are not affected by the business cycle, then the utility's stock price as a hedge would be detected in a zero or negative alpha. Also, if a sufficiently long pre-decoupling time period for observing returns and volatility is obtained, the change in the post-period should be detected as all of the post-decoupling period returns and volatilities are in a new business risk regime.

The data for stock returns is the total monthly rate of return from the Center for Research in Security Prices database (CRSP) from the University of Chicago. The pre-decoupling data reaches back to all available monthly returns data in the CRSP and ends at December 2014 for consistency in the post-decoupling ending period for all stocks. Therefore, we include all of the electric, electric and gas, and water utilities that were decoupled before 2014. The risk-free rate of return is the monthly Ibbotson income return on Long-Term US Treasury Securities {Morningstar (2016)}. We use this measure for the risk-free rate as it more closely matches the long-term horizon of stocks excludes the added risk of long-term bonds as embodied in the capital gain or loss. The CAPM beta data include all annual betas available in the CRSP database and ends at 2014.

Table 1 presents the empirical results of the GCAPM estimates. The risk-premium-to-volatility slopes ("alpha") are shown along with the decoupling slope in the risk-premium and volatility equations for electric, electric and gas and water company stocks. We expect that the decoupling slope in the risk-premium equation would be negative as the risk premium should decline with a reduction in business risk. None of these slope estimates are statistically significant. The decoupling slope in the volatility equation should be negative. Two of the slopes are negative and significant at $p = 0.10$, yet the magnitude of the slopes is very small.

All of the alphas for the energy utilities are positive and significant, yet none of the water group alphas are significant. These results for the water group may indicate that they are possible business cycle hedging assets. The zero value for alpha implies that there is no relationship between the business cycle as represented by expected changes in consumption and the returns on water utility stocks. Water utility sales may not be correlated with the business cycle as are electricity sales. Also, water sales attrition is occurring across the US as households (water consumption per household is dropping) change their behavior toward more conservation and by adopting water saving devices, such as low flow faucets, showerheads, high efficiency toilets and other water-using appliances. Water sales reduction is a concern for the water utility industry as discussed in the National Association of Water Companies' Water Policy Forum Report {NAWC (2014)}.

Table 2 presents the pre- and post-decoupling changes in the systematic risk as represented by the standard CAPM beta for all of the public utilities in this study. The betas did drop after the implementation of decoupling but none of the changes in beta are statistically significant using a t-statistic at a $p = 0.05$. Additionally, the standard errors of the betas show no consistent pattern of increasing or decreasing after decoupling.

Our results show some non-statistically significant signals of decoupling on the cost of common equity and risk. The results were not consistent as most results showed no impact or had low or no statistical power. A few utilities' decoupling-related returns volatilities were negative but had a low level of significance. However, all water utilities had zero alphas that reflect no relation of returns to the business cycle. Water utility betas **FORTHCOMING IN THE NEXT DRAFT**. Therefore, we find that the mixed evidence is generally not consistent enough to conclude that decoupling affects investor perceived risk or the cost of capital. However, the water industry alphas do provide consistent evidence that such stocks are a business cycle hedge, which may be due to, in part, to decoupling.

4. Conclusion

We conclude that decoupling has no statistically measurable impact on the cost of common equity based on our empirical analysis for electric, electric and gas and water utilities. This is consistent with the empirical findings of Vilbert and Wharton (2015, 2016). Moody's (2011) does find a reduction in business risk as measured by the change in the variability of gross profit after decoupling but did not estimate the impact on the cost of capital. Moody's (2011) did find that electric utilities were somewhat reluctant to adopt decoupling as electric utility executives anticipated that growth in sales would return to the industry. The electric utility industry also thought that the adoption of decoupling would cause their allowed rate of return to be reduced. That Report was written soon after the Great Recession had ended in June 2009 and the anticipated growth in sales has yet not materialized with the business cycle expansion. The Edison Electric Institute, the electric utility industry trade association, finds in a recent report {EEI (2015)} that electric utilities favor decoupling and that it has become more widespread across the US. However, we did find consistent evidence that water utilities were business cycle hedging assets, which may be due, in part, to decoupling and the extent to which water use is not correlated to business cycle as measured changes in real GDP.

We conclude that decoupling has no statistically significant impact on investor perceived risk and the cost of common equity. Due to the multitude of factors affecting investor perceived risk for energy and water utilities, the impact of decoupling may not yet be able to be isolated.

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Figure 1
US Electricity and Real GDP Growth Trends

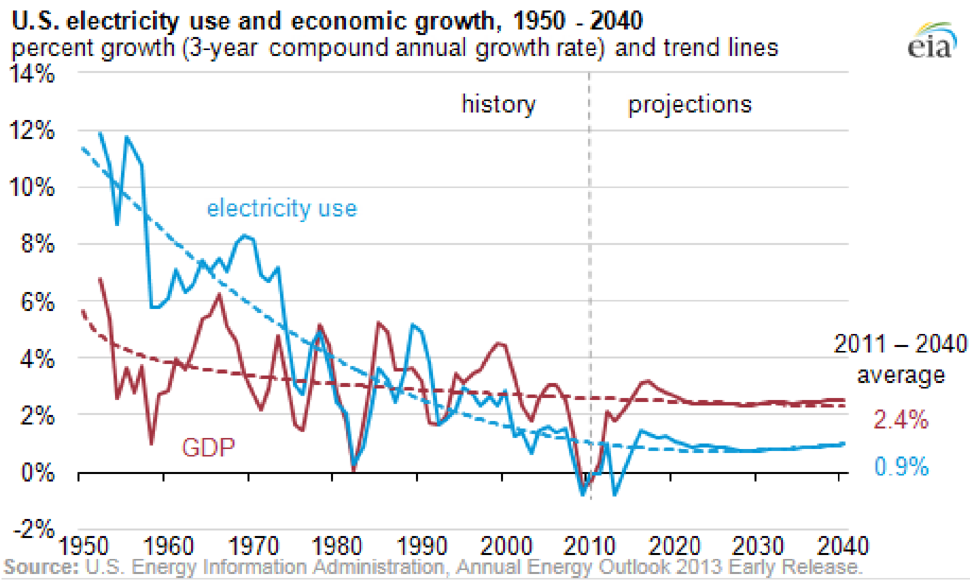

Table 1

GCAPM Estimation Results:

Impacts on Conditional Stock Returns and Returns Volatilities

The GCAPM was estimated with the GARCH-M method. The estimated models are:

$$R_{i,t+1} - R_{f,t} = \alpha_{i,t}\sigma^2_{i,t+1} + \alpha_D D + \varepsilon_{i,t+1}$$
$$\sigma^2_{i,t+1} = \beta_0 + \beta_1\sigma^2_{i,t} + \beta_2\varepsilon^2_{i,t} + \eta_{i,t+1},$$

And

$$R_{i,t+1} - R_{f,t} = \alpha_{i,t}\sigma^2_{i,t+1} + \varepsilon_{i,t+1}$$
$$\sigma^2_{i,t+1} = \beta_0 + \beta_1\sigma^2_{i,t} + \beta_2\varepsilon^2_{i,t} + \beta_D D + \eta_{i,t+1}.$$

where *Ri* is the conditional total return on the stock, R_f is the risk-free rate of return, $\sigma^2_{i,\ t+1}$ is the conditional volatility, *D* is the dummy variable that equals 1 when decoupling is in place, and α_D and β_D are the slopes on the conditional returns and volatility decoupling dummy variable that represent the impact of decoupling on those variables. Monthly returns data are from the CRSP database and includes all data available from the CRSP database and ends at 12/2010. The monthly risk-free rate of return is the Ibbotson income return on Long-Term US Treasuries. ***, **, * refers to statistical significance at p values of 0.01, 0.05 and 0.10 respectively.

Electric and Electric and Gas	α_i	α_D	β_D
ED	1.460***	0.004	-0.000
PCG	1.781***	0.001	-0.001
EIX	1.379***	0.003	0.000
CHG	2.094***	0.004	-0.000
CMS	1.440***	0.011	-0.000
HE	1.607***	0.004	-0.000*
POR	0.461	0.010	-0.000
IDA	1.939***	0.003	-0.000
Water	α_i	α_D	β_D
AWR	0.596	0.011	0.000
CWT	0.525	0.004	-0.000
CTWS	-1.008	0.009	0.000
ARTNA	3.006	-0.004	-0.002*

Table 2

Changes in Systematic Risk from Decoupling

Beta is the annual beta from the CRSP database. The data ends at 2014 and the pre- and post-decoupling beta data have the same number of observations. The number of observations below represents the amount of beta data used in each pre- and post-period. For example, ED had 10 observations on beta, 5 before and 5 after the implementation of decoupling. ***, **, * refers to statistical significance at 0.01, 0.05, and 0.10 respectively.

Electric and Electric and Gas	**Mean β_{PRE}**	**Mean β_{POST}**	**σ_{PRE}**	**σ_{POST}**	**Number of Observations**	**t-Statistic**
ED	0.608	0.427	0.172	0.064	5	-1.329
PCG	0.522	0.535	0.174	0.373	28	0.112
EIX	0.588	0.582	0.199	0.294	28	-0.051
CHG	0.680	0.401	0.279	0.326	3	-0.759
CMS	0.758	0.559	0.198	0.140	3	-0.815
HE	0.619	0.570	0.253	0.155	2	-0.171
POR	0.637	0.658	0.069	0.052	3	-0.151
IDA	0.905	0.728	0.251	0.125	5	-0.818
Mean	0.670	0.560				
Water (FORTHCOMING NEXT DRAFT)	**Mean β_{PRE}**	**Mean β_{POST}**	**σ_{PRE}**	**σ_{POST}**	**Number of Observations**	**t-Statistic**
AWR						
CWT						
CTWS						
ARTNA						
Mean						

The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation

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I. OVERVIEW AND SUMMARY

Research into the costs and benefits of energy efficiency (EE) technologies has shown that the expected value of long-run savings frequently exceeds the costs, and EE programs have the additional benefit of producing no harmful emissions. From 2007 to the present, several more states have adopted long-term goals for EE and have designated utilities, and in a few cases third party entities, as the program administrators. Despite the programs being beneficial and cost-effective to society and to utility systems, traditional regulation creates a substantial disincentive for utilities to pursue EE programs.

Traditional cost-of-service ratemaking collects a utility's total costs, fixed and variable, largely through volumetric rates. A large portion of an electric, gas, or water utility's costs is fixed in the short run and does not vary with the quantity of the service provided (kWh, Therms, or Cubic feet). A successful EE program will reduce the volume of sales, which will simultaneously reduce the recovery of fixed costs. If sales are lower than expected when rates are set, a utility will not fully recover its authorized fixed-cost revenue requirement; and if sales are higher than expected, a utility will over-collect its revenue requirement. As a result, utilities have what is often called a "throughput incentive" that conflicts with the objectives of EE programs.

Decoupling is a form of regulated ratemaking that disconnects fixed cost recovery from changes in the utility's sales volume.[1] It originated as a policy response in the 1980s when utilities were first encouraged to develop EE programs that significantly reduced the consumption of regulated commodities, such as electricity, gas, or water.[2] Decoupling solves the throughput incentive. The Brattle Group's (Brattle) recent survey of new, alternative ratemaking policies listed 22 states that allowed gas industry decoupling, 12 states that had electric industry decoupling, and 5 states had water conservation adjustments.[3] This report builds on several public surveys of alternative

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1 "Decoupling," as used in this report, means decoupling through symmetric revenue true-up mechanisms. An overall base revenue target is established for a future period. A periodic adjustment of volumetric rates is instituted to true up actual revenues to target revenues, whether actual revenues are above or below the target. Two other alternative ratemaking policies have some similarities but are not included in this study. One is the lost revenue adjustment mechanism (LRAM) for recovering only base revenues lost from validated EE volumetric savings. A second policy is the straight fixed-variable rate design that collects all or most fixed costs in non-volumetric charges.

2 This report focuses on the electric utility industry. There are many similarities and common lessons for decoupling policy development in the electric, natural gas, and private water service industries. Prior research by The Brattle Group addressed the natural gas delivery industry, see footnote 5 below.

3 Joe Wharton, Bente Villadsen, and Heidi Bishop, *Alternative Regulation and Ratemaking Approaches for Water Companies - Supporting Capital Investment Needs of the 21st Century*, The Brattle Group, Prepared for the National Association of Water Companies, September 30, 2013. The number of

Continued on next page

ratemaking policies that include decoupling.[4] In the last half dozen years, decoupling has grown rapidly in the electric industry coincident with the upsurge in expenditures for conservation programs, efficiency standards, and the general flattening of electricity sales growth.

Because of the potential effect on the cost of equity (COE), the adoption of EE programs accompanied by a decoupling policy is sometimes resisted by both regulated companies and interveners for opposite reasons. Some interveners and commission staffs have argued that the allowed return on equity (ROE) should be reduced because decoupling, by design, reduces the variability of revenues, which they believe translates directly into reduced business risk. If the allowed ROE is not reduced, those interveners may not support decoupling. Utilities fear that adoption of decoupling will result in a reduction in the allowed ROE even if there is no proof that decoupling actually reduces the cost of capital. Determining the actual, empirical effect of decoupling on the utility's cost of capital is critical to answering the question of whether the regulated company's allowed cost of capital should be reduced at the time of adoption.

The Brattle authors have considerable experience with the issues of decoupling rate policy and the frequently asked question as to whether it has a measurable impact on the cost of capital (COC) of regulated companies, as assessed in financial markets. In 2010 and again in 2013, the authors empirically tested the hypothesis in the natural gas delivery industry and found that there was no statistically measurable effect on the COC with decoupling.[5] In this report, we test

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Continued from previous page

companies and states with decoupling changes relatively frequently. For example, Washington State returned to decoupling in mid-2013, a change that was not in the Brattle survey, *Op. Cit*.

4 Sources of information on decoupling and other alternative regulatory policies beyond the Brattle survey *Op. Cit*. include Pamela Morgan, *A Decade of Decoupling for U.S. Energy Industries: Rate Impacts, Designs, and Observations*, Dec. 2012; Edison Electric Institute (EEI), *Alternative Regulation for Evolving Utility Challenges: An Updated Survey*, Pacific Economics Group Research LLC, Jan. 2013; Institute of Electric Efficiency (IEE), *State Electric Efficiency Regulatory Frameworks*, July 2013; and American Gas Association (AGA), *Natural Gas Innovative Rates, Non-Volumetric Rates, and Tracking Mechanisms Current List*, Cynthia J. Marple, power point presentation, Sept. 2012. For this study, Brattle reviewed many of the sources and updated the periods that decoupling policies have been in place for different states.

5 In the previous research, the authors analyzed a sample of 12 natural gas delivery holding companies (HCs) and their 31 regulated gas subsidiaries over the period 2005 to 2012. The number of gas subsidiary companies operating under decoupling grew from 8 to 22 over the period. This analysis made accurate measurements of the cost of capital and developed consistent measurements of the degree of decoupling of each HC for a decoupling "metric". The findings were that decoupling shows no statistically significant impact on the COC either up or down. See J. Wharton, M. Vilbert, C. Gibbons, and S. Lagos, *An Empirical Study of Impact of Decoupling on Cost of Capital*, Power Point presentation to the Western Conference of the Rutgers University Center for Research in Regulated Industries (CRRI), June 21, 2013.

the same hypothesis for a different set of utilities which are predominantly in the electric utility business.

Theoretical arguments for reducing the cost of capital are frequently offered by interveners in decoupling regulatory proceedings for electric and natural gas companies and have been accepted in a small number of commission decisions.[6] In some proceedings, different interveners have suggested that the effect of decoupling on ROE is anywhere from 25 basis points (bps) to 300 bps.[7] In the past, the Brattle authors have testified that in these regulated, high fixed cost industries, the determinants of the cost of capital are complicated,[8] and there should be no presumption that decoupling automatically lowers the cost of capital. Adoption of decoupling policies could be coincident with other influences that may be increasing non-diversifiable risk.[9] Any reduction in the allowed return on equity should be based upon evidence that decoupling reduces the cost of capital.

The results of our empirical analysis of decoupling in the electric industry do <u>not</u> support the hypothesis that utilities with decoupling have a lower cost of capital than utilities without decoupling. Our study finds that decoupling is not associated with a statistically significant decrease in the estimated cost of capital. This result is consistent with our previous findings for the natural gas distribution industry.

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6 Pamela Morgan reports that the return on equity (ROE) was not reduced in 78% of the Commission decisions adopting decoupling. The remaining decisions reduced the allowed ROE by 10 and 50 basis points. In settlements, 85% had no ROE reductions and the remaining 15% were between 10 and 25 basis points. See "A Decade of Decoupling for U.S. Energy Industries: Rate Impacts, Designs, and Observations", Dec. 2012, p. 14.

7 For example, see pp. 19-20 of "Phase 1B Testimony of Terry L. Murray on behalf of the Division of Ratepayer Advocates on Return on Equity Adjustments" before the California Public Utilities Commission, filed October 19, 2007 in Docket No. I. 07-01-022. Also see a recent discussion on p. 44 of Washington Utilities and Transportation Commission, *Puget Sound Energy, Final Order Granting Petition*, Docket UE-121697, Section D.2.b "Decoupling – Cost of Capital," June 25, 2013.

8 *See* Chapters 7-9, Brealey, Myers and Allen, *Principles of Corporate Finance*, 11th edition, McGraw Hill Irwin, 2014 for a discussion of the cost of capital.

9 Diversifiable risks, such as weather, do not affect the cost of capital because diversifiable risks can be eliminated by investing in a portfolio of unrelated assets.

II. DEVELOPMENTS IN THE POLICY OF REVENUE DECOUPLING

Adoption of a revenue decoupling policy[10] severs the link between recoveries of base or fixed revenues[11], from volumetric sales of kWh, which would normally be the case under traditional cost-of-service regulation. Cost recovery is not based upon actual kWh sales, but instead on a revenue target. Revenues are adjusted to achieve the target. For example, the percent growth in revenues relative to the base period could be set at actual net percentage growth in the numbers of customers over the base period. Over a pre-established period, such as a year, there is an adjustment of rates that will true-up the actual revenues to the target, whether actual sales are higher or lower than expected.

Current decoupling policies frequently evolve from the same policy basis as the earliest version, which was instituted in California in 1980 for natural gas utilities and in 1982-83 for electric utilities.[12] California policy makers determined that decoupling would be "in the public interest" in part because it provided relief for differences in actual revenues compared to forecast revenues when utilities carried out policy directives to pursue aggressive energy efficiency goals. Customers are protected if sales are greater than forecast, and utilities recover their fixed costs if EE programs are more effective than expected.[13]

Figure 1 illustrates the substantial increase in EE expenditures by electric utilities since 2007 as well as two projections of expenditures in 2025.[14] The growth of EE programs, the consequent installation of efficiency measures (equipment and structures), and the concurrent decline in

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10 The treatment of decoupling in this study is straight forward: at a given time for a given state-regulated electric company, a decoupling policy is in place, or it is not. Beyond what is discussed in footnote 1, we recognize but do not attempt to differentiate the several different kinds of decoupling mechanisms. Decoupling policies can vary in several dimensions: the companion revenue adjustment mechanism, the coverage and independence of rate classes; the inclusiveness of causes of demand fluctuation (weather fluctuations may be excluded); the adjustment over time using revenue target adjustment mechanism (numbers of customers and certain cost categories can be used to adjust targets over time).

11 Lost revenues for the recovery of variable costs, such as fuel and purchased power, are not included in decoupling true-ups because variable costs are avoided with the reduction in kWh consumption. Fixed costs only change in the long-term when depreciation and conservation leads to less system investment.

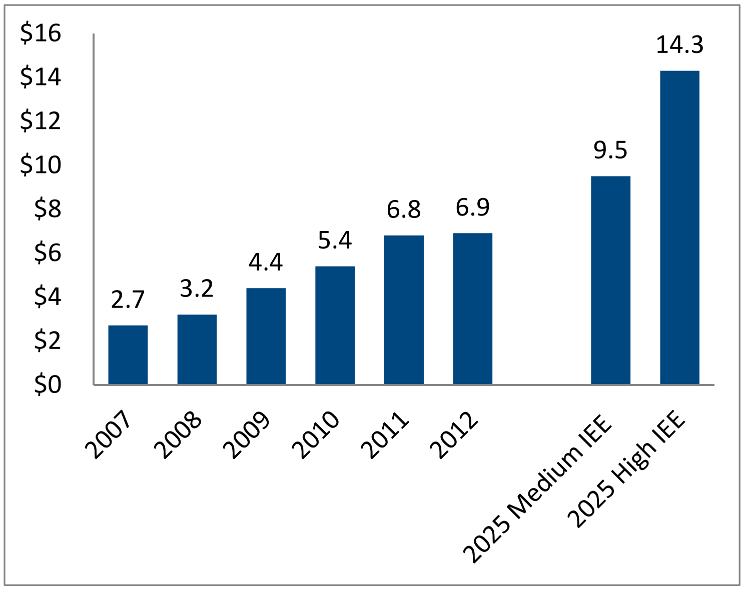
12 Dr. John L. Jurewitz, *Decoupling and Energy Efficiency Incentives: The California Experience*, EEI 2007 Spring Legal Conference, Charleston, SC, April 16, 2007.

13 In addition, disputes over sales forecasts may be reduced because the earnings of the regulated company are not affected by differences in forecasts.

14 Institute of Electric Efficiency (IEE); *State Electric Efficiency Regulatory Frameworks*, July 2013, p. 2. The values are spending and budgets for customer-funded electric efficiency programs.

kWh sales growth, especially for small customers on volumetric rates, highlights the importance of addressing the throughput incentive of regulated utilities.

Figure 1: U.S. Energy Efficiency Expenditures (Customer Funded, in $ Billions)



Source: Institute for Electric Efficiency, 2013

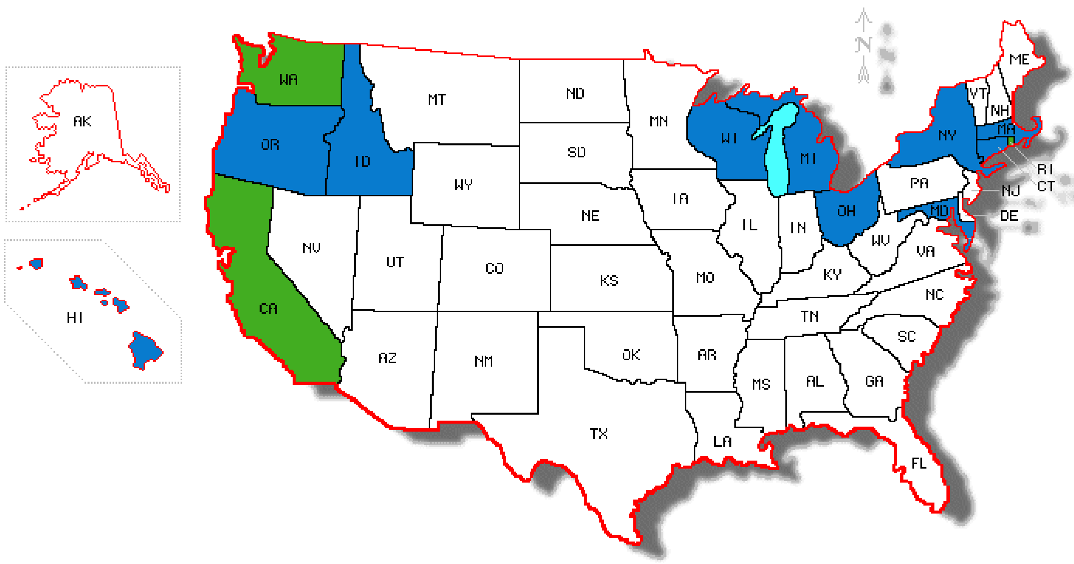
Figure 2 displays a map of the states that at present or in the recent past have had a policy of decoupling.[15] This is the starting point of the analysis. Utilities in California, Washington, and Rhode Island (shown in green) were not used in our sample. National Grid is the holding company for Narragansett Electric in Rhode Island. Observations were removed in the financial data screening because National Grid is a company based in the United Kingdom, so capital market information may not be compatible.[16] The major California utilities had the policy of decoupling or its equivalent across the entire study period 2005 – 2012, and saw no change in policy, so there was no way to compare the cost of capital before and after adoption of

[15] In principle and practice, decoupling can be ended. Our sample includes utilities in Michigan where decoupling for electric utilities was instituted by the commission for several electric companies and later determined to be illegal under state law.

[16] National Grid is traded as an American Depository Receipt (ADR) and so is excluded from the analysis.

decoupling. Washington state regulators approved decoupling for Puget Sound Energy in June 2013, after the study period ended.[17]

Figure 2: States with a Policy of Decoupling for Electric Utilities at Some Point in Time from 2005 to the Present



Source: The Brattle Group, *Alternative Regulation and Ratemaking Approaches for Water Companies*, Sep. 30, 2013. All states were in the study sample, except Washington, California, and Rhode Island, shown in green.

Decoupling policies often focus on the residential and commercial classes, where volumetric charges collect a considerable portion of the base revenue requirement that recovers capital investment and fixed operations and maintenance (O&M) costs of distribution. Figure 3 shows the downward trend in residential and commercial electric consumption growth in recent decades, indicating that it is likely to be lower than population or GDP growth in the future. Decoupling can be used to address the situation where fixed and unavoidable costs continue to increase, but where sales volume growth is slow or decreasing for any reasons, including the utility's EE programs, building codes, appliance efficiency standards, and the installation of distributed generation systems on customers' premises.

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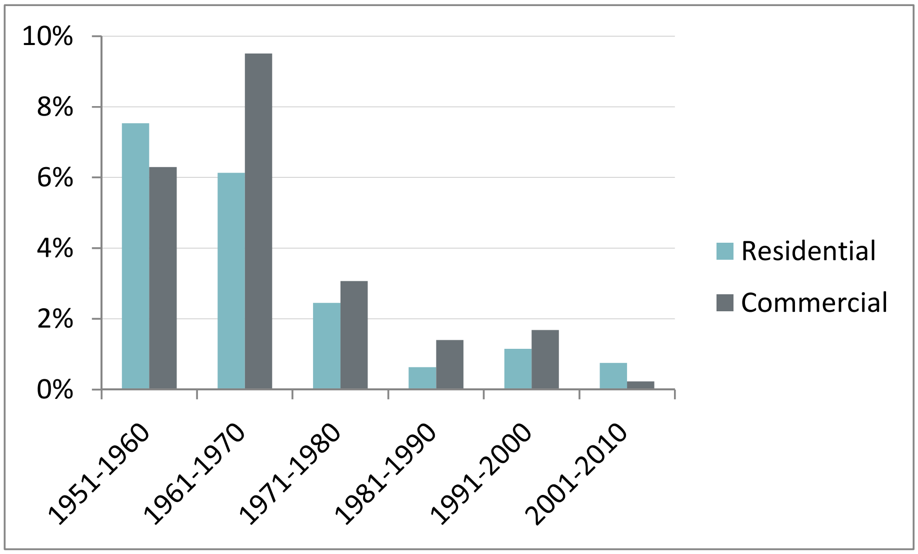
[17] See Washington Utilities and Transportation Commission, Puget Sound Energy, *Op. Cit.*, footnote 7. Puget Sound Power & Light, predecessor to Puget Sound Energy, had a decoupling mechanism in place from 1991 to 1995, at which time it was discontinued. This is before the Study Period.

Figure 3: Trends in Electric Consumption Growth by Decade: 1951 - 2010



III. COST OF CAPITAL THEORY AND THE IMPACTS OF DECOUPLING

A regulated utility's operating earnings (i.e., earnings before income taxes) are the difference between base revenues (non-fuel) and the sum of all prudent costs, including O&M, administrative and general (A&G), depreciation, and interest. There are several sources of variability in the base revenue stream that can be eliminated by the decoupling mechanism analyzed here. EE programs normally decrease revenues because they decrease sales. Other increases and/or decreases in base revenues are driven by changes in weather, business activity over the business cycle, the number of net new customers, local, state and federal building and appliance codes and standards, and the number of delinquent bills. By design, decoupling ratemaking eliminates or significantly weakens the linkage between revenues and the volume sold, independently from the sources of variability.

Decoupling should stabilize revenues, but net income can still vary. Although depreciation and interest expense are relatively stable, other costs can change materially between rate cases. At times of rapid capital investment, for example, when utilities face significant environmental retrofits and replacements, depreciation and interest may also increase rapidly and put pressure on earnings unless there are more frequent rate cases to adjust base revenues.

If decoupling stabilizes the revenue side of the earnings equation, does it stabilize operating earnings as well? This leads directly to the question: does decoupling reduce non-diversifiable risk since this is the risk that determines the cost of capital in financial markets? We shall see that the answer is <u>not</u> a simple "yes."

Not all risks or sources of variance in earnings affect the cost of capital equally, because investors can avoid certain risks. Diversification through portfolio formation can remove diversifiable risks; therefore, diversifiable risks do not affect the cost of capital. For example, extreme weather will cause variance in a single utility's revenues and are a risk factor for that utility's earnings. However, investors can assemble a portfolio of utility stocks from across the climate zones in the United States, thus mitigating the effects of weather on individual stocks. For a portfolio of utility stocks, the effect of weather variations should largely cancel out, removing weather as a source of investment risk, and negating its effect on the cost of capital. Non-diversifiable risks (also known as "business risks") are the risks that remain after diversification. Because investors must bear them, these risks affect a company's cost of capital. The distinction between diversifiable risk and non-diversifiable business risk is important to recognize when evaluating the effect of decoupling, or other regulatory policies, on a company's cost of capital. Simply reducing total risk, i.e., the sum of diversifiable and non-diversifiable risk, does not imply that the cost of capital has been reduced. The risk reduced must be part of a company's business risk, i.e., its non-diversifiable risk, to affect its cost of capital.

Decoupling is often praised by credit rating agencies because it clearly reduces total risk, which is the risk important to bond holders. Adoption of decoupling could reduce the overall cost of capital for a company through a reduction in the cost of debt, but that would not justify a reduction in the allowed ROE. Only reductions in business risk justify a reduction in a regulated company's allowed ROE.

The effect of decoupling on the cost of capital in the current electric environment of low growth and high investment cannot be determined solely on theoretical reasoning. Empirical analysis is needed, looking at the record compiled by utilities across the nation, both before and after adoption of decoupling mechanisms.

IV. CREATING A DECOUPLING SAMPLE OF REGULATED ELECTRIC UTILITIES

We start with a large sample of regulated electric company subsidiaries and their holding companies, then compile data on which have a decoupling policy and when it was officially adopted. We immediately note an important dichotomy. Holding companies, not their subsidiaries, have publicly traded stock that provides the financial information necessary to estimate the cost of capital. On the other hand, individual, state-regulated subsidiaries, not the holding companies themselves, apply for, and are granted, the policy of decoupling. Our methodology addresses this dichotomy. We measure the degree of decoupling of each holding company by examining the decoupling policies of its subsidiaries after differentiating each state in which a subsidiary operates. We use the subsidiary's share of the holding company's asset to establish the weights of the different subsidiaries.[18]

Another feature of the study design is to analyze only a sample of regulated utilities that have experienced a change in decoupling policy within the study period, 2005 to 2012.[19] As mentioned above, adoption of decoupling has been increasing along with the surge in spending on EE programs. There are several recent public surveys of alternative ratemaking policies that include decoupling.[20] In the fall of 2013, Brattle, and specifically one of this report's authors, completed a major study comparing the alternative ratemaking schemes of electric utilities on behalf of the National Association of Water Companies.[21] The report used and supplemented the public survey data on regulated electric utilities that had adopted decoupling as of the summer of 2013. This report supplements the earlier sources with additional information on the Specific Date on which the regulatory policy of decoupling was adopted for each state subsidiary.[22]

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[18] In this report, we use the term "subsidiary" to refer to the segment of a utility that is regulated at the state level. A particular holding company might own two utilities that are separate corporations. Assume the first is located in a single state, while the second has a service territory extending over three states. In our analysis, this holding company would have four "subsidiaries" for purposes of calculating its degree of decoupling. There are also situations, such as Con Edison in NY, where a holding company owns more than one subsidiary within a single state, and the individual subsidiaries get decoupling at different times. Our weighted average decoupling metric captures this.

[19] The choice of the study period was deliberate. The study started with the first quarter of 2005 when no holding companies in our sample had an electric subsidiary under decoupling. That continued for seven quarters until first quarter of 2007, when Idaho Power was decoupled. Thus, the study period has eight quarters of data for observing cost of capital without decoupling. There followed steady growth in decoupling across the sample states for the next six years, as shown in Figure 4. Our project and the data collection were initiated in the middle of 2013, so the last quarter of 2012 was used as an end point.

[20] Sources of information on decoupling and other alternative regulatory policies are cited in footnotes 3 and 4. Where there are disagreements, Brattle investigated and decided which policies to include for a state.

[21] The Brattle Group, *Alternative Regulation and Ratemaking Approaches for Water Companies*, *Op. Cit*. Footnote 3. See Appendix A, "Tabulation of the Alternative Regulatory and Rate Approaches in the Three Infrastructure Industries."

[22] We assume that for a particular state subsidiary, this Specific Date of approval is the likely date when any uncertainty in capital markets about adoption of decoupling is fully resolved, resulting in the possible change in cost of capital from a reassessment of the future risk for the holding company that owned the state regulated electric utility at issue. Capital markets are forward looking, and investors are aware of regulatory proceedings that potentially affect future risk. We report in the final section some results that test whether the capital markets anticipate the adoption of decoupling by one, two or three quarters prior to the Specific Date.

Each Specific Date was initially defined as the month and year of adoption. This was then converted to a quarter and year, so as to match the financial data. Decoupling for a state-regulated electric subsidiary is a binary variable, 0 or 1. On its Specific Date, each state subsidiary goes from 0, not decoupled, to 1, decoupled, or in the reverse direction. In general, a holding company may have several subsidiaries, and the Decoupling Index for the holding company is a weighted average of its subsidiaries. The decoupling index changes on each Specific Date, with the weights being the relative book value of assets in the subsidiaries with decoupling compared to the total book value of total assets of the holding company. Thus, for each sample holding company, we calculate a percentage of total assets that are decoupled as of each quarter in the study period. For example, a company with two subsidiaries, one decoupled representing 40 percent of the total assets and the other not decoupled, would have a decoupling index of 0.40 in the quarter.

The calculation of the decoupling index is sometimes complicated by the fact that some regulated subsidiaries cover more than one state and could have decoupling in one state and not the other. In that circumstance, we estimate the percentage of assets that are decoupled for that subsidiary by reference to the percentage of MWh of electricity consumed in the separate jurisdictions compared to the total MWh for the entire subsidiary. This is necessary because the distribution of assets of a multistate subsidiary is not generally reported.

The decoupling sample development started with the Brattle *Alternative Rates* Report of September 2013, supplemented by additional information. The initial list included 98 state regulated electric companies in 42 states. The final sample contains a subset of the following size:

- 14 electric holding companies;
- 21 state-regulated electric subsidiaries of the holding companies. The subsidiaries operate in 11 states and during some quarters in the study period had decoupling;
- 32 quarters from 2005 through 2012, when growth in the policy of decoupling was rapid; and
- 291 observations, each pertaining to a holding company and consisting of the cost of capital in that quarter, the decoupling index value in that quarter, and a set of explanatory or dummy variables, as discussed below in Section V. Holding company data financial data are screened for potential bias, using a set of standard financial and other criteria that Brattle uses continuously when estimating the cost of capital. The criteria are discussed in Section V.

Figure 4 shows the increase in the total state subsidiaries in our sample with decoupling over the study period.

Figure 4: Count of State Regulated Subsidiaries
In Sample with Decoupling over the Study Period 2005 – 2012

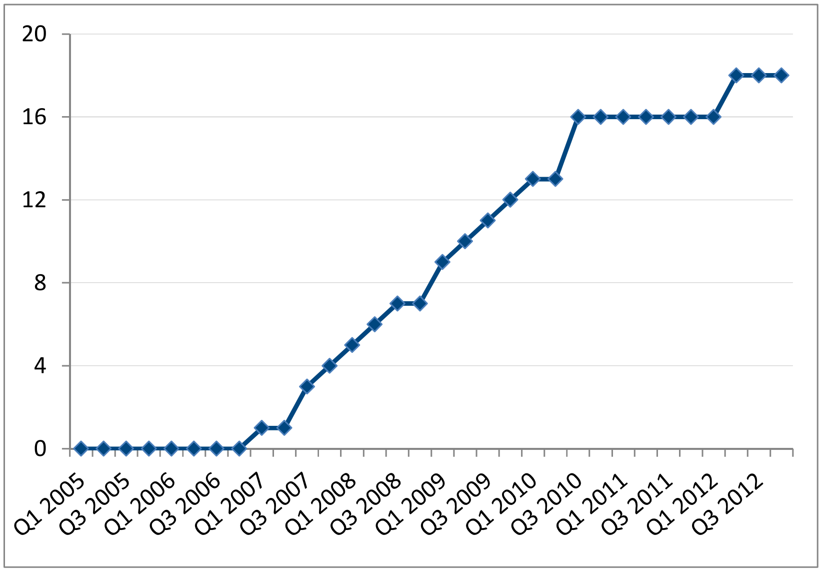
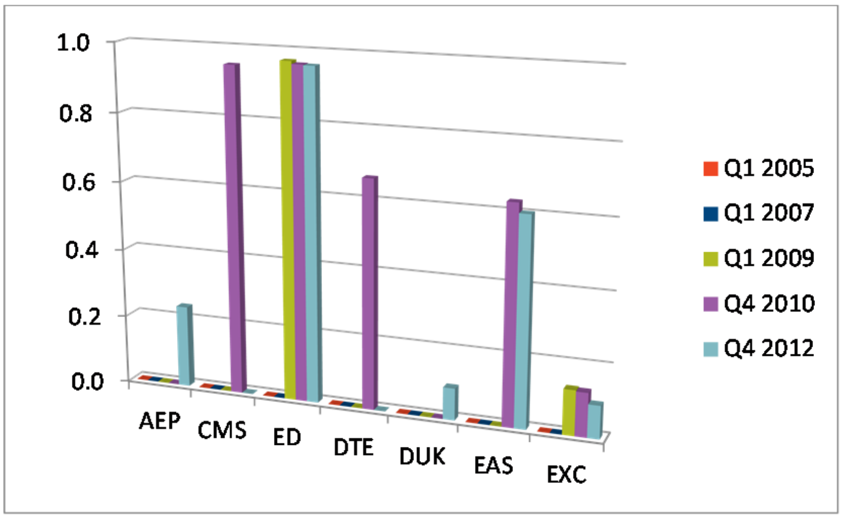
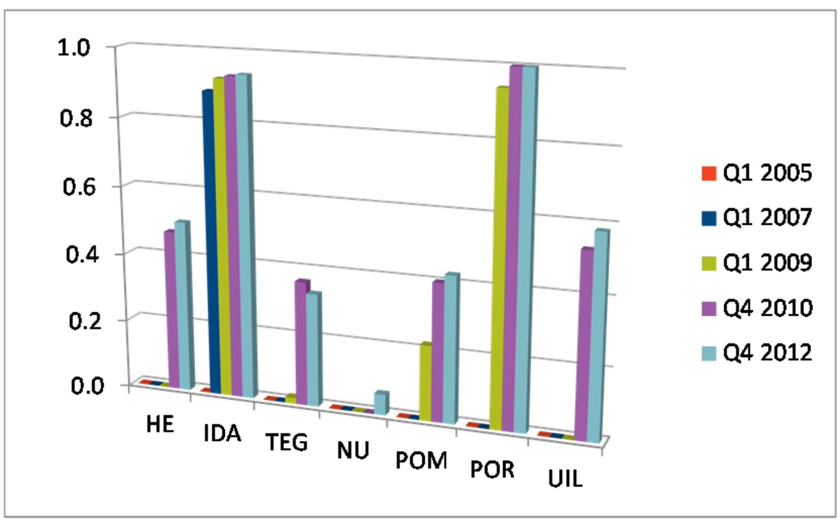


Figure 5 displays the decoupling index values for the 14 individual holding companies at selected times over the study period. These holding companies had no decoupling at the beginning in 2005 – 2006, but this changed substantially over the next six years.

Figure 5: The Level of Electric Decoupling Index for 14 Holding Companies in 5 Selected Quarters in Study Period





The holding companies are American Electric Power Co. Inc. (AEP), CMS Energy Corp. (CMS), Consolidated Edison, Inc. (ED), DTE Energy Co. (DTE), Duke Energy Corp. (DUK), Energy East (EAS), Exelon Corp. (EXC), Hawaiian Electric Industries Inc. (HE), IDACORP Inc. (IDA), Integrys Energy Group Inc. (TEG), Northeast Utilities (NU), Pepco Holdings Inc. (POM), Portland General Electric Co. (POR), UIL Holdings Corp. (UIL).

V. ESTIMATION OF THE COST OF CAPITAL FOR THE ELECTRIC INDUSTRY

This section explains the estimation of the cost of capital for the sample holding companies. First, the universe of holding companies is screened to remove companies whose estimated cost of capital could be biased by other factors. To be in the sample, the holding companies must meet all of the following conditions:

- no recent, substantial merger and acquisition (M&A) activity;
- investment grade credit rating, i.e., BBB- or better;
- has not cut its dividend in the last two quarters; and
- is a U.S. company.

Substantial M&A activity is defined to be a merger or acquisition/divestiture comprising 25 percent or more of the pre-merger book value of assets of the company. The stock prices of companies involved in mergers or acquisitions react more to the latest news on the progress of the M&A than to developments in the capital markets, but this is contrary to the assumptions underlying the cost of capital estimation models. A holding company with substantial M&A activity is dropped from the sample for the period one quarter before the quarter of the merger announcement through two quarters after the quarter in which the merger was consummated or abandoned.

Companies with non-investment grade credit ratings are generally considered to be in financial distress so that their cost of capital estimates could be affected by the market's perception of their likely survival in their current form. Similarly, companies resist cutting dividends unless absolutely necessary to conserve cash. Cutting the dividend is viewed by the market as a signal of some level of financial distress, so we require that there be no dividend cuts in the previous two quarters. Finally, only U.S. companies are considered because the cost of capital may differ for companies whose home capital market is in another country. In all these situations, the cost-of-capital estimates are likely to be biased.

<u>Estimating the Overall After-Tax Weighted-Average Cost of Capital</u>

We estimate the cost of capital quarterly for the period quarter 1, 2005 to quarter 4, 2012. The following describes the steps we used to calculate the overall cost of capital for each of the 14 holding companies listed in Figure 5 above. First, we calculate the <u>cost of equity</u>, COE, using the constant growth version of the discounted cash flow model (DCF).

$$\begin{aligned} r &= \frac{D_1}{P} + g \\ &= \frac{D_0 \times (1+g)}{P} + g \end{aligned} \tag{1}$$

where "D1" is the dividend expected at the end of the first period, "g" is the perpetual growth rate, and "P" and "r" are the market price and the cost of equity, respectively.

The COE is the information of interest to regulators when they set the allowed ROE for a utility, so our focus is ultimately on whether there is a measurable reduction in the COE from the policy of decoupling.[23] In general, the COE increases not only with increased business risk but also with increased financial risk.[24] Therefore, in testing for an impact on the cost of capital from decoupling, we systematically account for differences in the COE in different holding companies in the samples that arise from different levels of financial risk, which has nothing to do with decoupling.

This analysis relies on the DCF model instead of the Capital Asset Pricing Model (CAPM) because the DCF model is the more forward looking model. The beta parameter in the CAPM is normally estimated using three to five years of historical data, but historical data would not capture the effect of a change in risk from the adoption of decoupling. In contrast, the DCF model relies upon the current stock price and a forecast of the future growth of earnings and dividends. We use an average over 15 trading days for the current stock price and security analyst earnings five-year forecasts from Thomson-Reuters.

Second, we calculate the company's after-tax weighted-average cost of capital (ATWACC) which measures the overall cost of capital for the firm. To control for the effect of differences in capital structure (i.e., differences in financial risk) among the sample companies, we converted estimates of the COE into corresponding estimates of the overall ATWACC.[25] The ATWACC measures the cost of capital for the business itself, while the COE estimate represents the cost of equity capital taking into account the equity-holders' additional financial risk from the company's level of debt financing. In other words, the ATWACC measures business risk, while the COE is also affected by financial risk. We use the ATWACC in our statistical analysis below to control for differences in financial risk. Of course, the effect of decoupling on the cost of capital would primarily be reflected in the COE, but it could also affect the cost of debt, albeit with a lag.

The ATWACC is a better measure of the relevant cost of capital for our investigation because it takes differences in capital structure among the sample firms into consideration. Firms with

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23 In general, the regulator sets the allowed return on equity equal to the estimated cost of equity in order to provide the regulated company a fair opportunity to earn its cost of capital. In some circumstances the regulator may set the allowed ROE above or below the COE to compensate for differences in risk between the regulated company and the sample companies.

24 Financial risk, as distinct from business risk, is related to the degree to which the company's assets are debt financed. The greater the share of debt in the capital structure, the greater the interest that must be paid out of operating revenues before any shareholder earnings are available.

25 To be specific, the ATWACC is the measure we use; it is a weighted average of both the cost of equity and cost of debt after taking into account the tax deductibility of interest payments. The weights used in the calculation are the market values of debt and equity in the capital structure. See Chapter 20 of Brealey, Myers and Allen, Op Cit.

similar assets will have different cost of equity if they have different capital structures even though their overall cost of capital may be identical. The ATWACC is calculated as follows:

$$ATWACC = r_D \times (1 - T_C) \times \% D + r_E \times \% E \qquad \textbf{(2)}$$

where r_D = market cost of debt,
r_E = market cost of equity,
T_C = corporate income tax rate,
$\% D$ = percent debt in the capital structure, and
$\% E$ = percent equity in the capital structure.

- The cost of debt, r_D, is based upon the yield on utility debt from Bloomberg's utility bond index for companies of comparable S&P credit ratings.
- For T_C, we use a 40 percent combined federal and state corporate tax rate for all companies.[26]
- For those companies with preferred equity in their capital structures, we estimate the return on preferred equity as equal to the before tax return on the company's debt and weigh it by its share in the capital structure.[27]
- The market value of equity, E, is calculated as the product of P, the price of the stock, and the number of shares outstanding at the time.
- The market value of debt, D, is approximated by the book value of debt because the market value of debt and the book value were not substantially different.
- The market value of preferred, Pf, is also approximated by the book value of preferred equity if there is any in the capital structure.
- The total market value of the firm is the sum of the E, D and Pf.

The result of this process is an estimate of the ATWACC for each sample company for each quarter of the sample period.

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26 Although state tax rates vary, a combined 40 percent rate is used for all to avoid any distortions in the results from attempting to model different tax rates.

27 This is an approximation because we do not know of an index for the cost of preferred equity. The approximation is not likely to have a large effect because the percentage of preferred equity in the companies' capital structures is relatively small.

VI. AN EMPIRICAL TEST OF THE EFFECT OF DECOUPLING ON THE COST OF CAPITAL

Finally, we test the effect of decoupling on the overall cost of capital by regression analysis on the time series of our estimated ATWACCs for the sample of holding companies. The dependent variable is the overall cost of capital, i.e., the ATWACC, and the prime explanatory variable is the decoupling index. We use dummy variables to capture the fixed effects for the different holding companies and for different time periods. These are discussed in more detail below in the section on the Regression Model.

Regression Model

We estimate the following regression model:

$$ATWACC_{i,t} = \beta_0 + \beta_1 * Decoupling\ Index_{i,t} + \beta_2 * QTR_t + \beta_3 * Company_i + \varepsilon_{it} \tag{3}$$

For the ROE estimate in the ATWACC, we use the single-stage version of the DCF model based upon security analysts' 5-year forecasts of company-specific earnings growth. QTR_t is a dummy variable for the quarter (period t) of the estimate, and $Company_i$ is a dummy variable for the specific company (company i).

In assembling the data set, we recognize that detecting the effect on decoupling will be affected by a number of factors. The *Company* dummy variable captures the difference in the average ATWACC by company, which can be due to such factors as the average amount of unregulated assets compared to regulated assets in the holding company or due to differences in regulation in the various states. There are 14 companies in the sample, so there are 13 Company variables. Unlike our previous study of gas LDCs, the 14 company electric sample is not nearly as close to a "pure-play" sample. That is, the electric utility holding companies are larger and more diverse than the gas LDC sample. There may be changes in the risk of unregulated assets that we are not fully capturing.

The *QTR* dummy variable captures the variation in average ATWACC across companies in a quarter due to differences in interest rates or other economic conditions. Our period covers eight years or 32 quarters so there are 31 *QTR* variables. The *QTR* dummy variables are intended to control for macro-economic effects on the average cost of capital for the sample, which is important given that our study covers a very unusual period for the U.S. economy. The U.S. suffered the worst recession since the Great Depression. Interest rates generally declined.

Decoupling could be signaling the company is entering a period of higher risk. Decoupling reduces both the upside and the downside for a regulated company. If a company believes that policies or economic conditions impose additional risk, the company may request decoupling to mitigate rising risk. On the other hand, state policy makers and commissions may seek to impose decoupling to ensure success of EE programs. Perhaps decoupling reduces risk but not enough to offset the increase in risk due to other associated policies or circumstances.

Finally, we know that financial markets are forward looking. Information is available to the market when a company files for decoupling and the ongoing status of the hearings, and when decisions are expected. To test whether these expectations led the markets to adjust the cost of capital before the decision was released, we consider three alternative periods for when financial markets react to the possibility that decoupling may be implemented. The periods are one, two or three quarters *before* the quarter that the decision was announced, i.e., the Specific Date.[28] We use these alternative anticipation dates in separate models to serve as robustness checks for our primary, contemporaneous specification.

The coefficient of interest for testing our hypothesis is β_1, the coefficient on the Decoupling Index. We consider a null hypothesis that decoupling does not lower the cost of capital, i.e., the ATWACC. This framework allows us to determine whether there is statistically significant evidence in favor of the contention that decoupling does lower the ATWACC.

Statistical Results

The results of our test for each of the four models with varying financial market anticipation are all in general agreement and fail to reject the claim that decoupling does not lower the cost of capital. Although the coefficient on the decoupling index is negative, the null hypothesis that the coefficient is zero or positive (i.e., not negative) cannot be rejected at the 5% level. Hence, there is no statistical support for the claim that decoupling leads to a decrease in the cost of capital. The primary point estimate from the contemporaneous model is -41 bps, with point estimates ranging from -46 to -49 bps for the models with anticipation by the capital markets. The estimated impacts and associated one-sided *p*-values are shown in Table 1 for all four models. The *p*-values are all above the conventional 0.05 level and are generally above the 0.10 level as well, therefore justifying our conclusion that decoupling does not lead to a statistically significant decrease in the cost of capital.[29]

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28 We also recalculate the holding company Decoupling Index for each of the earlier periods in which the effect of decoupling could be reflected in the capital markets.

29 In testing for statistical significance, the *p*-value is the probability of obtaining a test statistic at least as extreme as the one observed, assuming the neutral or null hypothesis is true, which in this case is that decoupling does not reduce the cost of capital. "In most scientific work, the level of statistical significance required to reject the null hypothesis (i.e., to obtain a statistically significant result) is set conventionally at .05, or 5%. The significance level [or *p*-value] measures the probability that the null hypothesis will be rejected incorrectly, assuming that the null hypothesis is true." See Rubinfeld, Daniel, "Reference Guide on Multiple Regression" in National Research Council, *Reference Manual on Scientific Evidence*, 3rd ed. Washington, DC: The National Academies Press. 2011.

In our models, we account for differences in the estimated cost of capital due to economy-wide impacts by quarter and due to company-specific variation through the use of time period-specific and company-specific indicator variables respectively. We also use clustered standard errors to account for correlation in each company's performance across time.

Table 1: Impact of Electric Decoupling in Basis Points and Test Results: Primary Model and Three Alternative Models of Financial Market Anticipation

	Primary model	**1 Qtr. anticipation**	**2 Qtr. anticipation**	**3 Qtr. anticipation**
Estimate	-40.88	-46.5	-48.7	-45.9
***p*-value**	0.14	0.12	0.08	0.11

VII. CONCLUSION

Our statistical tests do <u>not</u> support the claim that the cost of capital is reduced by the adoption of decoupling. The results of our models of the effect of decoupling on the cost of capital are consistent and collectively demonstrate that there is no statistically significant evidence of a decrease in the cost of capital following adoption of decoupling. If decoupling policy decreases the cost of capital, these tests strongly suggest that the effect must be relatively small because we are not able to detect it statistically.

As decoupling continues to grow in importance, cases will frequently come up where interveners and commission staff may explore the extent to which decoupling reduces business risk and the utility's cost of capital. To date, in a small minority of cases in which decoupling was approved, the utility explicitly had their allowed ROE reduced. Our research leads us to conclude that these reductions were implemented without reliable empirical analysis to support the ROE reduction. The results of our analysis show that if such empirical analysis had been done, it is unlikely that it would have supported even the moderate reductions in allowed ROE that were imposed on the utilities.

Although the point estimate of the coefficient on decoupling is negative, this result is not statistically significant (for this sample over this period). Further, there is another reason for the regulator not to simply deduct some amount from the allowed rate of return: the cost of capital comparison samples used in regulatory proceedings are not generally restricted to holding companies without any subsidiaries with decoupling. Whatever effect adoption of decoupling may have on the cost of capital, it will be reflected in the sample results. Reducing the allowed ROE relative to the sample average cost of capital estimate would risk "double counting" the effect of decoupling, because that effect is already captured by the sample estimates.

Even if decoupling does not reduce a company's cost of capital, it is still a beneficial policy if it is effective in removing the utility's disincentive to pursue conservation programs. Where decoupling is associated with implementing enhanced EE programs (as is frequently the case), adopting a reduction in allowed ROE in essence punishes a utility for pursuing EE programs. If a utility's management fears an unjustified reduction in the allowed ROE as a result of decoupling, the original disincentive to pursue EE programs is recreated in a new form, and the purpose of decoupling to align the interests of customers, shareholders, and society as a whole may be frustrated.

Appendix A
Regression Statistics

Variable	Actual	1Q Forward	2Q Forward	3Q Forward
DecoupIndex	-0.00408	-0.00465	-0.00487	-0.00459
	(0.00362)	(0.00376)	(0.00330)	(0.00353)
Constant	0.0504***	0.0503***	0.0502***	0.0502***
	(0.00518)	(0.00509)	(0.00489)	(0.00478)
Observations	291	291	291	291
R-squared	0.678	0.679	0.680	0.679

Clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Effect on the Cost of Capital of Ratemaking that Relaxes the Linkage between Revenue and kWh Sales

An Updated Empirical Investigation of the Electric Industry

A Brattle Group Report

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November 2016

THE Brattle GROUP

This report was prepared as a working paper of The Brattle Group. All results and any errors are the responsibility of the authors and do not represent the opinion of The Brattle Group, Inc. or its clients.

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I. Executive Summary

The purpose of this report by *The Brattle Group ("Brattle")* is to describe the research the authors have done on the effect, if any, on the cost of capital ("COC") of ratemaking mechanisms that significantly relax the linkage between the collection of base revenue and the amount of kWh sales.[1] The two ratemaking mechanisms we analyze are revenue decoupling and fixed-variable rates, which are alternatives to the standard ratemaking in general rate cases. The linkage comes particularly from the common use of volumetric rates ($ per kWh) for residential and small commercial customer classes that collect significant amounts of fixed costs in the volumetric charge. Revenue decoupling is separate from the somewhat similar trackers (using balancing accounts and riders) that true-up forecast to actual variable costs, like fuel and purchased power, EE program expenditures, and certain kinds of capital expenditures. We have reviewed the relevant finance theory and conclude that the issue cannot be answered definitively on a theoretical basis. While there are theoretical arguments why adoption of linkage-relaxing ratemaking could decrease the COC, there are also valid theoretical reasons why it would not and could even be associated with an increase in the COC. An empirical test is required to answer the question of whether the COC is affected upon adoption of decoupling. To conduct the test, we develop a sample of fifteen electric holding companies with thirty-seven regulated

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1 "Linkage-relaxing ratemaking" is new terminology for policies that have been broadly referred to as "decoupling" in the past. The new term was introduced by the Edison Electric Institute ("EEI") in the most recent publication of their periodic survey of alternative ratemaking policies of U.S. and Canadian regulated electric and gas companies, *Alternative Regulation for Emerging Utility Challenges: 2015 Update*, Pacific Economics Group Research LLC, Chapter III, "Relaxing the Link Between Revenue and System Use," November 11, 2015. This new terminology clarifies that "revenue decoupling" is one of three specific alternatives of this linkage-relaxing rate policy.

subsidiaries that were central to the rapid growth in revenue decoupling in the U.S. during the period 2005 through 2015.

The main linkage-relaxing mechanism we consider is revenue decoupling,[2] which adjusts a utility's rates annually or more frequently to help its actual revenue track its allowed revenue more closely. In this family of related state policies, there are variations in several different dimensions,[3] but revenue decoupling policies have strong similarities, and in the way they function, they are distinct from traditional general rate case ratemaking. All of the holding companies in our sample have one or more subsidiaries with revenue decoupling. In general ratemaking, allowed cost of service is used to set rates that are expected to collect the revenue requirement (i.e., the full cost of service) based upon an approved kWh sales forecast. The actual revenue collected involves inherent uncertainty because actual retail kWh sales (or therms of natural gas) may substantially differ from the forecast used to set rates due to the random effects of weather and economic cycles on sales as well as from designed reductions in sales due to policies favoring energy efficiency ("EE") and distributed generation ("DG"), particularly rooftop solar programs. Under revenue decoupling, the difference in revenues collected resulting from differences in kWh sales is subsequently refunded to or collected from customers so that target

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2 Revenue decoupling is a somewhat heterogeneous, but well-defined set of ratemaking policies in place around the U.S., and we adopt EEI's definition in its survey mentioned in footnotes 1. The EEI definition starts with the use of a Revenue Balancing Account ("RBA") to achieve an annual revenue target. A Revenue Adjustment Mechanism ("RAMs") to adjust the target over time without a general rate case is also included in the definition. Some states have revenue decoupling policies with no periodic revenue target adjustments but frequently include other balancing accounts that adjust the collectible revenue levels, e.g. rate riders for certain environmental expenses or capital additions.

3 This is discussed in Section II below.

revenue uncertainty is dampened.

Revenue decoupling is frequently part of a state energy efficiency or distributed generation policy with the goal of slowing the growth in the consumption of electricity. Decoupling facilitates a more active role for the utility by eliminating its "through-put incentive" to increase earnings from increasing sales. However, in regulatory hearings on revenue decoupling, the resulting reduction in the variability of base revenues has led to a corresponding request by intervenors for regulators to reduce the allowed return on equity ("ROE") in conjunction with approval of revenue decoupling.

Fixed-Variable Rates ("FVR") is the second linkage-relaxing mechanism. A FVR structure has a very similar effect in reducing the volatility of revenue, but it accomplishes this by recovering a much higher percentage of fixed costs in monthly charges that do not vary with usage and less in the volumetric per kWh rate. FVR (and the alternative of including demand charges where residential and small commercial customers are served with smart meters) are being much more actively discussed at present and have supporters and detractors.[4]

We develop of our sample from nationwide surveys of which the state-regulated utilities have gotten approval for revenue decoupling between 2005 and 2015. In each instance, we determine the subsidiary's holding company, whether that holding company has any other subsidiaries with revenue decoupling or FVR. We analyze both rate mechanisms for two related reasons. First,

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4 We take no position on the relative merits of revenue decoupling and FVR (or on demand charges). Our empirical test is focused on whether revenue decoupling, with or without a contribution from FVR, lowers the cost of capital for a regulated utility.

revenue decoupling and FVR theoretically and in practice have a similar stabilizing effect on actual revenues. This of course is a prime reason some argue a COC reduction is likely. However, revenue decoupling is also introduced in situations when the normal revenue growth of the utility is being undermined, and the primary goal of the policy is not to reduce volatility, but rather to address the throughput incentive. As a result, the net effect on risk is cannot be determined by theory alone. Second, we find that our sample of 15 electric holding companies with subsidiaries with revenue decoupling includes four that have FVR in place. We include FVR in our analyses to ensure that we capture the effect of these types of policies on the COC, and because the FVR is a policy of interest by itself.

For each quarter of the 2005 to 2015 study period (44 quarters), we determine the revenue decoupling or FVR status of every subsidiary of each holding company. We use this information to develop two independent, asset-weighted decoupling indexes for each holding company, one for revenue decoupling and one for FVR.[5] Each holding company's index can range in value from 0.00 (*i.e.*, no subsidiaries with revenue decoupling, or independently FVR) to 1.00 (all subsidiaries have revenue decoupling, or FVR). If revenue decoupling or FVR affects the COC, the effect will be reflected in the returns demanded by investors in capital markets.

For each holding company in each quarter, we also estimate the COC as the dependent variable based upon *Brattle's* standard methodology used in providing expert testimony on the cost of capital. The final database consists of over 465 observations. We then use regression analysis to

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[5] For each company, we calculate the decoupling index for revenue decoupling and for FVR as the share of the total assets of the company that belong to subsidiaries that operate under the policies.

determine if revenue decoupling, or that and FVR together, have had a statistically significant impact on the COC. Our results show that although the estimated coefficient for the decoupling index is negative, the direction expected if there is a reduction in risk, it is statistically insignificant by normal statistical standards.

There are at least two theoretical explanations for our empirical results of no significant effect. First, based on fundamental financial theory, we know that a linkage-relaxing mechanism would reduce the COC only if it reduces systematic risk (i.e., non-diversifiable risk), which is the type of risk that affects the COC. Non-diversifiable risks are those directly correlated with the stock market and the business cycle. Therefore, if the reduction in the variability in revenues from the linkage-relaxing mechanism is primarily related to diversifiable risk, such as weather, it would not affect the COC. However, reducing diversifiable risk would still provide a benefit to debt holders (which could eventually reduce the cost of debt, esp. if the company had a low debt rating) and thus to the customers, but not through reducing the cost of equity capital.

The second theoretical possibility is that any risk-reducing effects from a linkage-relaxing mechanism are being offset by a contemporaneous increase in systematic risk stemming from other causes – possibly the very causes motivating the decoupling in the first instance. Revenue decoupling is never instituted in a vacuum, but frequently along with the adoption of regulatory policies pursuing aggressive energy efficiency ("EE") or widespread distributed generation ("DG")that increases the possibility of the under recovery of fixed costs. These two theoretical possibilities are not mutually exclusive, so the lack of statistical significance in our results could be the result of a combination of both explanations. Again, we believe that the effect on the

COC of ratemaking that relaxes the linkage between revenues and kWh sales cannot be determined theoretically alone but requires empirical testing.

Our study of revenue decoupling does not provide statistical evidence of a reduction in a utility's COC, but reducing the cost of capital was not the original or an appropriate intention for decoupling. Revenue decoupling remains an extremely valuable regulatory policy with benefits for customers, regulators, and the utility. For example, low or stagnant sales growth can lead utilities to file serial rate cases in an effort to recover the full cost of providing service, which diverts regulatory and utility resources from other important forward-looking issues.[6] The authors expect some form of linkage-relaxing ratemaking to be a natural part of the slow-sales-growth utility of the future.

II. Developments in the Policy of Revenue Decoupling

Electricity, and particularly its distribution, is a capital intensive industry with a correspondingly high percentage of total costs represented by fixed costs that is significantly above the average for other industries in the U.S.[7,8] Going back to the 1950's, the rate design for the residential and

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6 The Washington Utility and Transportation Commission approved revenue decoupling for Puget Sound Energy's electric and gas businesses in Order 7, Dockets UE-121697 and UG-121705 (consolidated), June 25, 2013. On page 1, the Synopsis says: "The Commission in this Order implements several innovative ratemaking mechanisms that, together, fulfill the Commission's policy goal of breaking the recent pattern of almost continuous rate cases for Puget Sound Energy, Inc. (PSE). As the Commission observed in PSE's 2011/2012 general rate case (GRC): This pattern of one general rate case filing following quickly after the resolution of another is overtaxing the resources of all participants and is wearying to the ratepayers who are confronted with increase after increase. This situation does not well serve the public interest and we encourage the development of thoughtful solutions."

7 One standard measure of capital intensiveness is "asset turnover ratio," which is the annual revenue

Continued on next page

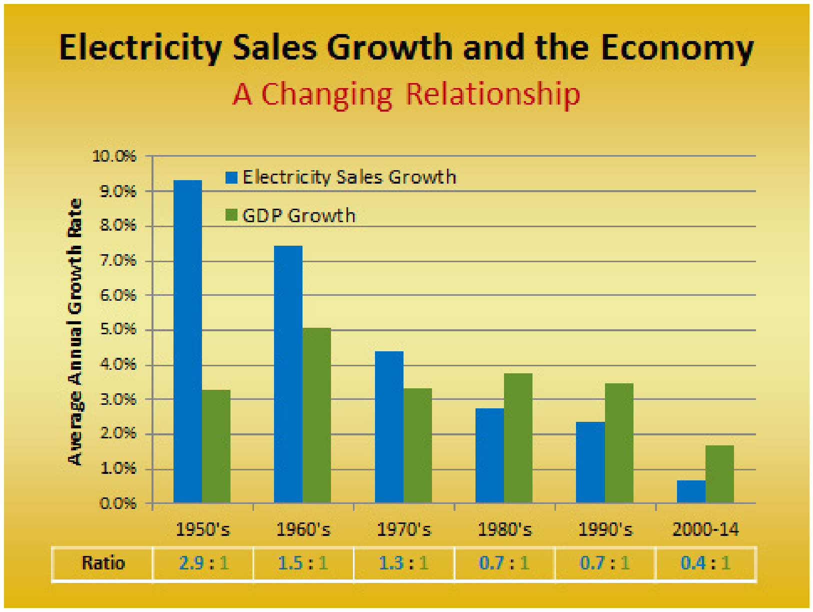
small commercial classes, the customer segments where the fixed distribution costs are the highest, evolved to collect a minor share of fixed costs in fixed charges and relied on volumetric charges ($ per kWh) for the rest. Included in the volumetric rate are much of the fixed capital investment and operations and maintenance (O&M) costs of the utility. One reason for this design is that it satisfies equity considerations, forcing larger (and possibly higher income) users to pay more of the fixed costs than the cost allocation principles might produce. A second reason the volumetric rate design has worked for so long was that in the whole 20th century, annual economic growth was 3% to 4%, and growth in electric sales was commensurate, as shown in Figure 1 below. This kind of growth in electric demand required rapid investment between general rate cases, and the growth in kWh sales along with volumetric rates to a degree automatically met the revenue need.

Continued from previous page

divided by the dollar value of the total assets of the company. A lower value indicates higher capital intensity. Electric, natural gas and water are among the lowest, around 0.35; capital goods industry is approximately 1.0 and retail goods 2.0 or above. Thus, fixed cost recovery is a major issue for utilities.

[8] Although fuel and purchased power costs can be sizeable, they are variable costs and not part of the lost revenue problem discussed here. These costs are nearly always collected in clauses that automatically set revenues equal to costs, because costs are from markets that change rapidly and are generally outside the control of the utility.

Figure 1
History of the Relationship of GDP to Electric Consumption



Source: John Caldwell, Chief Economist, EEI, 2016

An intrinsic consequence of volumetric rates is that revenue from the residential and small commercial classes is subject to considerable more variability from the normal changes in weather, short-run economic fluctuations, changes in customer growth, and changes in consumer tastes. The variation makes it difficult for the utility to forecast its sales reliably so that it can have high confidence in recovering its authorized fixed-costs. Utilities have a "through-put" incentive to encourage increased sales once rates are set in a general rate case.[9] However, the rate of growth that supported this volumetric-based structure is a thing of the past. Figure 2 below clearly shows that behind the year-to-year volatility there has been a long-run decline in the growth rate of electric retail sales in the U.S. Currently, the average growth rate is only

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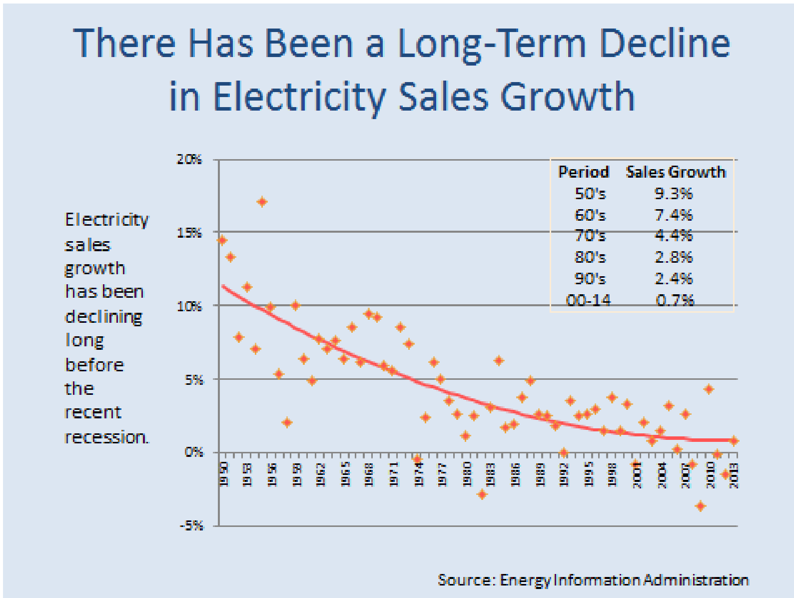
9 The competition between electric and gas companies for new water heating business in the last century was one result.

slightly positive, and many utilities have negative growth. In the last decade, which largely corresponds to our study period, one major contributing factor to this decline was the increase in EE expenditures by electric utilities, which is expected to continue.

Figure 2
Long Run Trend in U.S. Electric Sales Growth



A conflict in incentives surfaces as soon as utilities are asked to facilitate aggressive energy efficiency ("EE") and/or distributed generation ("DG") programs. The revenue decoupling mechanism was developed to eliminate this conflict by severing the link between recovery of base, or fixed, revenues and volumetric sales of kWh.

Under revenue decoupling, the final, actual revenue recovered is not or only partially based upon actual kWh sales. Instead, cost recovery is based on an allowed target for total revenue or per customer revenue.[10]

There are variations in several dimensions for revenue decoupling policies set by individual states. These dimensions include first, whether the allowed revenue is adjusted from year to year as discussed in footnote 2; second, whether the allowed revenue is total revenue or revenue per customer and thus trues up to the actual number of customers; third, whether and what kind of cap there is on the size of the annual rate adjustment; fourth, whether the policy is limited to the residential and small customer classes; fifth, whether the pooling of rate classes for purposes of the true-up; and sixth whether all or just some kWh demand fluctuations are decoupled from actual revenues, e.g., in some cases weather fluctuations are not removed in when revenues are trued up. While these dimensions affect how closely actual revenue comes to allowed revenue each year and over time, the effects on risk are not obvious. In our empirical analyses, we do not attempt to differentiate the decoupling policies on these dimensions.

Over a subsequent period, rates are adjusted to achieve a true-up of actual revenues to the target that is equal or much closer to the allowed revenues. The majority of revenue decoupling mechanisms also includes a second feature to adjust the revenue target annually for a set period of years, called by EEI the Revenue Adjustment Mechanism or RAM.[11]

Revenue decoupling has a long history, with the earliest version instituted in California in the

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10 Not all costs are recovered through the kWh charge. Some are recovered through riders such as for fuel costs.

11 See *EEI 2015 Survey*, *Op. Cit.*, Table 4, Revenue Decoupling Precedents. This table shows that there are 32 regulated electric companies that have revenue decoupling and about 75% have a RAM.

1980s, first for natural gas utilities and in 1982-83 for electric utilities.[12] California policy makers determined that decoupling would be "in the public interest" because utilities were being asked to pursue aggressive energy efficiency goals.

With revenue decoupling, the short run sales forecast is important to set the initial level of volumetric rates accurately and to minimize the size of revenue balancing account. The policy is symmetric. Customers are protected if sales are greater than forecast, and utilities recover their fixed costs if EE programs and other programs are more effective than expected.[13] Contrary to the assertion that revenue decoupling only shifts the risk of recovering revenue from the utility to the customers, both benefit when the policy results in a symmetric sharing of the risk of recovering allowed revenues.[14] From year to year, revenue decoupling with a RAM will also move the allowed revenue and protect against the declining trend of unit sales, and thus revenues over time. This depends on how the desired targets are set, and the utilities' ability to recover increasing costs and infrastructure investments through trackers, for example, between rate cases. In both cases, properly designed decoupling promotes the utility's ability to facilitate the EE and DG policies without undermining its financial stability. Note that the decoupling true-up amounts are recovered from or returned to customers in subsequent periods. Hence, if

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12 Dr. John L. Jurewitz, *Decoupling and Energy Efficiency Incentives: The California Experience*, EEI 2007 Spring Legal Conference, Charleston, SC, April 16, 2007.

13 An additional benefit is that disputes over sales forecasts may be reduced because the earnings of the regulated company are not affected by differences in forecasts with full revenue decoupling.

14 If the rate setting process was in fact biased against recovery of the full cost of service, then decoupling might be said to shift risk away from utility by correcting this asymmetric risk. The decline of sales through time from EE and DG might contribute to such a bias, which is why revenue decoupling is often linked to these policies.

some customers are reducing their average loads due to EE or DG, and that drives the level of the decoupling balances, there is some reallocation of costs to customers not participating in those programs and technologies.

So far, we have focused our discussion on revenue decoupling. Linkage-relaxing rate policies also include FVR and lost revenue adjustment mechanisms ("LRAM").[15] Revenue decoupling and FVR are broad policies in terms of eliminating base revenue variability from all or most sources. Those two mechanisms are the focus of our empirical work. LRAMs are inherently narrower, in the sense that their focus is only on the specific kWh savings that stem directly from a utility's EE or DG programs. LRAM is an important policy, but this policy has not been the focus of claims that it lowers the cost of capital. We have not included LRAMs in the empirical work underlying this report.

As discussed above, revenue decoupling solves the incentive problem for a utility to pursue EE program success. FVR does this also but in a different way. To the extent that fixed charges recover a larger portion of the utility's fixed costs, the utility is less affected by changes in kWh sales because recovery of its fixed costs are not as much at risk. The throughput incentive is mitigated but not eliminated by FVR.

Many intervenors have argued that the utility's risk has been reduced by revenue decoupling

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15 See EEI 2015 Survey, *Op. Cit.*, Table 3, Current LRAM Precedents, and Table 5 Fixed Variable Residential Pricing Precedents. EEI's definition of fixed variable rates is that the rates of power and gas distributors have a fixed monthly customer charge equal to or in excess of $15 (or $20 for vertically integrated utilities).

policies, and, therefore, the allowed ROE should be reduced. By design, both types of linkage-relaxing policies reduce the variability of revenues, which according to intervenors translates directly into reducing the kind of risk that determines the COC financial markets require. The argument proceeds to first, estimate the COC in the standard way, and second, reduce the estimate by a recommended amount (*i.e.*, a number of basis points ("bps")) as a consequence of the assumed reduction in risk. The recommended reduction in allowed ROE is therefore quantitatively associated with the risk reduction from revenue decoupling alone, and is treated independently from the all other risk factors considered in the first step of COC estimation. Some proposed discrete reductions have been as high as 300 bps. To our knowledge, no recommendation for a reduction in the allowed ROE was accompanied by any empirical evidence showing a reduction in the COC from implementation of decoupling.

Regulators have been persuaded by these theoretical arguments in just under one-fifth of past decisions adopting revenue decoupling for either electric utilities or gas LDCs.[16] The time profile of these decisions for electric utilities is shown in Figure 3. Since 2010 there has been no explicit, *ex post* reduction in the allowed ROE in 12 decisions in conjunction with initial approval of revenue decoupling. All of the decisions reducing the allowed ROE in electric companies by the amount of 50 bps have come from decisions in three regulatory jurisdictions: Maryland, the District of Columbia, and Hawaii.[17] Other states have made smaller bps

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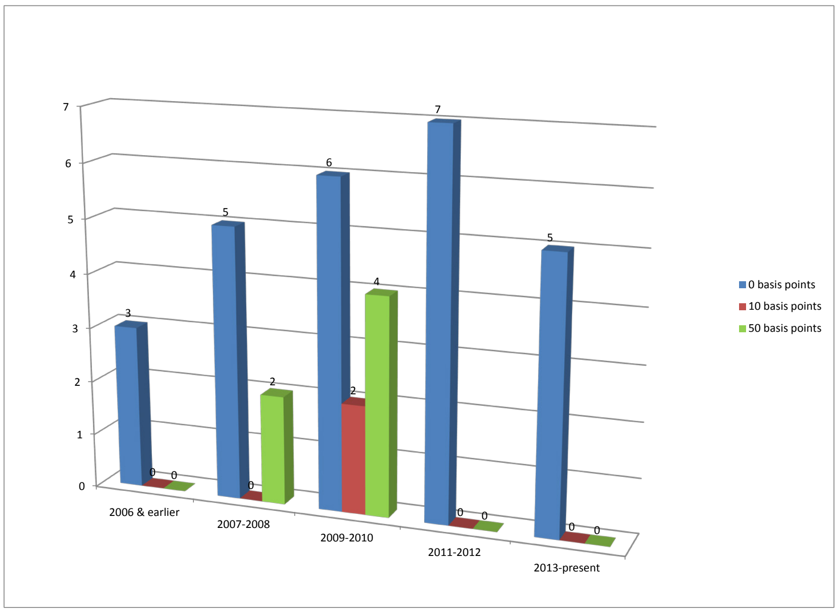
16 We have extended the work of Pamela Morgan, *A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations*, Graceful Systems LLC, December 2012.

17 We display the distribution of ROE reductions and non-reductions for the initial revenue decoupling decisions. We do not catalogue and include all of the sequential decisions in rate cases. Note that the

Continued on next page

reductions. In general rate cases, Maryland no longer makes a deduction, in part because the coverage of revenue decoupling was removed during the outages from declared major storms and thus weakened.

Figure 3
Time Profile of ROE Reductions upon Approval of Electric Revenue Decoupling Policies: Before 2006 to Present



The purpose of our empirical analysis is to provide a foundation upon which to answer the question of the effect of revenue decoupling on the COC that is not based solely on supposition.

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effect of decoupling on the COC will be reflected in the market estimates of the COC based upon the initial decision on revenue decoupling. If expected by investors, subsequent decisions reaffirming decoupling would not change any effect on the COC. Regulatory decisions can change of course. For example, the Maryland Public Service Commission ("MPSD") first approved revenue decoupling for Baltimore Gas & Electric (BG&E) in November 2007 and lowered BG&E's allowed ROE by -50 bps. This policy was continued in the subsequent electric rate case number 9230, Dec. 6, 2010, but the MPSD later eliminated any bps reduction in allowed ROE in electric rate case number 9299, Order No. 85374, February 22, 2013.

In these regulated, high fixed cost industries, the determinants of the cost of capital are complicated. For at least two reasons, there should be no presumption that revenue decoupling automatically lowers the COC by a specific amount that should be deducted from the previously estimated cost of capital. First, a sample must be used for estimating the cost of capital, and today that sample is likely to have some utilities that already have decoupling. Second, adoption of decoupling policies is always in response to a changing situation and therefore could be coincident with other influences that may be increasing non-diversifiable risk. Any reduction in the allowed return on equity should be based upon empirical evidence that decoupling reduces the cost of capital.

The *Brattle* authors have considerable experience analyzing the issues of decoupling rate policy and the frequently asked question as to whether it has a measurable impact, as assessed in financial markets, on the cost of capital of regulated companies. In 2011-12, the authors published a report on the first empirical test of the hypothesis in the natural gas delivery industry and found that there was no statistically significant effect on the COC with decoupling.[18] In 2014, we published our first study of electric power industry and again found no statistically significant effect of decoupling on the COC.[19] Updated studies of the gas delivery

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18 Joseph B. Wharton, Michael J. Vilbert, Richard E. Goldberg, Toby Brown, *The Impact of Decoupling on the Cost of Capital: An Empirical Investigation*, Brattle Report, Original Version March 2011, Revised July 2012.

19 Michael J. Vilbert, Joseph B. Wharton, Charles Gibbons, Melanie Rosenberg, Yang Wei Neo, *The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Prepared for The Energy Foundation, March 20, 2014.

and the electric industries were published in November 2014.[20]

III. Cost of Capital Theory and the Effect of Revenue Decoupling

Our empirical analyses reported here address the question of whether the adoption of a revenue decoupling mechanism affects the market-determined COC for the regulated electric companies. We begin by a review of the financial theory regarding how decoupling could affect the COC and why it may not.

A company's cost of capital is determined in the capital markets based upon expected cash flows and their risk. Volatility of market returns is positively related to the total risk of the investment.[21] Cost-of-capital experts therefore rely upon market data to estimate a company's COC, not accounting data.

Decoupling focuses narrowly on reducing the volatility of a utility's base revenues, not its market cash flows, though the former influences the latter indirectly.[22] A regulated utility's operating earnings (*i.e.*, earnings before income taxes) are the difference between base revenues[23] and the

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20 Both of the electric and gas studies are written up in *Prefiled Direct Testimony (Nonconfidential) of Dr. Michael J. Vilbert, on behalf of Puget Sound Energy, Inc.*, WUTC, Docket Nos. UE-121697 and UG-121705 (consolidated), Nov. 5, 2014.

21 There are several different kinds of risk addressed by finance theory, and they are discussed below in Section III A.

22 In general, investors expect payment of dividends and capital gains from changes in market prices. Both revenue decoupling and fixed variable rates eliminate or significantly reduce the variability of a utility's base revenues, as discussed above in Section II. This section will focus on a theoretical discussion of the cost of capital and revenue decoupling, a policy that has been more prevalent than FVR for electric utilities. Our empirical analysis considers the effect of both policies separately and in combination.

23 Base revenues are those other than costs recovered in adjustable rate clauses such as fuel and

Continued on next page

sum of all prudent costs, including O&M, administrative and general (A&G), depreciation, and interest. The hypothesis that revenue decoupling reduces the cost of capital for a regulated company is therefore based on the expectation that revenue decoupling will reduce the short-term volatility of a regulated company's operating earnings. However, changes in operating earnings, an accounting variable, are not necessarily or even generally equal to changes in market returns. Market returns for common stock consist of dividends paid out and changes in the price of the stock. Stock prices change whenever market participants incorporate their assessments of future market conditions and investment performance.

Decoupling is often praised by credit rating agencies because it clearly reduces total risk (i.e., a company's total volatility of returns), which is the risk important to bond holders.[24] Adoption of decoupling could reduce the overall cost of capital for a company through a reduction in the cost of debt, but that would not justify a reduction in the allowed ROE. Only reductions in business risk (systematic risk) justify a reduction in a regulated company's allowed ROE, which is our next subject.

A. TYPES OF RISK

In financial theory, volatility is closely related to risk, so some theorize that reduced revenue volatility alone will translate into reduced risk and, therefore, a reduced cost of capital. To analyze this theory, the concept of risk must be more carefully defined. There are three kinds of

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purchased power.

[24] See for example, "Fitch Rates DTE Electric Co.'s $300MM General & Refunding Mtge Bonds 'A+': Outlook Stable," *FitchRatings*, 10 May 2016.

risk that are important to understanding the plausible, theoretical impacts of revenue decoupling:

- Systematic (a.k.a., non-diversifiable or business) risk,
- Unique (a.k.a., diversifiable) risk, and
- Financial risk.

Together, they comprise an investment's total risk, i.e., the total variability of market returns. All three categories of risk are important and will be discussed in this section.[25] Finance theory explicitly distinguishes the type of risk that affects the cost of capital from risks that do not. The cost of capital is a function of the first: the systematic risk of the assets owned by the company. Another portion of the total risk is the unique risk, which can be eliminated through diversification and so does not affect the cost of capital. This distinction between diversifiable and non-diversifiable risk is based upon modern portfolio theory, which demonstrated that a portion of an investment's total risk can be eliminated or be "diversified away" when the investment is included in a well-designed portfolio of investments.[26] Only the remaining non-diversifiable risk affects the cost of capital, and its amount is typically measured by its beta.[27]

The portion of the risk that can be eliminated does not affect the cost of capital because capital markets do not reward investors for risks that can be avoided. Nonetheless, diversifiable risk should not be ignored by investors or policy makers. The price investors are willing to pay for an

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[25] Different names are often applied to the different types of risk, which is frequently a source of confusion. The different names for each category of risk are intended to identify the same risk.

[26] Well-designed in this context means the returns of the individual assets in the portfolio are not highly correlated.

[27] See Brealey, Myers, and Allen, *Principles of Corporate Finance,* 12th Edition, McGraw Hill Irwin, 2017, Chapter 8, "Portfolio Theory and the Capital Asset Pricing Model" for a discussion of the relationship between risk and return.

investment depends upon both types of risk. Unique events, good or bad, will affect a company's stock price, but they do not affect its cost of capital.

The third type of risk listed above is financial risk, which is additional risk borne by equity investors when a portion of a company's assets are financed with debt. There is no theoretical connection between the adoption of revenue decoupling and capital structure.[28] Our investigation into the effect of decoupling on the cost of capital for equity investors requires that any differences in financial risk be measured correctly. *Brattle* has experience in dealing with the financial risk in estimating the individual utility's cost of equity.

A bestselling textbook on corporate finance by Brealey, Myers, and Allen summarizes the relationship between capital structure and the company cost of capital:

> The expected rate of return on the common stock of a levered firm increases in proportion to the debt-equity ratio (D/E) expressed in market values …." [29]

Consistent with the theory of financial risk above, the effect of each utility's capital structure on its cost of equity must be considered in our analyses. We consider differences in financial risk through the use of the After-Tax Weighted-Average Cost of Capital (ATWACC), as discussed below in Section IV.

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[28] There may be a future effect on capital structure from implementation of decoupling. Firms with less variable cash flows may increase their use of debt financing, although the effect is likely to be small for utilities which are already highly leveraged.

[29] Brealey, Myers, and Allen, *Principles of Corporate Finance,* 12th Edition, McGraw Hill Irwin, 2017, p. 443.

B. Theoretical Reasons For and Against Revenue Decoupling Lowering the COC

The hypothesis we test is whether revenue decoupling affects the COC, i.e. its ATWACC, for a regulated company. Revenue decoupling largely eliminates the volatility of base revenues collected. Therefore the expectation is that revenue decoupling will reduce the short-term volatility of a regulated company's operating earnings.

The distinction between diversifiable and non-diversifiable risks provides the first theoretical reason that a decoupling mechanism may not reduce the cost of capital. If variation in base revenues that is eliminated through decoupling is primarily diversifiable risk, there would be no effect on the cost of capital.

There is a second theoretical reason that the adoption of revenue decoupling may offset the increase in systematic risk from other regulatory policies so that the net result is no change in the company's COC. Revenue decoupling is never adopted in a vacuum but is a deliberate response to a set of circumstances that can increase the systematic risk of the utility. The implementation of decoupling neutralizes what may otherwise be a set of regulatory policy that increase the utility's systematic risk (and its cost of capital).

Consider two situations likely to be associated with the adoption of decoupling. In the first, the utility is tasked by state policy makers to achieve aggressive goals for its energy efficiency programs. The policy may come with the requirement for the state regulator to "address the utility's disincentives." If volumetric rates ($ per kWh) recover a significant amount of the fixed costs from residential and small commercial customers, the regulated company has an obvious monetary disincentive to facilitate a reduction in kWh consumption by customers. This is the so-called "throughput disincentive" for the utility. If aggressive energy efficiency goals are to be met, the utility must simultaneously reduce its own revenue and earnings. If the energy efficiency goals are not met, the utility may be violating state policy and incur public disfavor. By severing the link between recovery of revenues and sales, decoupling resolves the throughput disincentive.

The second situation arises when investment needs and revenue requirements continue to rise but kWh sales are stagnating for reasons not directly related to utility actions, such as building codes and standards, changing technology, and changing consumer tastes. This seems to be increasingly the norm in the U.S. as the long term relationship between of growth in GDP and growth in the consumption of electricity has been fundamentally altered, as seen in Figure 2 above. Without a policy like decoupling, this situation could result in the utility filing serial rate cases that strain the resources of the commission staff, the utilities, and intervenors, as well as increasing the likelihood that the company cannot earn its cost of capital.

In summary, financial theory provides support for the hypothesis that revenue decoupling could lower the COC, but it also provides equally plausible reasons why it could leave the COC unchanged or even be associated with an increase in the COC.[30] Therefore, the effect of decoupling on the cost of capital cannot be determined solely based on theoretical reasoning.

[30] Note that we are not suggesting that revenue decoupling alone increased the COC. Instead, we are acknowledging the possibility that the circumstances in which decoupling is proposed and adopted are ones in which the systematic risk of the utility has materially increased.

Empirical analysis is required. The question is important because revenue decoupling is a valuable policy in the current economic environment of aggressive EE and DG, low growth, but with the commensurate requirement for continuing substantial investment in the electrical system. Awarding the appropriate allowed ROE is critically important to achieve the regulatory policy goals as well as for maintaining the financial stability of utilities. In our view, any regulatory decision that considers the issue of whether to reduce the allowed ROE in conjunction with adoption of a decoupling mechanism should be based upon verifiable empirical evidence on the effect of decoupling.

Our empirical analysis investigates the effect on the COC from the adoption of revenue decoupling mechanisms. We also test the effect on the COC from adoption of fixed variable rates.

IV. Creating a Decoupling Sample of Regulated Electric Utilities

Our empirical work examines two significant changes to traditional ratemaking policies, revenue decoupling and fixed variable rates, to determine whether their adoption affects a regulated company's cost of capital.[31] Revenue decoupling is our primary focus, as discussed above, but our analyses deal with them jointly for two reasons. First, in different ways, both of these alternative rate policies substantially reduce the degree to which changes in kWh sales affect the recovery of fixed costs, i.e., they reduce revenue volatility. Second, although we developed our sample

[31] As discussed above, we follow the definitions for these two innovative ratemaking approaches used by the EEI in their national (and Canadian) survey, which collects and categorizes policies for subsidiaries of electric and natural gas local delivery companies.

around state-regulated subsidiaries that were approved for a revenue decoupling policy, we found that in many cases, these holding companies also had state regulated subsidiaries in either the electric utility or the gas local distribution companies ("gas LDC") businesses had fixed variable rates. Because of a similar effect on revenue recovery, we also consider FVR policies in developing our decoupling index for each holding company.

A. IDENTIFYING UTILITIES WITH LINKAGE-RELAXING RATE POLICIES

In the past decade revenue decoupling and fixed variable rates have been increasingly adopted by states, especially those pursuing EE and DG. Figure 4 displays a list of the states that at present or in the recent past have had one of the three linkage-reducing ratemaking policies.

Figure 4
Range of States in U.S. with Linkage-Relaxing Policies for Electric Industry

States with Linkage-Relaxing Ratemaking		
Category	**Count of States**	**List of States Allowing for ARR's**
Total States with Linkage-Relaxing Mechanisms	**27**	**AR, AZ, CA, CT, DC, HI, ID, IN, KS, KY, LA, MA, MD, ME, MN, MT, NC, NH, NV, NY, OH, OK, OR, RI, SC, WA, WY**
Revenue Decoupling	14	CA, CT, DC, HI, ID, MA, MD, ME, MN, NY, OH, OR, RI, WA
Fixed Variable Rate Design	3	CT, OK, WY
Lost Revenue Adjustment Mechanism (LRAM) for EE and DSM	17	AR, AZ, IN, KS, KY, LA, MA, MT, NC, NH, NV, NY, OH, OK, OR, SC, WY

Source is EEI Survey 2015 and Brattle.

The current sample dataset is an extension and enhancement of Brattle's dataset used in our previous studies.[32] An important duality ran through that analysis and is continued. Electric utility holding companies ("HCs"), not their subsidiaries, have publicly traded stock that provides the financial information necessary to estimate the cost of capital. On the other hand, only individual, state-regulated subsidiaries,[33] not the HCs themselves, apply for, and are granted, the policy of decoupling or FVR.

B. SAMPLE CHARACTERISTICS

To select the sample, we start with public data on regulated U.S. electric company subsidiaries and their HCs and compile data on which subsidiaries have a linkage-reducing rate policy and when the policy was officially adopted by commission order. We limit the sample in two ways. First, we use subsidiaries and thus HCs that changed to revenue decoupling during the study period 2005 to 2015. Second, we eliminate certain HCs that primarily trade in foreign (i.e., non-U.S.) capital markets.[34]

The updated *Brattle* sample consists of

- 15 electric holding companies;
- 37 state-regulated electric and gas subsidiaries of the HCs (subsidiaries operate in 16 states

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32 See footnotes 17, 18, and 19 above.

33 A subsidiary is defined to mean first, the operations within one state, (e.g., Potomac Electric DC separately from Potomac Electric Maryland), and second, the separation of utilities by fuel type, since ratemaking is done independently (e.g., Baltimore Gas and Electric is consider to be two subsidiaries in our dataset, one for electric and one for gas). The legal definition of a subsidiary may differ.

34 The California electric utilities and National Grid were not used in our sample. National Grid is the holding company for Narragansett Electric in Rhode Island and Massachusetts Electric Company and Nantucket Electric Company in Massachusetts. National Grid is a company based in the United Kingdom and is traded as an American Depository Receipt (ADR) in U.S. capital markets, so it is excluded from the analysis. The major California utilities had the policy of decoupling or its equivalent starting in the 1980's; therefore, there was no significant change in decoupling status across the study period 2005–2015.

and during some quarters in the study period had revenue decoupling or fixed variable rates);

- 44 quarterly observations from 1Q 2005 through 4Q 2015, covering the period when there was rapid growth in the policy of decoupling for electric utilities; and
- 465 observations, each pertaining to a holding company and consisting of the cost of capital in that quarter, the decoupling index value in that quarter, and a set of explanatory or dummy variables, as discussed below in Section V.

HC financial data are screened for potential bias, using a set of standard financial and other criteria that *Brattle* routinely uses when estimating the cost of capital. The criteria are discussed in Section V.

It is noteworthy that the electric HCs in the sample are not "pure play" holding companies.[35] The necessary criterion for inclusion in the electric HC sample is the existence of an electric utility subsidiary that has received a revenue decoupling or fixed variable rate decision during the study period. If any such holding company also has gas subsidiaries with linkage-relaxing ratemaking, that is identified and incorporated into the database. About two-thirds of the total 37 subsidiaries with linkage-relaxing ratemaking are electric companies; one-third of the subsidiaries are their "sister" gas LDCs. There can be unregulated subsidiaries of the HCs as well, including independent power producers or retail marketers. This characteristic of the industry necessitates the use of a company specific dummy variable to control for differences in the asset composition of the sample companies which may affect the estimated cost of capital.

Figure 5 below shows the segmentation by ratemaking approach of the total of thirty-seven (37)

[35] This contrasts with the more "pure play" holding companies in the gas LDC sample that *Brattle* has used in other studies. See for example, Joseph B. Wharton, Michael J. Vilbert, Richard E. Goldberg, and Toby Brown, *The Impact of Decoupling on the Cost of Capital: An Empirical Investigation*, The Brattle Group Report, Original Version March 2011, Revised July 2012.

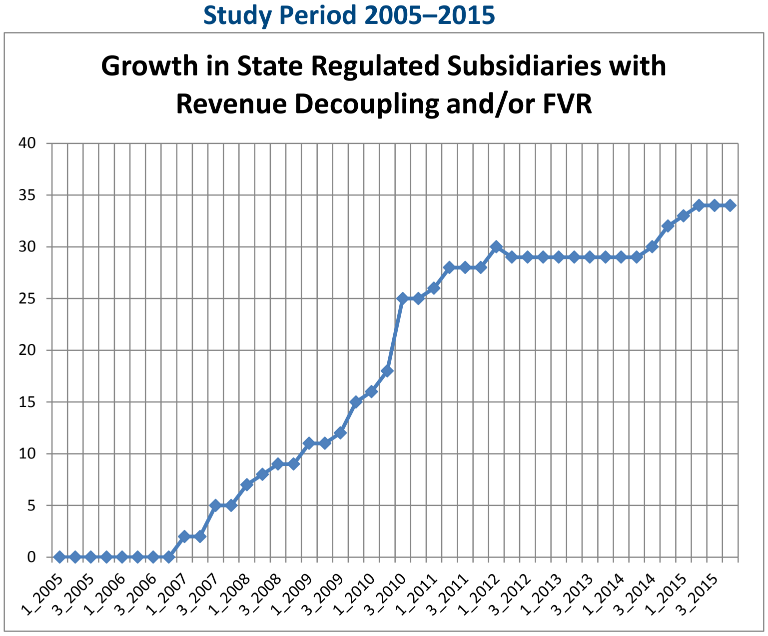
subsidiaries. Figure 6 shows the growth in linkage-relaxing policies in the sample during the study period. The total at the end of the study period is net of the three subsidiaries that had the policy reversed at some point. This pattern of growth reflects that our sample was designed around HCs that had a significant increase in the linkage-relaxing policies.

Figure 5
Breakdown of the Sample

Distribution of Linkage-Relaxing Policies in Sample

	Revenue Decoupling with True Up	Fixed Variable Rates	Both policies, in sequence or combined	Total
Electric Subsidiaries	22	2	1	25
Gas Subsidiaries	8	3	1	12
Total Subsidiaries	30	5	2	37

Figure 6
State Regulated Subsidiaries in the Study Period 2005–2015



C. DEVELOPING EACH HOLDING COMPANY'S DECOUPLING INDEX

The key independent or explanatory variable is the "decoupling index variable" calculated each quarter for each HC. Our methodology for calculating the decoupling index addresses the duality of HCs and subsidiaries mentioned above. We measure the degree of decoupling of each holding company by examining the decoupling policies of its subsidiaries. The decoupling index variable index is a weighted average of the decoupling index (either 0 or1) values separately for the existence of approved revenue decoupling or FVR for each of the HC's subsidiaries, electric or natural gas. In each quarter, a value of 1 means the subsidiary has the policy by the end of the quarter; a value of 0 means that it does not. The weights in the numerator of the index are the total asset values of the subsidiaries with the linkage-relaxing policy. The denominator is the total asset value of the HC. For example, an HC with two subsidiaries, one decoupled representing 40 percent of the total assets and the other not decoupled, would have a decoupling index of 0.40 in the quarter. The timing information from the EEI report is supplemented with additional information on the specific date on which the regulatory policy of decoupling was adopted (or rescinded) for each state subsidiary.[36]

The calculation of the decoupling index is sometimes complicated by the fact that some regulated subsidiaries cover more than one state and could have decoupling in one state and not the other.

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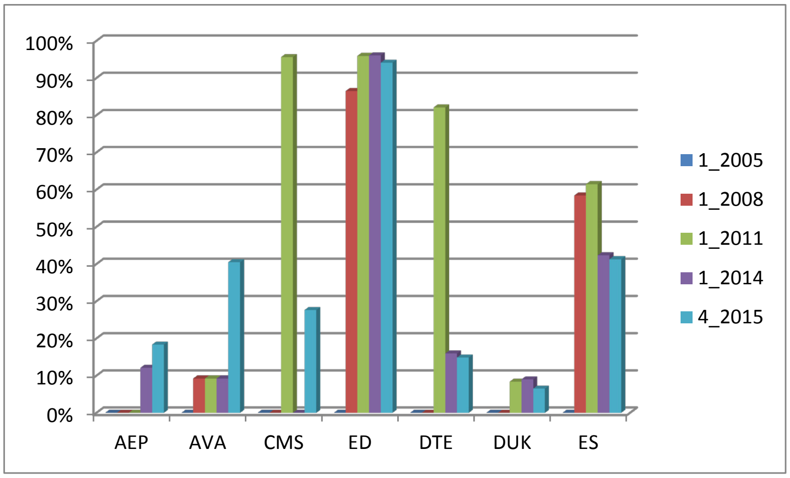
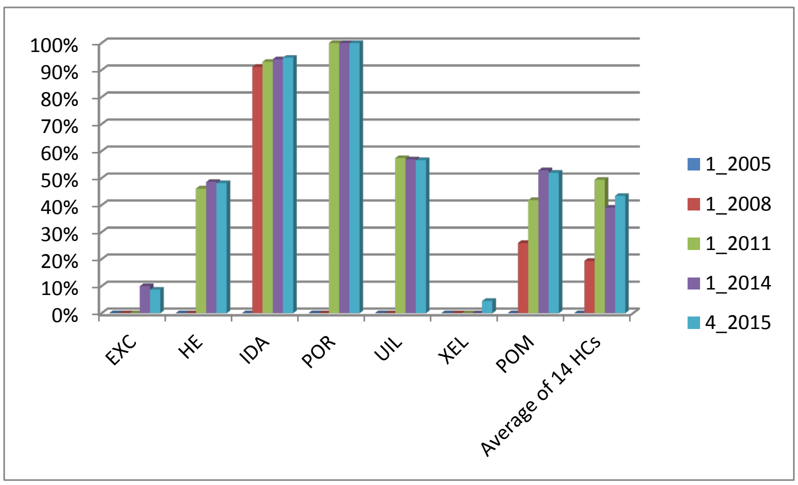
[36] We assume that for a particular state subsidiary, this specific date of approval is the likely date when any uncertainty in capital markets about adoption of decoupling is fully resolved. This would in principle result in the reassessment of the future risk for the holding company that owned the state regulated electric utility at issue, which would continue as long as the policy is in effect. Capital markets are forward looking, and investors are aware of regulatory proceedings that potentially affect future risk.

In that circumstance, we estimate the percentage of assets that are decoupled for that subsidiary by reference to the percentage of MWh of electricity consumed in the separate jurisdictions compared to the total MWh for the entire subsidiary. This is necessary because the distribution of assets of a multistate subsidiary is not generally reported in their accounting statements. Figure 7 displays the decoupling index values for the holding companies at five selected times over the study period. This group of HCs had no decoupling at the beginning in 2005, but this changed substantially over the study period of eleven years. At 4Q2015, the end of the study period, the decoupling index across the holding companies ranges between 4.5% and 100%, with an average of 43.4%.

Figure 7
The Level of Decoupling Index in 5 Selected Quarters in Study Period





Note: The names and tags of HCs portrayed in the figure are American Electric Power Co. Inc. (AEP), Avista, (AVA), CMS Energy Corp. (CMS), Consolidated Edison, Inc. (ED), DTE Energy Co. (DTE), Duke Energy Corp. (DUK), Exelon Corp. (EXC), Hawaiian Electric Industries Inc. (HE), IDACORP Inc. (IDA), Xcel Energy Inc. (XEL), Eversource Energy (ES), Pepco Holdings Inc. (POM), Portland General Electric Co. (POR), UIL Holdings Corp. (UIL). The 15th holding company Avangrid (AGR), formerly Energy East and then Iberdrola, is omitted from the figure for technical and data reasons.[37]

[37] A subset of observations for Avangrid holding company and its decoupled subsidiaries had to be omitted from the analysis because Avangrid's predecessor Energy East in 2008 was acquired by Iberdrola, a Spanish holding company. Foreign companies not traded on a U.S. stock exchange are

Continued on next page

V. Estimation of the Cost of Capital for the Electric Industry

This section explains the estimation of the cost of capital for the sample holding companies.

A. Estimating the Overall After-Tax Weighted-Average Cost of Capital

We estimate the cost of capital quarterly for the period quarter 1, 2005 to quarter 4, 2015. The dependent variable in the regression equation is the after-tax weighted-average cost of capital ("ATWACC") as calculated below:

After-Tax WACC = (Equity Share) * (ROE)

+ (Debt Share) * (Cost of Debt) * (1-Corp Tax Rate).

The equity and debt share weights are based upon market values. ROE is estimated using the multistage version of the discounted cash flow ("DCF") model.[38] We note that the focus of the regression analysis is detecting whether there were changes in the COC as the decoupling index changes[39] for the various holding companies over the study period. The multistage DCF methodology is well suited for this.[40] The Cost of Debt is set at the then current market yield on

Continued from previous page

screened out as part of the Brattle standard COC methodology. Additionally, data on Iberdrola's total assets and non U.S. subsidiaries are complicated to deal with or non-existent. In 2016, Avangrid, Inc. has become traded on the NYSE and the holding company can be included in future updates.

38 Our analyses rely on the DCF model instead of the Capital Asset Pricing Model (CAPM) because the DCF model is the more forward looking model. The beta parameter in the CAPM is normally estimated using three to five years of historical data, but historical data would not capture the effect of a change in risk from the adoption of decoupling. In contrast, the DCF model relies upon the current stock price and a forecast of the future growth of earnings and dividends.

39 The changes are generally step increases when decoupling or FVR are approved. However, decoupling and FVR policies are discontinued in three cases. Also, mergers can change the total assets of the HC and thus change the decoupling index.

40 In particular, the study is not interested in the *level* of the cost of capital but in the *change* in the estimated cost of capital. This difference is important and the ordinary disputes in different DCF

Continued on next page

the comparably rated utility bond index as reported by Bloomberg. We use an estimate of the marginal Corporate Tax Rate of 40%.

B. ESTIMATING THE COST OF EQUITY

The COE is the information of interest to regulators when they set the allowed ROE for a utility, so our focus is ultimately on whether there is a measurable reduction in the COE from the policy of decoupling.[41] In general, the COE increases not only with increased business risk but also increased financial risk.[42] Therefore, in testing for an impact on the cost of capital from decoupling, we systematically account for differences in the COE arising from different levels of financial risk in the sample HCs, but which has nothing to do with decoupling.

The cost of capital is estimated quarterly for the sample HCs. *Brattle* screened the universe to remove estimates that could be biased due to factors such as dividend cuts. These criteria are standard in *Brattle's* cost of capital analysis.[43] The cost of equity is the information of interest to regulators when they set the allowed ROE for a utility, so the focus is ultimately on whether

Continued from previous page
methodologies are of secondary importance in our view.

[41] In general, the regulator sets the allowed return on equity equal to the estimated cost of equity ("COE") in order to provide the regulated company a fair opportunity to earn its cost of capital. In some circumstances the regulator may set the allowed ROE above or below the COE to compensate for differences in risk between the regulated company and the sample companies.

[42] Financial risk, as distinct from business risk, is related to the degree to which the company's assets are debt financed. The greater the share of debt in the capital structure, the greater the interest that must be paid out of operating revenues before any shareholder earnings are available.

[43] To be included in the sample for any quarter, the HC must meet all of the following conditions: no recent, substantial merger and acquisition (M&A) activity; must have an investment grade credit rating, i.e., BBB- or better; has not cut its dividend in the last two quarters; is a U.S. stock exchange traded company; the ROE estimate from the DCF model must exceed the market cost of debt; and there is no significant uncertainty over legality of the regulatory policy of decoupling.

there is a measurable reduction in the cost of equity from the policy of decoupling.[44] As discussed above, the cost of equity generally increases not only with increased systematic risk (i.e., non-diversifiable risk) but also with increased financial risk. Therefore, in testing for an impact on the cost of capital from decoupling, *Brattle* used the after-tax weighted average cost of capital to control for differences in the cost of equity in the sample HCs stemming from different levels of financial risk (i.e., different capital structures) but which has nothing to do with decoupling.

We use an average over 15 trading days for the current stock price and security analyst earnings five-year forecasts from Thomson-Reuters.

where r_D = market cost of debt,
r_E = market cost of equity,
T_C = corporate income tax rate,
% D = percent debt in the capital structure, and
% E = percent equity in the capital structure

- The cost of debt, r_D, is based upon the yield on utility debt from Bloomberg's utility bond index for companies of comparable S&P credit ratings.
- For T_C, we use a 40 percent combined federal and state corporate tax rate for all companies.[45]
- For those companies with preferred equity in their capital structures, we estimate the return on preferred equity as equal to the before tax return on the company's debt and weigh it by its share in the capital structure.[46] [27]

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44 The distinction between the cost of equity (COE) and the return on equity (ROE) is that the COE is the estimated cost of equity whereas the ROE is the allowed return set by the regulator. In most cases, regulators strive to set the allowed ROE equal to the estimated COE, but there are some circumstances when the regulator may set the allowed ROE higher or lower than the COE in recognition of differences in risk between the sample and the regulated company.

45 Although state tax rates vary, a combined 40 percent rate is used for all to avoid any distortions in the results from attempting to model different tax rates.

46 This is an approximation because we do not know of an index for the cost of preferred equity. The approximation is not likely to have a large effect because the percentage of preferred equity in the companies' capital structures is relatively small.

- The market value of equity, *E*, is calculated as the product of *P*, the market price of the stock, and the number of shares outstanding at the time.
- The market value of debt, *D*, is approximated by the book value of debt because the market value of debt and the book value were not substantially different.
- The market value of preferred, *Pf*, is also approximated by the book value of preferred equity if there is any in the capital structure.
- The total market value of the firm is the sum of the *E*, *D*, and *Pf*.

The result of this process is an estimate of the ATWACC for each sample company for each quarter of the sample period.

VI. An Empirical Test of the Effect of Decoupling on the Cost of Capital

Finally, we test the effect of decoupling on the overall cost of capital by regression analysis on the time series of our estimated ATWACCs for the sample of holding companies.

A. Regression Model

We estimate the following regression model:

$$ATWACC_{c,t} = \beta 0 \quad + \beta_1 * \ HC\ Decoupling\ Index_{c,t} + \beta_2 * QTR_t + \beta_3 * HC\ Epoch\ Variable_{c,t} + \varepsilon_{ct} \tag{3}$$

In the regression equation, the dependent variable is the overall ATWACC of each holding company. The primary explanatory variable is the HC Decoupling Index. Other variables are time in quarters (QTR_t) and the HC Epoch Variable.

Indexes: c = holding company; t = quarter.

In statistics, particularly in regression analysis, it is common practice to use a dummy variable (also known as an indicator variable, binary variable, or qualitative variable) to indicate the absence or presence of some categorical effect that may be expected to shift the outcome.[47] This variable takes the value 0 or 1. As shown in formula above, to account for those other factors, we use two dummy variables, the time period QTR variable and the company-specific HC Epoch Variable. The time period variable changes every quarter to capture things that affect all HCs, like the prime rate or the inflation expectation.

The HC Epoch Variable is an enhancement of the standard company dummy variable for each HC. The HC Epoch Variable changes to account for known, significant changes. Each "epoch" is a sequence of observed values of pairs of cost of capital and the decoupling index with no major changes or interruptions. Changes come from the following four causes: substantial mergers or acquisitions, dividend cuts, credit rating changes, and major legal policy changes. Such changes for a HC result in starting a new epoch because they would be picked up by financial analysts and capital markets. This may trigger a change in the determination of the overall level of risk and the cost of capital for the HC, independent from changes in the decoupling index.

The equation is estimated with ordinary least squares and clustered standard errors to account for correlation in each company's performance across time.[48] We consider two cases. The first case is to estimate the impact of revenue decoupling policy alone, adding no weight to a HC's decoupling index for any subsidiaries that have FVR as a linkage-reducing policy. The second case treats revenue decoupling and FVR as equals that adds weight of any subsidiary that gets one

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47 For example, we believe that the ATWACC is affected over time by many other factors, such as the prime rate, the level of inflation, state regulatory policy and regulatory risk, just to mention a few.

48 Clustered standard errors are appropriate for this panel data set.

or the other or both forms of a linkage-reducing policy.

B. Statistical Results

The statistical results are clear. First, there is no statistically significant decrease or increase in the cost of capital from adoption of revenue decoupling alone (this is the first case which omits FVR from the decoupling index. For this first case, the regression coefficient on the decoupling index is -22.1 bps. The standard error is 22.7 bps, slightly larger in absolute value than the coefficient itself, giving rise to a p-value of 0.330 (meaning there is a 33% chance that the observed -22.1 bp decoupling index coefficient is not the case, but the true value is really zero or larger). Clearly, 0.330 > 0.05, so this fails the p-value test, as discussed below. The tabulated results for the first case are shown in Figure 8.

Figure 8
Statistical Tests of First Case
Null Hypothesis p-value less than or equal to 0.05

Linkage Relaxing Policy is Only Revenue Decoupling

Multiple Stage DCF 1Q2005 to 4Q2015	Values
Decoupling Index Coefficient (bps)	-22.1
Standard Error of the Estimate (bps)	22.7
p-value, 2-sided (should be < 0.05)	0.330
No. of Observations	465
R-squared, adjusted	0.796

The second case treats both types of linkage-relaxing policies, revenue decoupling and FVR, as determining the level of the decoupling index in the regression. The coefficient of the decoupling index variable is -20.9 bps. The standard error of the estimate is 22.7 bps, again relatively large. The p-value for this coefficient is 0.359 which is again much greater than the 0.05 p-value required to reject the null hypothesis that these link-relaxing policies do not affect the cost of capital. The tabulated results for the second case are shown in Figure 9.

Figure 9
Statistical Tests of Second Case
Null Hypothesis p-value less than or equal to 0.05

Linkage Relaxing Policy is Both Revenue Decoupling and Fixed Var Rates

Multiple Stage DCF 1Q2005 to 4Q2015	Values
Decoupling Index Coefficient (bps)	-20.9
Standard Error of the Estimate (bps)	22.7
p-value, 2-sided (should be < 0.05)	0.359
No. of Observations	465
R-squared, adjusted	0.795

There is no material difference in the two cases in terms of the lack of statistical evidence of an impact of revenue decoupling on the COC. Again, the primary focus of our analysis is revenue decoupling, but we have systematically analyzed FVR because the two policies have a similar effect of reducing the variability of revenue collections around the target, and both policies are found in our sample. Therefore, we tested whether FVR and revenue decoupling together have an effect. We get the same results with and without FVR and believe that this strengthens the statistical evidence that adoption of revenue decoupling does not reduce the cost of capital.

C. Explanation of the Statistical Results for the Non Statistician

For the non-statistician reader, we now explain more fully the statistical test used in the first case, revenue decoupling is the sole linkage-relaxing policy. The decoupling index coefficient is an estimate of the number of basis points the COC would change, possibly fall, if the decoupling index increased from 0.00 to 1.00, and is estimated at -22.1 bps. [49] The regression equation does not determine the COC perfectly as there is considerable unexplained variance in the actual ATWACC observations from the fitted ATWACC values.[50] The regression results do provide the standard error of the estimated coefficient of decoupling, which is + 22.7 bps.

Hypothesis testing starts from null hypothesis - there can be a range of estimated impacts across empirical samples even when the impact coefficient is assumed to be zero in the population and this distribution is centered at zero (the null hypothesis). The p-value test is the basic way of determining if the key estimated parameter for the decoupling index has a large or small likelihood of being the estimated coefficient size – 22.1 bps (or larger in absolute value).

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49 This is a 2-sided test, which means that null hypothesis can be disproven by strong results on either side of 0. This is a standard structure for statistical analysis. This is appropriate when, as discussed in the theoretical section above, the decoupling policy is not introduced in a vacuum and can be seen as part of a response to other conditions and policies that are increasing some risks, which may be those increasing the cost of capital.

50 The adjusted R-squared is 0.795. Adjusted R-squared is the amount of the variation in ATWACC observations from the mean that is explained by the linear regression, in relation to the total variation, adjusted for the degrees of freedom. This just shows that there is unexplained variation. High or low R-squared alone are not determinative of statistical significance.

Standard p-value test levels are 0.01, 0.05, and sometimes 0.10.[51] We adopt a test level of 0.05, meaning our standard is the probability must be less than or equal to 0.05 that the estimated reduction of -22.1 bps is true when by working assumption of the null hypothesis, there is no such impact. The 0.05 test level translates into a t-value greater than 1.96.[52] We calculate the t-value of coefficient of decoupling:

t-value	=	Estimate / Standard Error of Estimate
	=	- 22.1 / 22.7
	=	-0.976

The estimated p-value of the decoupling coefficient is equal to the probability under the normal curve of t-values: outside the values + 0.976 and – 0.976. That p-value is 0.33, so the p-value test fails.

$$0.330 \gg 0.05$$

We use a standard two-sided hypothesis test. This is consistent with the discussion above that there is a possibility of non-diversifiable risk and the COC rising from other factors at the time that revenue decoupling is approved.[53]

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51 See Daniel L. Rubinfeld, "Reference Guide on Multiple Regression," Chapter in the book by the Federal Judicial Center National Research Council, *Reference Manual on Scientific Evidence*, Third Edition, 2011.

52 The t distribution for our large number of 465 observations is essentially the normal distribution and, by the null hypothesis, is centered at zero (0).

53 While not appropriate, a one-tailed hypothesis test would still show that the decoupling index coefficient was not statistically significant.

VII. Summary and Conclusion

A cornerstone of traditional cost-of-service ratemaking is being questioned as to how well it fits in the "utility of the future." This cornerstone is volumetric (per kWh) rates that change only at general rates cases while collecting the majority of the fixed costs of residential and small commercial customers. The modern problem with this cornerstone has two sides. The first is how to address the regulated company's throughput incentive for greater sales when it directly conflicts with the regulatory policies for the company to promote energy efficiency and distributed generation. The second is how to address stagnant or falling revenues from stagnant or falling kWh sales from more general changes in technology and the economy. Both revenue decoupling and fixed variable rates are alternative ratemaking policies that are increasingly used or being discussed in the U.S. to solve the problems with the old cornerstone. But there is an important issue with the solution, especially for revenue decoupling.

In regulatory proceedings on the adoption of revenue decoupling, there is almost always an issue raised by some intervening parties: there should be a significant reduction in the allowed return on equity and thus the cost of capital because of the reduction in revenue volatility. In this report, we have updated and expanded our empirical study of the impact of these two ratemaking policies on the regulated cost of capital. The two part design of the study is to first, estimate the COC quarterly over the study period 2005 to 2015 for fifteen electric holding companies and, second, collect data on all of their regulated subsidiaries that have revenue decoupling or fixed variable rates to create an accurate "decoupling index." The sample and study period have been designed so that the level of revenue decoupling for these holding companies exhibits considerable change, which is preponderantly an increase.

Using multivariate linear regression, we then test whether there is statistically significant evidence that the adoption of decoupling reduces the COC. The first regression considers only revenue decoupling as the linkage-relaxing rate policy. The second regression considers both revenue decoupling and FVR as linkage-relaxing policies.

The results for both regressions are very similar, and both fail to reject the standard null hypothesis that decoupling does not affect the cost of capital. Although the coefficient on the decoupling index is negative, it is not close to being statistically significant in either test. For statistical significance we required a p-value of less 0.05 (the 5% level). The p-values in the tests were 0.330 (33%) and 0.359 (36%), respectively. Therefore, our updated empirical study of the electric industry provides results consistent with Brattle's previous studies of the electric industry, as well as those of the natural gas local distribution industry.

Although linkage-relaxing ratemaking will reduce the volatility of revenues, there is no statistically significant evidence that it reduces the COC. Is this reasonable? Volatility in revenues from weather and economic cycles has always existed for utilities using traditional volumetric rates and general rate case paradigm, so the empirical evidence rejecting an effect on the COC may seem counter intuitive. However, the statistical evidence is consistent with the fact that linkage-relaxing ratemaking is not instituted in a vacuum (or to lower the cost of capital) but as a direct policy response to the rapidly emerging issues and risks of energy efficiency and distributed generation programs, and stagnant and falling kWh sales and revenues. These policies are likely to increase risk to utilities under traditional cost of service regulation.

In financial terms, this increasing risk can be either systematic and non-diversifiable (part of the cost of capital) or diversifiable (not part of the cost of capital). The lack of statistical significance in our tests is an indication that the adoption of linkage-relaxing ratemaking, and especially revenue decoupling, reduces risk that is diversifiable or offsets a comparable increase non-diversifiable risk or both.

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Atmos Energy Corporation (ATO)
(Delayed Data from NYSE)

$98.89 USD

+0.04 (0.00%)

Updated Mar 30, 2021 04:02 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | D Growth | D Momentum | D VGM

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

Atmos Energy Corporation (ATO) Quote Overview » Estimates » Atmos Energy Corporation (ATO) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	2.01	Current Year	5.03
EPS Last Quarter	1.71	Next Year	5.39
Last EPS Surprise	8.23%	EPS (TTM)	4.98
ABR	1.31	P/E (F1)	19.64

Growth Estimates	ATO	IND	S&P
Current Qtr (03/2021)	3.08	62.89	7.20
Next Qtr (06/2021)	10.13	-60.86	120.51
Current Year (09/2021)	6.57	3.30	10.94
Next Year (09/2022)	7.16	11.10	14.74
Past 5 Years	8.60	4.30	8.00
Next 5 Years	7.30	7.50	NA
PE	19.64	38.30	22.71
PEG Ratio	2.67	5.11	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for ATO

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	C Value | D Growth | D Momentum | D VGM
Earnings ESP	0.00%
Research Reports for ATO	Analyst | Snapshot

(= Change in last 30 days)

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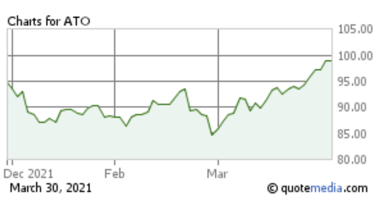
Research for ATO

Chart for ATO



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	1.12B	646.56M	3.37B	3.64B
# of Estimates	1	1	2	2
High Estimate	1.12B	646.56M	3.43B	3.64B
Low Estimate	1.12B	646.56M	3.31B	3.64B
Year ago Sales	977.67M	493.00M	2.82B	3.37B
Year over Year Growth Est.	14.46%	31.15%	19.42%	8.01%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	2.01	0.87	5.03	5.39
# of Estimates	3	2	5	5
Most Recent Consensus	NA	NA	5.00	5.35
High Estimate	2.04	0.90	5.08	5.44
Low Estimate	1.99	0.83	5.00	5.34
Year ago EPS	1.95	0.79	4.72	5.03
Year over Year Growth Est.	3.08%	10.13%	6.57%	7.12%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	1	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	1	1	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	2.01	0.87	5.03	5.39
7 Days Ago	2.01	0.87	5.03	5.39
30 Days Ago	2.01	0.87	5.03	5.40
60 Days Ago	2.05	0.87	5.03	5.39
90 Days Ago	2.05	0.88	5.03	5.40

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	2.01	0.87	5.03	5.41
Zacks Consensus Estimate	2.01	0.87	5.03	5.39
Earnings ESP	0.00%	0.00%	0.00%	0.33%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.71	0.53	0.79	1.95	NA
Estimate	1.58	0.52	0.76	1.94	NA
Difference	0.13	0.01	0.03	0.01	0.05
Surprise	8.23%	1.92%	3.95%	0.52%	3.66%

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NewJersey Resources Corporation (NJR)
(Delayed Data from NYSE)

$40.50 USD

-0.16 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfol Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
F **Value** | F **Growth** | C **Momentum** | F **VGM**

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

NewJersey Resources Corporation (NJR) Quote Overview » Estimates » NewJersey Resources Corporation (NJR) Detailed Estimates

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Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/14/21	Earnings ESP	10.80%
Current Quarter	1.07	Current Year	1.73
EPS Last Quarter	0.46	Next Year	2.25
Last EPS Surprise	2.22%	EPS (TTM)	2.09
ABR	1.80	P/E (F1)	23.48

Growth Estimates	NJR	IND	S&P
Current Qtr (03/2021)	-4.46	62.89	7.20
Next Qtr (06/2021)	166.67	-60.86	120.51
Current Year (09/2021)	-16.02	3.30	10.94
Next Year (09/2022)	30.06	11.10	14.74
Past 5 Years	2.50	4.30	8.00
Next 5 Years	6.00	7.50	NA
PE	23.48	38.30	22.71
PEG Ratio	3.91	5.11	NA

Learn More About Estimate Research
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See Earnings Report Transcript

Premium Research for NJR

Zacks Rank	Buy 2
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	F Value | F Growth | C Momentum | F VGM
Earnings ESP	10.80%
Research Report for NJR	Snapshot

(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

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Research for NJR

Chart for NJR

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	655.00M	291.00M	1.76B	2.03B
# of Estimates	1	1	1	1
High Estimate	655.00M	291.00M	1.76B	2.03B
Low Estimate	655.00M	291.00M	1.76B	2.03B
Year ago Sales	639.61M	298.97M	1.95B	1.76B
Year over Year Growth Est.	2.41%	-2.67%	-9.76%	15.09%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	1.07	0.04	1.73	2.25
# of Estimates	2	1	2	2
Most Recent Consensus	1.18	NA	1.85	NA
High Estimate	1.18	0.04	1.85	2.25
Low Estimate	0.95	0.04	1.60	2.24
Year ago EPS	1.12	-0.06	2.06	1.73
Year over Year Growth Est.	-4.46%	166.67%	-16.02%	30.06%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	0	1	0
Up Last 60 Days	1	0	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	1.07	0.04	1.73	2.25
7 Days Ago	1.07	0.04	1.73	2.25
30 Days Ago	0.94	0.04	1.60	2.25
60 Days Ago	0.85	0.04	1.60	2.16
90 Days Ago	0.85	0.04	1.60	2.07

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	1.18	0.04	1.85	2.25
Zacks Consensus Estimate	1.07	0.04	1.73	2.25
Earnings ESP	10.80%	0.00%	7.25%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.46	0.57	-0.06	1.12	NA
Estimate	0.45	0.58	0.04	1.43	NA
Difference	0.01	-0.01	-0.10	-0.31	-0.10
Surprise	2.22%	-1.72%	-250.00%	-21.68%	-67.80%

Quarterly Estimates By Analyst

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Annual Estimates By Analyst

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At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

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Northwest Natural Gas Company (NWN)
(Delayed Data from NYSE)

$53.69 USD

-0.19 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:

3-Hold 3

Style Scores:

B Value | F Growth | C Momentum | D VGM

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

Northwest Natural Gas Company (NWN) Quote Overview » Estimates » Northwest Natural Gas Company (NWN) Detailed Estimates

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Estimates

Next Report Date	5/14/21	Earnings ESP	0.00%
Current Quarter	1.85	Current Year	2.56
EPS Last Quarter	1.50	Next Year	2.60
Last EPS Surprise	0.00%	EPS (TTM)	2.30
ABR	2.75	P/E (F1)	21.01

Growth Estimates	NWN	IND	S&P
Current Qtr (03/2021)	17.09	62.89	7.20
Next Qtr (06/2021)	35.29	-60.86	120.51
Current Year (12/2021)	11.30	3.30	10.94
Next Year (12/2022)	1.56	11.10	14.74
Past 5 Years	0.80	4.30	8.00
Next 5 Years	NA	7.50	NA
PE	21.01	38.30	22.71
PEG Ratio	NA	5.11	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for NWN

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	B Value | F Growth | C Momentum | D VGM
Earnings ESP	0.00%
Research Report for NWN	Snapshot

(= Change in last 30 days)

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Research for NWN

Chart for NWN

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	324.99M	147.02M	854.55M	900.34M
# of Estimates	1	1	1	1
High Estimate	324.99M	147.02M	854.55M	900.34M
Low Estimate	324.99M	147.02M	854.55M	900.34M
Year ago Sales	285.15M	134.97M	773.68M	854.55M
Year over Year Growth Est.	13.97%	8.93%	10.45%	5.36%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.85	-0.11	2.56	2.60
# of Estimates	1	1	2	1
Most Recent Consensus	NA	NA	NA	NA
High Estimate	1.85	-0.11	2.57	2.60
Low Estimate	1.85	-0.11	2.54	2.60
Year ago EPS	1.58	-0.17	2.30	2.56
Year over Year Growth Est.	17.09%	35.29%	11.30%	1.76%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	0	0	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	1	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.85	-0.11	2.56	2.60
7 Days Ago	1.85	-0.11	2.56	2.60
30 Days Ago	1.85	-0.11	2.56	2.60
60 Days Ago	1.77	-0.09	2.56	2.58
90 Days Ago	1.61	-0.05	2.54	2.56

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.85	-0.11	2.56	2.60
Zacks Consensus Estimate	1.85	-0.11	2.56	2.60
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.50	-0.61	-0.17	1.58	NA
Estimate	1.50	-0.72	-0.09	NA	NA
Difference	0.00	0.11	-0.08	NA	0.01
Surprise	0.00%	15.28%	-88.89%	NA	-24.54%

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ONE Gas, Inc. (OGS)
(Delayed Data from NYSE)

$76.06 USD

-0.21 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | F Growth | D Momentum | D VGM

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

ONE Gas, Inc. (OGS) Quote Overview » Estimates » ONE Gas, Inc. (OGS) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/26/21	Earnings ESP	-1.49%
Current Quarter	1.80	Current Year	3.83
EPS Last Quarter	1.09	Next Year	4.11
Last EPS Surprise	2.83%	EPS (TTM)	3.68
ABR	2.47	P/E (F1)	19.89

Growth Estimates	OGS	IND	S&P
Current Qtr (03/2021)	4.65	62.89	7.20
Next Qtr (06/2021)	4.17	-60.86	120.51
Current Year (12/2021)	4.08	3.30	10.94
Next Year (12/2022)	7.31	11.10	14.74
Past 5 Years	9.60	4.30	8.00
Next 5 Years	5.00	7.50	NA
PE	19.89	38.30	22.71
PEG Ratio	3.98	5.11	NA

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Premium Research for OGS

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	C Value | F Growth | D Momentum | D VGM
Earnings ESP	-1.49%
Research Reports for OGS	Analyst | Snapshot

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Research for OGS

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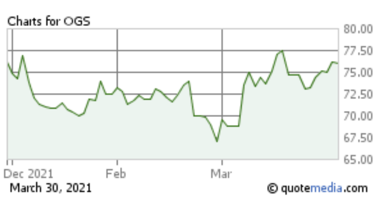

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	543.85M	292.89M	1.59B	1.67B
# of Estimates	1	1	2	2
High Estimate	543.85M	292.89M	1.62B	1.72B
Low Estimate	543.85M	292.89M	1.56B	1.62B
Year ago Sales	528.17M	273.29M	1.53B	1.59B
Year over Year Growth Est.	2.97%	7.17%	3.95%	4.88%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.80	0.50	3.83	4.11
# of Estimates	3	2	4	4
Most Recent Consensus	NA	NA	NA	4.00
High Estimate	1.82	0.50	3.87	4.19
Low Estimate	1.77	0.49	3.80	4.00
Year ago EPS	1.72	0.48	3.68	3.83
Year over Year Growth Est.	4.65%	4.17%	4.08%	7.38%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	1
Up Last 60 Days	0	0	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	0	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.80	0.50	3.83	4.11
7 Days Ago	1.80	0.50	3.83	4.11
30 Days Ago	1.81	0.50	3.82	4.09
60 Days Ago	1.83	0.50	3.83	4.16
90 Days Ago	1.83	0.51	3.83	4.19

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.77	0.50	3.87	4.17
Zacks Consensus Estimate	1.80	0.50	3.83	4.11
Earnings ESP	-1.49%	0.00%	1.18%	1.40%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.09	0.39	0.48	1.72	NA
Estimate	1.06	0.36	0.45	1.78	NA
Difference	0.03	0.03	0.03	-0.06	0.01
Surprise	2.83%	8.33%	6.67%	-3.37%	3.62%

At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

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South Jersey Industries, Inc. (SJI)
(Delayed Data from NYSE)

$22.94 USD

+0.27 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfoli Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | F Growth | B Momentum | C VGM

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

South Jersey Industries, Inc. (SJI) Quote Overview » Estimates » South Jersey Industries, Inc. (SJI) Detailed Estimates

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Detailed Estimates

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Estimates

Next Report Date	5/5/21	Earnings ESP	1.76%
Current Quarter	1.21	Current Year	1.67
EPS Last Quarter	0.62	Next Year	1.68
Last EPS Surprise	14.81%	EPS (TTM)	1.70
ABR	3.16	P/E (F1)	13.75

Growth Estimates	SJI	IND	S&P
Current Qtr (03/2021)	5.22	62.89	7.20
Next Qtr (06/2021)	400.00	-60.86	120.51
Current Year (12/2021)	-0.60	3.30	10.94
Next Year (12/2022)	0.60	11.10	14.74
Past 5 Years	3.00	4.30	8.00
Next 5 Years	4.40	7.50	NA
PE	13.75	38.30	22.71
PEG Ratio	3.15	5.11	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for SJI

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	B Value | F Growth | B Momentum | C VGM
Earnings ESP	1.76%
Research Report for SJI	Snapshot

(= Change in last 30 days)

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Research for SJI

Chart for SJI

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	552.25M	268.44M	1.50B	1.56B
# of Estimates	3	3	4	4
High Estimate	560.94M	282.00M	1.62B	1.74B
Low Estimate	546.00M	251.61M	1.16B	1.18B
Year ago Sales	534.11M	259.96M	1.54B	1.50B
Year over Year Growth Est.	3.40%	3.26%	-2.95%	4.26%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.21	0.03	1.67	1.68
# of Estimates	5	4	5	5
Most Recent Consensus	1.17	0.11	1.69	1.74
High Estimate	1.38	0.11	1.71	1.79
Low Estimate	1.10	-0.06	1.61	1.48
Year ago EPS	1.15	-0.01	1.68	1.67
Year over Year Growth Est.	5.22%	400.00%	-0.60%	0.96%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	1	0	0
Up Last 30 Days	0	1	1	1
Up Last 60 Days	0	1	1	2
Down Last 7 Days	1	0	2	2
Down Last 30 Days	1	1	4	3
Down Last 60 Days	2	1	4	2

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.21	0.03	1.67	1.68
7 Days Ago	1.23	0.02	1.69	1.72
30 Days Ago	1.18	0.04	1.71	1.70
60 Days Ago	1.18	0.07	1.71	1.68
90 Days Ago	1.19	0.07	1.68	1.66

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.23	0.02	1.67	1.68
Zacks Consensus Estimate	1.21	0.03	1.67	1.68
Earnings ESP	1.76%	-6.67%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.62	-0.06	-0.01	1.15	NA
Estimate	0.54	-0.23	-0.05	1.12	NA
Difference	0.08	0.17	0.04	0.03	0.08
Surprise	14.81%	73.91%	80.00%	2.68%	42.85%

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Southwest Gas Corporation (SWX)
(Delayed Data from NYSE)

$69.10 USD

-0.23 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | D Growth | F Momentum | C VGM
Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

Southwest Gas Corporation (SWX) Quote Overview » Estimates » Southwest Gas Corporation (SWX) Detailed Estimates

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Detailed Estimates

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Estimates

Next Report Date	5/6/21	Earnings ESP	0.00%
Current Quarter	1.72	Current Year	4.09
EPS Last Quarter	1.82	Next Year	4.26
Last EPS Surprise	12.35%	EPS (TTM)	4.41
ABR	2.50	P/E (F1)	16.88

Growth Estimates	SWX	IND	S&P
Current Qtr (03/2021)	8.18	62.89	7.20
Next Qtr (06/2021)	-32.35	-60.86	120.51
Current Year (12/2021)	-1.21	3.30	10.94
Next Year (12/2022)	4.16	11.10	14.74
Past 5 Years	6.40	4.30	8.00
Next 5 Years	5.00	7.50	NA
PE	16.88	38.30	22.71
PEG Ratio	3.38	5.11	NA

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See Earnings Report Transcript

Premium Research for SWX

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	B Value | D Growth | F Momentum | C VGM
Earnings ESP	0.00%
Research Report for SWX	Snapshot

(= Change in last 30 days)

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Research for SWX

Chart for SWX

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	865.93M	786.80M	3.42B	3.54B
# of Estimates	1	1	1	1
High Estimate	865.93M	786.80M	3.42B	3.54B
Low Estimate	865.93M	786.80M	3.42B	3.54B
Year ago Sales	836.32M	757.25M	3.30B	3.42B
Year over Year Growth Est.	3.54%	3.90%	3.81%	3.46%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.72	0.46	4.09	4.26
# of Estimates	1	1	3	2
Most Recent Consensus	NA	NA	NA	4.25
High Estimate	1.72	0.46	4.11	4.26
Low Estimate	1.72	0.46	4.07	4.25
Year ago EPS	1.59	0.68	4.14	4.09
Year over Year Growth Est.	8.18%	-32.35%	-1.21%	3.95%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	1
Up Last 30 Days	0	0	0	1
Up Last 60 Days	0	0	0	1
Down Last 7 Days	0	0	1	0
Down Last 30 Days	0	0	1	0
Down Last 60 Days	0	0	1	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.72	0.46	4.09	4.26
7 Days Ago	NA	NA	4.10	4.23
30 Days Ago	NA	NA	4.10	4.23
60 Days Ago	NA	NA	4.10	4.20
90 Days Ago	1.78	0.56	4.16	4.38

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.72	0.46	4.11	4.26
Zacks Consensus Estimate	1.72	0.46	4.09	4.26
Earnings ESP	0.00%	0.00%	0.41%	0.12%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.82	0.32	0.68	1.59	NA
Estimate	1.62	0.19	0.40	1.53	NA
Difference	0.20	0.13	0.28	0.06	0.17
Surprise	12.35%	68.42%	70.00%	3.92%	38.67%

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Spire Inc. (SR)
(Delayed Data from NYSE)

$73.88 USD

+0.26 (0.00%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | D Growth | C Momentum | C VGM

Industry Rank:

Top 36% (92 out of 253)

Industry: Utility - Gas Distribution

Spire Inc. (SR) Quote Overview » Estimates » Spire Inc. (SR) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	5/14/21	Earnings ESP	2.01%
Current Quarter	2.99	Current Year	4.15
EPS Last Quarter	1.42	Next Year	4.40
Last EPS Surprise	7.58%	EPS (TTM)	3.87
ABR	1.75	P/E (F1)	17.82

Growth Estimates	SR	IND	S&P
Current Qtr (03/2021)	8.73	62.89	7.20
Next Qtr (06/2021)	128.57	-60.86	120.51
Current Year (09/2021)	10.37	3.30	10.94
Next Year (09/2022)	6.02	11.10	14.74
Past 5 Years	3.10	4.30	8.00
Next 5 Years	5.00	7.50	NA
PE	17.82	38.30	22.71
PEG Ratio	3.56	5.11	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for SR

Zacks Rank	Hold 3
Zacks Industry Rank	Top 36% (92 out of 253)
Zacks Sector Rank	Bottom 6% (15 out of 16)
Style Scores	C Value | D Growth | C Momentum | C VGM
Earnings ESP	2.01%
Research Report for SR	Snapshot

(= Change in last 30 days)

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Research for SR

Chart for SR

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	725.57M	319.31M	1.85B	1.90B
# of Estimates	2	2	3	3
High Estimate	730.11M	334.28M	1.93B	1.98B
Low Estimate	721.03M	304.34M	1.77B	1.78B
Year ago Sales	715.50M	321.10M	1.86B	1.85B
Year over Year Growth Est.	1.41%	-0.56%	-0.51%	2.95%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	2.99	0.16	4.15	4.40
# of Estimates	4	3	5	5
Most Recent Consensus	NA	NA	NA	4.30
High Estimate	3.05	0.22	4.36	4.55
Low Estimate	2.93	0.06	4.05	4.30
Year ago EPS	2.75	0.07	3.76	4.15
Year over Year Growth Est.	8.73%	128.57%	10.37%	6.07%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	1	1
Up Last 30 Days	0	0	2	2
Up Last 60 Days	1	0	3	3
Down Last 7 Days	1	0	0	0
Down Last 30 Days	1	0	0	0
Down Last 60 Days	2	3	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	2.99	0.16	4.15	4.40
7 Days Ago	3.01	0.16	4.11	4.39
30 Days Ago	3.01	0.16	4.10	4.39
60 Days Ago	2.97	0.21	4.07	4.34
90 Days Ago	2.98	0.21	4.08	4.34

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	3.05	0.16	4.23	4.47
Zacks Consensus Estimate	2.99	0.16	4.15	4.40
Earnings ESP	2.01%	0.00%	2.03%	1.52%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.42	-0.37	0.07	2.75	NA
Estimate	1.32	-0.41	0.08	2.95	NA
Difference	0.10	0.04	-0.01	-0.20	-0.02
Surprise	7.58%	9.76%	-12.50%	-6.78%	-0.49%

Apple Inc. (AAPL)
(Delayed Data from NSDQ)

$119.90 USD

-1.49 (-1.23%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | A Growth | B Momentum | A VGM

Industry Rank:

Bottom 24% (192 out of 253)

Industry: Computer - Mini computers

Apple Inc. (AAPL) Quote Overview » Estimates » Apple Inc. (AAPL) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/29/21	Earnings ESP	0.00%
Current Quarter	0.99	Current Year	4.48
EPS Last Quarter	1.68	Next Year	4.71
Last EPS Surprise	19.15%	EPS (TTM)	3.69
ABR	1.44	P/E (F1)	26.76

Growth Estimates	AAPL	IND	S&P
Current Qtr (03/2021)	54.69	48.98	7.20
Next Qtr (06/2021)	26.15	20.75	120.51
Current Year (09/2021)	36.59	40.60	10.94
Next Year (09/2022)	5.13	4.50	14.74
Past 5 Years	10.30	2.60	8.00
Next 5 Years	11.00	17.70	NA
PE	26.76	110.40	22.71
PEG Ratio	2.43	6.24	NA

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Premium Research for AAPL

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 24% (192 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	C Value | A Growth | B Momentum | A VGM
Earnings ESP	0.00%
Research Reports for AAPL	Analyst | Snapshot

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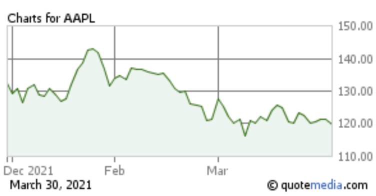
Research for AAPL

Chart for AAPL



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	77.39B	68.46B	336.56B	350.32B
# of Estimates	8	8	9	9
High Estimate	82.91B	69.91B	341.26B	358.39B
Low Estimate	74.72B	67.48B	331.62B	339.49B
Year ago Sales	58.31B	59.69B	274.52B	336.56B
Year over Year Growth Est.	32.71%	14.71%	22.60%	4.09%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	0.99	0.82	4.48	4.71
# of Estimates	11	9	12	11
Most Recent Consensus	0.94	0.80	4.35	4.69
High Estimate	1.08	0.88	4.76	5.14
Low Estimate	0.92	0.76	4.34	4.41
Year ago EPS	0.64	0.65	3.28	4.48
Year over Year Growth Est.	54.69%	26.15%	36.59%	5.09%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	0
Up Last 60 Days	0	0	1	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	1	1	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	0.99	0.82	4.48	4.71
7 Days Ago	0.99	0.82	4.48	4.71
30 Days Ago	0.99	0.82	4.47	4.71
60 Days Ago	0.99	0.82	4.47	4.71
90 Days Ago	0.92	0.77	4.03	4.39

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	0.99	0.82	4.35	4.71
Zacks Consensus Estimate	0.99	0.82	4.48	4.71
Earnings ESP	0.00%	0.00%	-2.90%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.68	0.73	0.65	0.64	NA
Estimate	1.41	0.69	0.51	0.52	NA
Difference	0.27	0.04	0.14	0.12	0.14
Surprise	19.15%	5.80%	27.09%	22.01%	18.51%

Quarterly Estimates By Analyst

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Abbott Laboratories (ABT)
(Delayed Data from NYSE)

$119.75 USD

-2.48 (-2.03%)

Updated Mar 30, 2021 04:03 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | A Growth | D Momentum | B VGM

Industry Rank:

Bottom 44% (141 out of 253)

Industry: Medical - Products

Abbott Laboratories (ABT) Quote Overview » Estimates » Abbott Laboratories (ABT) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	*BMO 4/20/21	Earnings ESP	-5.44%
Current Quarter	1.33	Current Year	5.07
EPS Last Quarter	1.45	Next Year	5.33
Last EPS Surprise	6.62%	EPS (TTM)	3.65
ABR	1.23	P/E (F1)	23.63

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	ABT	IND	S&P
Current Qtr (03/2021)	104.62	1,210.15	7.20
Next Qtr (06/2021)	129.82	420.75	120.51
Current Year (12/2021)	38.90	15.40	10.94
Next Year (12/2022)	5.13	20.60	14.74
Past 5 Years	10.50	3.90	8.00
Next 5 Years	14.00	15.60	NA
PE	23.63	9.70	22.71
PEG Ratio	1.69	0.62	NA

Learn More About Estimate Research

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Premium Research for ABT

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 44% (141 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	C Value | A Growth | D Momentum | B VGM
Earnings ESP	-5.44%
Research Reports for ABT	Analyst | Snapshot

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Research for ABT

Chart for ABT

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	10.84B	10.73B	42.43B	42.33B
# of Estimates	5	5	7	7
High Estimate	10.98B	11.02B	43.66B	44.67B
Low Estimate	10.77B	10.51B	42.03B	41.06B
Year ago Sales	7.73B	7.33B	34.61B	42.43B
Year over Year Growth Est.	40.30%	46.43%	22.59%	-0.23%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.33	1.31	5.07	5.33
# of Estimates	8	6	10	9
Most Recent Consensus	1.36	1.31	5.04	5.30
High Estimate	1.43	1.38	5.24	5.63
Low Estimate	1.26	1.24	5.00	4.20
Year ago EPS	0.65	0.57	3.65	5.07
Year over Year Growth Est.	104.62%	129.82%	38.90%	5.12%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Up Last 60 Days	0	0	0	1
Down Last 7 Days	1	0	0	1
Down Last 30 Days	1	0	0	1
Down Last 60 Days	1	0	0	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.33	1.31	5.07	5.33
7 Days Ago	1.34	1.31	5.07	5.34
30 Days Ago	1.34	1.31	5.07	5.33
60 Days Ago	1.34	1.31	5.07	5.34
90 Days Ago	1.07	1.09	4.38	4.58

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.26	1.31	5.07	5.29
Zacks Consensus Estimate	1.33	1.31	5.07	5.33
Earnings ESP	-5.44%	0.00%	0.00%	-0.71%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.45	0.98	0.57	0.65	NA
Estimate	1.36	0.90	0.43	0.55	NA
Difference	0.09	0.08	0.14	0.10	0.10
Surprise	6.62%	8.89%	32.56%	18.18%	16.56%

Quarterly Estimates By Analyst

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Assurant, Inc. (AIZ)
(Delayed Data from NYSE)

$144.71 USD

+0.94 (0.65%)

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Zacks Rank:
5-Strong Sell 5

Style Scores:
A Value | C Growth | D Momentum | B VGM

Industry Rank:

Bottom 40% (152 out of 253)

Industry: Insurance - Multi line

Assurant, Inc. (AIZ) Quote Overview » Estimates » Assurant, Inc. (AIZ) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

Enter Symbol

Estimates

Next Report Date	5/4/21	Earnings ESP	-4.08%
Current Quarter	1.96	Current Year	9.58
EPS Last Quarter	1.82	Next Year	11.82
Last EPS Surprise	-12.50%	EPS (TTM)	8.62
ABR	1.25	P/E (F1)	15.11

Growth Estimates	AIZ	IND	S&P
Current Qtr (03/2021)	-25.76	-46.02	7.20
Next Qtr (06/2021)	-19.27	1,066.72	120.51
Current Year (12/2021)	11.01	12.40	10.94
Next Year (12/2022)	23.38	15.00	14.74
Past 5 Years	8.70	7.40	8.00
Next 5 Years	NA	13.40	NA
PE	15.11	11.40	22.71
PEG Ratio	NA	0.85	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for AIZ

Zacks Rank	Strong Sell 5
Zacks Industry Rank	Bottom 40% (152 out of 253)
Zacks Sector Rank	Top 13% (2 out of 16)
Style Scores	A Value | C Growth | D Momentum | B VGM
Earnings ESP	-4.08%
Research Reports for AIZ	Analyst | Snapshot

(= Change in last 30 days)

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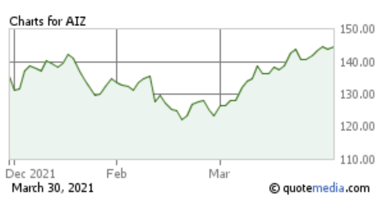
Research for AIZ

Chart for AIZ



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	2.45B	2.32B	10.04B	10.72B
# of Estimates	1	1	2	2
High Estimate	2.45B	2.32B	10.36B	11.04B
Low Estimate	2.45B	2.32B	9.72B	10.39B
Year ago Sales	2.66B	2.45B	10.10B	10.04B
Year over Year Growth Est.	-7.65%	-5.22%	-0.60%	6.75%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.96	2.22	9.58	11.82
# of Estimates	2	2	2	2
Most Recent Consensus	2.04	2.31	9.80	12.05
High Estimate	2.04	2.31	9.80	12.05
Low Estimate	1.88	2.12	9.35	11.58
Year ago EPS	2.64	2.75	8.63	9.58
Year over Year Growth Est.	-25.76%	-19.27%	11.01%	23.38%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	2	2	1
Down Last 60 Days	2	2	2	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.96	2.22	9.58	11.82
7 Days Ago	1.96	2.22	9.58	11.82
30 Days Ago	2.46	2.51	10.55	11.81
60 Days Ago	2.74	2.70	10.56	12.27
90 Days Ago	2.78	2.72	10.63	12.42

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.88	2.22	9.58	11.82
Zacks Consensus Estimate	1.96	2.22	9.58	11.82
Earnings ESP	-4.08%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.82	1.41	2.75	2.64	NA
Estimate	2.08	0.94	2.23	2.46	NA
Difference	-0.26	0.47	0.52	0.18	0.23
Surprise	-12.50%	50.00%	23.32%	7.32%	17.04%

Quarterly Estimates By Analyst

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ANSYS, Inc. (ANSS)
(Delayed Data from NSDQ)

$331.89 USD

-10.34 (-3.02%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
4-Sell 4

Style Scores:
D Value | C Growth | F Momentum | D VGM

Industry Rank:

Bottom 45% (140 out of 253)

Industry: Computer - Software

ANSYS, Inc. (ANSS) Quote Overview » Estimates » ANSYS, Inc. (ANSS) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	0.84	Current Year	6.80
EPS Last Quarter	2.96	Next Year	7.78
Last EPS Surprise	17.93%	EPS (TTM)	6.70
ABR	2.78	P/E (F1)	48.82

Growth Estimates	ANSS	IND	S&P
Current Qtr (03/2021)	1.20	25.16	7.20
Next Qtr (06/2021)	-0.65	3.84	120.51
Current Year (12/2021)	1.49	3.00	10.94
Next Year (12/2022)	14.41	14.40	14.74
Past 5 Years	9.10	9.50	8.00
Next 5 Years	NA	14.20	NA
PE	48.82	48.70	22.71
PEG Ratio	NA	3.43	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for ANSS

Zacks Rank	Sell 4
Zacks Industry Rank	Bottom 45% (140 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	D Value | C Growth | F Momentum | D VGM
Earnings ESP	0.00%
Research Reports for ANSS	Analyst | Snapshot

(= Change in last 30 days)

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More Premium Research » »

Research for ANSS

Chart for ANSS

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	352.75M	431.26M	1.86B	2.06B
# of Estimates	5	5	5	5
High Estimate	369.11M	448.50M	1.92B	2.20B
Low Estimate	344.73M	424.64M	1.83B	1.99B
Year ago Sales	308.90M	389.70M	1.70B	1.86B
Year over Year Growth Est.	14.19%	10.66%	9.70%	10.64%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.84	1.54	6.80	7.78
# of Estimates	6	6	6	6
Most Recent Consensus	0.85	1.25	6.75	8.25
High Estimate	0.90	1.80	7.00	8.25
Low Estimate	0.78	1.25	6.64	7.26
Year ago EPS	0.83	1.55	6.70	6.80
Year over Year Growth Est.	1.20%	-0.65%	1.49%	14.41%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	5	5	6	4

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.84	1.54	6.80	7.78
7 Days Ago	0.84	1.54	6.80	7.78
30 Days Ago	0.84	1.54	6.80	7.78
60 Days Ago	1.13	1.68	7.05	7.82
90 Days Ago	1.13	1.68	7.05	7.82

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.84	1.54	6.80	7.78
Zacks Consensus Estimate	0.84	1.54	6.80	7.78
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	2.96	1.36	1.55	0.83	NA
Estimate	2.51	1.26	1.16	0.78	NA
Difference	0.45	0.10	0.39	0.05	0.25
Surprise	17.93%	7.94%	33.62%	6.41%	16.48%

Quarterly Estimates By Analyst

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Detailed Estimates

Booz Allen Hamilton Holding Corporation (BAH)
(Delayed Data from NYSE)

$80.77 USD

-0.65 (-0.80%)

Updated Mar 30, 2021 04:00 PM ET

Zacks Rank:
3-Hold 3

Style Scores:
B Value | A Growth | D Momentum | B VGM

Industry Rank:

Top 43% (109 out of 253)

Industry: Government Services

Booz Allen Hamilton Holding Corporation (BAH) Quote Overview » Estimates » Booz Allen Hamilton Holding Corporation (BAH) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/25/21	Earnings ESP	0.00%
Current Quarter	0.83	Current Year	3.83
EPS Last Quarter	1.04	Next Year	4.05
Last EPS Surprise	13.04%	EPS (TTM)	3.73
ABR	1.73	P/E (F1)	21.12

Growth Estimates	BAH	IND	S&P
Current Qtr (03/2021)	13.70	2.09	7.20
Next Qtr (06/2021)	6.45	1.35	120.51
Current Year (03/2021)	20.44	12.00	10.94
Next Year (03/2022)	5.74	12.20	14.74
Past 5 Years	14.20	10.50	8.00
Next 5 Years	10.60	10.30	NA
PE	21.12	21.70	22.71
PEG Ratio	2.00	2.11	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for BAH

Zacks Rank	Hold 3
Zacks Industry Rank	Top 43% (109 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	B Value | A Growth | D Momentum | B VGM
Earnings ESP	0.00%
Research Reports for BAH	Analyst | Snapshot

(= Change in last 30 days)

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Research for BAH

Chart for BAH

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Zacks Consensus Estimate	2.00B	2.04B	7.91B	8.36B
# of Estimates	6	3	7	7
High Estimate	2.03B	2.07B	8.10B	8.44B
Low Estimate	1.95B	2.01B	7.83B	8.24B
Year ago Sales	1.97B	1.96B	7.46B	7.91B
Year over Year Growth Est.	1.40%	4.38%	5.97%	5.66%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Zacks Consensus Estimate	0.83	0.99	3.83	4.05
# of Estimates	9	3	8	9
Most Recent Consensus	0.80	1.00	3.80	4.00
High Estimate	0.89	1.02	3.85	4.20
Low Estimate	0.79	0.97	3.80	3.97
Year ago EPS	0.73	0.93	3.18	3.83
Year over Year Growth Est.	13.70%	6.45%	20.44%	5.93%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	8	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	6	2	0	6

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Current	0.83	0.99	3.83	4.05
7 Days Ago	0.83	0.99	3.83	4.05
30 Days Ago	0.83	0.99	3.83	4.05
60 Days Ago	0.88	1.04	3.77	4.12
90 Days Ago	0.88	1.04	3.74	4.15

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Most Accurate Estimate	0.83	0.99	3.83	4.05
Zacks Consensus Estimate	0.83	0.99	3.83	4.05
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.04	1.03	0.93	0.73	NA
Estimate	0.92	0.92	0.87	0.70	NA
Difference	0.12	0.11	0.06	0.03	0.08
Surprise	13.04%	11.96%	6.90%	4.29%	9.05%

Annual Estimates By Analyst

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Becton, Dickinson and Company (BDX)
(Delayed Data from NYSE)

$245.19 USD

-1.95 (-0.79%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B **Value** | A **Growth** | D **Momentum** | B **VGM**

Industry Rank:

Top 34% (85 out of 253)

Industry: Medical - Dental Supplies

Becton, Dickinson and Company (BDX) Quote Overview » Estimates » Becton, Dickinson and Company (BDX) Detailed Estimates

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Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/6/21	Earnings ESP	0.00%
Current Quarter	3.05	Current Year	12.81
EPS Last Quarter	4.55	Next Year	13.42
Last EPS Surprise	44.90%	EPS (TTM)	12.09
ABR	1.81	P/E (F1)	19.14

Growth Estimates	BDX	IND	S&P
Current Qtr (03/2021)	19.61	27.98	7.20
Next Qtr (06/2021)	17.73	87.95	120.51
Current Year (09/2021)	25.59	19.40	10.94
Next Year (09/2022)	4.76	15.20	14.74
Past 5 Years	6.60	10.40	8.00
Next 5 Years	9.00	11.70	NA
PE	19.14	47.50	22.71
PEG Ratio	2.13	4.06	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for BDX

Zacks Rank	Hold 3
Zacks Industry Rank	Top 34% (85 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	B Value | A Growth | D Momentum | B VGM
Earnings ESP	0.00%
Research Reports for BDX	Analyst | Snapshot

(= Change in last 30 days)

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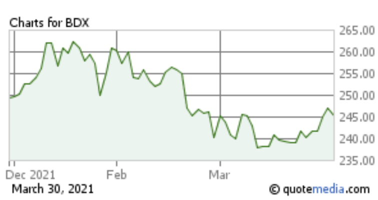
Research for BDX

Chart for BDX



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	4.83B	4.56B	19.44B	19.46B
# of Estimates	7	7	8	7
High Estimate	4.88B	4.68B	19.63B	19.66B
Low Estimate	4.78B	4.52B	19.36B	19.13B
Year ago Sales	4.25B	3.86B	17.12B	19.44B
Year over Year Growth Est.	13.61%	18.40%	13.56%	0.12%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	3.05	2.59	12.81	13.42
# of Estimates	10	9	11	10
Most Recent Consensus	3.05	2.56	12.80	13.27
High Estimate	3.17	2.80	12.94	14.09
Low Estimate	2.88	2.48	12.75	13.02
Year ago EPS	2.55	2.20	10.20	12.81
Year over Year Growth Est.	19.61%	17.73%	25.59%	4.71%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	0	9	5
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	7	8	2	3

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	3.05	2.59	12.81	13.42
7 Days Ago	3.05	2.59	12.81	13.42
30 Days Ago	3.05	2.59	12.81	13.42
60 Days Ago	3.29	3.04	12.59	13.43
90 Days Ago	3.30	3.03	12.51	13.39

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	3.05	2.59	12.81	13.42
Zacks Consensus Estimate	3.05	2.59	12.81	13.42
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	4.55	2.79	2.20	2.55	NA
Estimate	3.14	2.50	2.05	2.28	NA
Difference	1.41	0.29	0.15	0.27	0.53
Surprise	44.90%	11.60%	7.32%	11.84%	18.92%

Quarterly Estimates By Analyst

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BrownForman Corporation (BF.B)
(Delayed Data from NYSE)

$69.65 USD

+0.68 (0.99%)

Updated Apr 1, 2021 04:03 PM ET

After-Market: **$69.62** -0.03 (-0.04%)

Add to portfolio Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | D Growth | A Momentum | D VGM

Industry Rank:

6:32 PM ET

Bottom 37% (160 out of 253)

Industry: Beverages - Alcohol

BrownForman Corporation (BF.B) Quote Overview » Estimates » BrownForman Corporation (BF.B) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	6/8/21	Earnings ESP	-2.24%
Current Quarter	0.31	Current Year	1.82
EPS Last Quarter	0.45	Next Year	1.90
Last EPS Surprise	4.65%	EPS (TTM)	1.62
ABR	3.12	P/E (F1)	37.90

Growth Estimates	BF.B	IND	S&P
Current Qtr (04/2021)	14.81	159.16	115.38
Next Qtr (07/2021)	5.00	-26.88	141.17
Current Year (04/2021)	5.81	23.00	NA
Next Year (04/2022)	4.40	14.10	14.74
Past 5 Years	5.70	0.90	8.00
Next 5 Years	NA	10.50	NA
PE	37.90	29.40	22.79
PEG Ratio	NA	2.80	NA

Learn More About Estimate Research
See Brokerage Recommendations
See Earnings Report Transcript

Premium Research for BF.B

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 37% (160 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	D Value | D Growth | A Momentum | D VGM
Earnings ESP	-2.24%
Research Reports for BF.B	Analyst | Snapshot

(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

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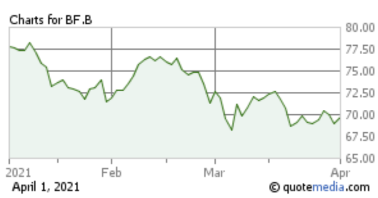
Research for BF.B

Chart for BF.B



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Zacks Consensus Estimate	794.03M	843.36M	3.43B	3.72B
# of Estimates	3	1	4	4
High Estimate	817.50M	843.36M	3.47B	3.77B
Low Estimate	759.87M	843.36M	3.38B	3.65B
Year ago Sales	709.00M	753.00M	3.36B	3.43B
Year over Year Growth Est.	11.99%	12.00%	1.90%	8.59%

Earnings Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Zacks Consensus Estimate	0.31	0.42	1.82	1.90
# of Estimates	5	2	2	5
Most Recent Consensus	0.31	NA	NA	1.89
High Estimate	0.34	0.44	1.95	1.99
Low Estimate	0.29	0.40	1.69	1.85
Year ago EPS	0.27	0.40	1.72	1.82
Year over Year Growth Est.	14.81%	5.00%	5.81%	4.40%

Agreement - Estimate Revisions

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	2	2
Up Last 60 Days	0	1	3	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	3	0	1	2
Down Last 60 Days	3	0	1	2

Magnitude - Consensus Estimate Trend

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Current	0.31	0.42	1.82	1.90
7 Days Ago	0.31	0.42	1.82	1.90
30 Days Ago	0.34	0.42	1.78	1.90
60 Days Ago	0.34	0.41	1.78	1.91
90 Days Ago	0.33	0.41	1.78	1.92

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Most Accurate Estimate	0.31	0.42	1.95	1.90
Zacks Consensus Estimate	0.31	0.42	1.82	1.90
Earnings ESP	-2.24%	0.00%	7.14%	0.13%

Surprise - Reported Earnings History

	Quarter Ending (1/2021)	Quarter Ending (10/2020)	Quarter Ending (7/2020)	Quarter Ending (4/2020)	Average Surprise
Reported	0.45	0.50	0.40	0.27	NA
Estimate	0.43	0.51	0.31	0.28	NA
Difference	0.02	-0.01	0.09	-0.01	0.02
Surprise	4.65%	-1.96%	29.03%	-3.57%	7.04%

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Broadridge Financial Solutions, Inc. (BR)
(Delayed Data from NYSE)

$152.98 USD

-4.33 (-2.75%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | B Growth | D Momentum | C VGM

Industry Rank:

Top 41% (104 out of 253)

Industry: Outsourcing

Broadridge Financial Solutions, Inc. (BR) Quote Overview » Estimates » Broadridge Financial Solutions, Inc. (BR) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/14/21	Earnings ESP	0.00%
Current Quarter	1.67	Current Year	5.54
EPS Last Quarter	0.73	Next Year	6.09
Last EPS Surprise	0.00%	EPS (TTM)	5.53
ABR	2.17	P/E (F1)	27.62

Growth Estimates	BR	IND	S&P
Current Qtr (03/2021)	0.00	54.78	7.20
Next Qtr (06/2021)	0.93	24.50	120.51
Current Year (06/2021)	10.14	3.90	10.94
Next Year (06/2022)	9.93	18.00	14.74
Past 5 Years	15.00	10.00	8.00
Next 5 Years	NA	11.40	NA
PE	27.62	21.80	22.71
PEG Ratio	NA	1.91	NA

Learn More About Estimate Research

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Premium Research for BR

Zacks Rank	Hold 3
Zacks Industry Rank	Top 41% (104 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	C Value | B Growth | D Momentum | C VGM
Earnings ESP	0.00%
Research Reports for BR	Analyst | Snapshot

(= Change in last 30 days)

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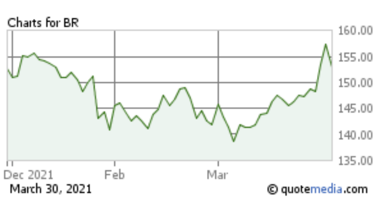
Research for BR

Chart for BR



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	1.28B	1.39B	4.74B	4.99B
# of Estimates	5	5	5	5
High Estimate	1.31B	1.41B	4.78B	5.08B
Low Estimate	1.26B	1.36B	4.71B	4.89B
Year ago Sales	1.25B	1.36B	4.53B	4.74B
Year over Year Growth Est.	2.67%	1.88%	4.73%	5.22%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	1.67	2.17	5.54	6.09
# of Estimates	5	5	5	5
Most Recent Consensus	1.68	2.18	5.56	6.05
High Estimate	1.70	2.21	5.59	6.27
Low Estimate	1.65	2.12	5.50	5.89
Year ago EPS	1.67	2.15	5.03	5.54
Year over Year Growth Est.	0.00%	0.93%	10.14%	10.04%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	1
Up Last 30 Days	0	0	0	1
Up Last 60 Days	1	4	4	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	3	1	1	3

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	1.67	2.17	5.54	6.09
7 Days Ago	1.67	2.17	5.54	6.05
30 Days Ago	1.67	2.17	5.54	6.05
60 Days Ago	1.71	2.09	5.50	6.10
90 Days Ago	1.71	2.09	5.50	6.10

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	1.67	2.17	5.54	6.27
Zacks Consensus Estimate	1.67	2.17	5.54	6.09
Earnings ESP	0.00%	0.00%	0.00%	2.89%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.73	0.98	2.15	1.67	NA
Estimate	0.73	0.63	2.10	1.74	NA
Difference	0.00	0.35	0.05	-0.07	0.08
Surprise	0.00%	55.56%	2.38%	-4.02%	13.48%

Quarterly Estimates By Analyst

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Brady Corporation (BRC)
(Delayed Data from NYSE)

$54.04 USD

-0.32 (-0.59%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | C Growth | C Momentum | C VGM

Industry Rank:

Top 40% (101 out of 253)

Industry: Security and Safety Services

Brady Corporation (BRC) Quote Overview » Estimates » Brady Corporation (BRC) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/20/21	Earnings ESP	0.00%
Current Quarter	0.67	Current Year	2.57
EPS Last Quarter	0.59	Next Year	2.85
Last EPS Surprise	-3.28%	EPS (TTM)	2.23
ABR	2.00	P/E (F1)	21.03

Growth Estimates	BRC	IND	S&P
Current Qtr (04/2021)	42.55	276.26	7.20
Next Qtr (07/2021)	30.19	35,091.66	120.51
Current Year (07/2021)	21.80	15.60	10.94
Next Year (07/2022)	10.89	10.10	14.74
Past 5 Years	7.60	8.60	8.00
Next 5 Years	7.00	10.90	NA
PE	21.03	171.60	22.71
PEG Ratio	3.00	15.74	NA

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Premium Research for BRC

Zacks Rank	Hold 3
Zacks Industry Rank	Top 40% (101 out of 253)
Zacks Sector Rank	Top 38% (6 out of 16)
Style Scores	C Value | C Growth | C Momentum | C VGM
Earnings ESP	0.00%
Research Report for BRC	Snapshot

(= Change in last 30 days)

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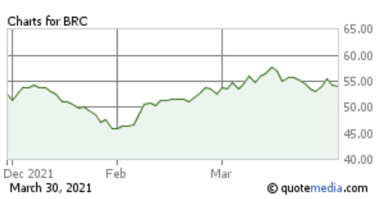
Research for BRC

Chart for BRC



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Zacks Consensus Estimate	285.00M	287.80M	1.12B	1.16B
# of Estimates	1	1	1	1
High Estimate	285.00M	287.80M	1.12B	1.16B
Low Estimate	285.00M	287.80M	1.12B	1.16B
Year ago Sales	265.94M	251.74M	1.08B	1.12B
Year over Year Growth Est.	7.17%	14.32%	3.20%	4.24%

Earnings Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Zacks Consensus Estimate	0.67	0.69	2.57	2.85
# of Estimates	2	1	2	2
Most Recent Consensus	0.69	0.69	2.61	3.05
High Estimate	0.69	0.69	2.61	3.05
Low Estimate	0.64	0.69	2.53	2.65
Year ago EPS	0.47	0.53	2.11	2.57
Year over Year Growth Est.	42.55%	30.19%	21.80%	10.89%

Agreement - Estimate Revisions

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	1	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	1	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Current	0.67	0.69	2.57	2.85
7 Days Ago	0.67	0.69	2.57	2.85
30 Days Ago	0.67	0.69	2.57	2.85
60 Days Ago	0.72	0.71	2.57	2.87
90 Days Ago	0.72	0.71	2.57	2.87

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Most Accurate Estimate	0.67	0.69	2.57	2.85
Zacks Consensus Estimate	0.67	0.69	2.57	2.85
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (1/2021)	Quarter Ending (10/2020)	Quarter Ending (7/2020)	Quarter Ending (4/2020)	Average Surprise
Reported	0.59	0.64	0.53	0.47	NA
Estimate	0.61	0.58	0.55	0.47	NA
Difference	-0.02	0.06	-0.02	0.00	0.01
Surprise	-3.28%	10.34%	-3.64%	0.00%	0.86%

Quarterly Estimates By Analyst

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Annual Estimates By Analyst

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At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

Zacks Research
Detailed Estimates

CACI International, Inc. (CACI)
(Delayed Data from NYSE)

$246.25 USD

-1.70 (-0.69%)

Updated Mar 30, 2021 04:00 PM ET

Zacks Rank:
2-Buy 2

Style Scores:
A Value | A Growth | D Momentum | A VGM

Industry Rank:

Bottom 27% (184 out of 253)

Industry: Computer - Services

CACI International, Inc. (CACI) Quote Overview » Estimates » CACI International, Inc. (CACI) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	3.67	Current Year	15.24
EPS Last Quarter	4.18	Next Year	16.05
Last EPS Surprise	17.09%	EPS (TTM)	14.69
ABR	1.55	P/E (F1)	16.16

Growth Estimates	CACI	IND	S&P
Current Qtr (03/2021)	16.14	79.27	7.20
Next Qtr (06/2021)	-0.54	212.43	120.51
Current Year (06/2021)	20.86	14.10	10.94
Next Year (06/2022)	5.31	20.50	14.74
Past 5 Years	18.10	9.40	8.00
Next 5 Years	10.50	10.00	NA
PE	16.16	0.80	22.71
PEG Ratio	1.53	0.08	NA

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Premium Research for CACI

Zacks Rank	Buy 2
Zacks Industry Rank	Bottom 27% (184 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	A Value | A Growth | D Momentum | A VGM
Earnings ESP	0.00%
Research Reports for CACI	Analyst | Snapshot

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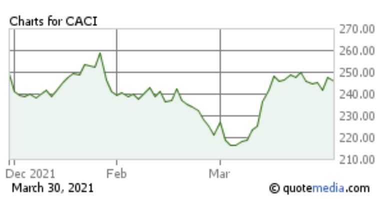
Research for CACI

Chart for CACI



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	1.58B	1.63B	6.14B	6.44B
# of Estimates	6	6	7	7
High Estimate	1.59B	1.66B	6.17B	6.57B
Low Estimate	1.55B	1.57B	6.05B	6.30B
Year ago Sales	1.47B	1.50B	5.72B	6.14B
Year over Year Growth Est.	7.47%	9.13%	7.30%	4.98%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	3.67	3.66	15.24	16.05
# of Estimates	8	7	8	8
Most Recent Consensus	3.61	3.70	15.00	15.68
High Estimate	3.94	3.81	15.80	16.55
Low Estimate	3.38	3.34	14.94	15.66
Year ago EPS	3.16	3.68	12.61	15.24
Year over Year Growth Est.	16.14%	-0.54%	20.86%	5.36%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	0	1	1
Up Last 60 Days	2	0	4	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	2	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	3.67	3.66	15.24	16.05
7 Days Ago	3.67	3.66	15.24	16.05
30 Days Ago	3.67	3.66	15.22	15.97
60 Days Ago	3.64	3.77	15.08	15.90
90 Days Ago	3.75	3.98	14.99	15.72

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	3.67	3.66	15.05	16.45
Zacks Consensus Estimate	3.67	3.66	15.24	16.05
Earnings ESP	0.00%	0.00%	-1.22%	2.47%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	4.18	3.67	3.68	3.16	NA
Estimate	3.57	3.15	3.37	3.24	NA
Difference	0.61	0.52	0.31	-0.08	0.34
Surprise	17.09%	16.51%	9.20%	-2.47%	10.08%

Quarterly Estimates By Analyst

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Caseys General Stores, Inc. (CASY)
(Delayed Data from NSDQ)

$217.23 USD

+2.06 (0.96%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | A Growth | A Momentum | A VGM

Industry Rank:

Bottom 4% (243 out of 253)

Industry: Retail - Convenience Stores

Caseys General Stores, Inc. (CASY) Quote Overview » Estimates » Caseys General Stores, Inc. (CASY) Detailed Estimates

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Estimates

Next Report Date	6/14/21	Earnings ESP	-0.96%
Current Quarter	0.67	Current Year	7.93
EPS Last Quarter	1.04	Next Year	7.83
Last EPS Surprise	11.83%	EPS (TTM)	8.95
ABR	2.17	P/E (F1)	27.39

Growth Estimates	CASY	IND	S&P
Current Qtr (04/2021)	-59.88	-79.54	7.20
Next Qtr (07/2021)	-12.35	-14.10	120.51
Current Year (04/2021)	11.69	16.10	10.94
Next Year (04/2022)	-1.26	-1.30	14.74
Past 5 Years	9.00	9.00	8.00
Next 5 Years	NA	NA	NA
PE	27.39	-24.90	22.71
PEG Ratio	NA	NA	NA

Learn More About Estimate Research

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Premium Research for CASY

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 4% (243 out of 253)
Zacks Sector Rank	Bottom 25% (12 out of 16)
Style Scores	B Value | A Growth | A Momentum | A VGM
Earnings ESP	-0.96%
Research Reports for CASY	Analyst | Snapshot

(= Change in last 30 days)

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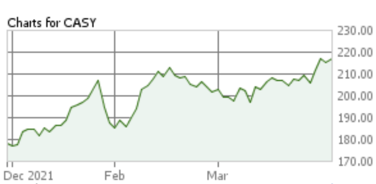
Research for CASY

Chart for CASY



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Zacks Consensus Estimate	2.16B	2.79B	8.49B	10.59B
# of Estimates	4	2	4	4
High Estimate	2.26B	2.81B	8.59B	10.90B
Low Estimate	1.99B	2.77B	8.32B	9.93B
Year ago Sales	1.81B	2.11B	9.18B	8.49B
Year over Year Growth Est.	19.08%	32.34%	-7.49%	24.79%

Earnings Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Zacks Consensus Estimate	0.67	2.84	7.93	7.83
# of Estimates	5	3	6	6
Most Recent Consensus	0.76	2.93	8.00	8.20
High Estimate	0.76	2.93	8.00	8.20
Low Estimate	0.60	2.71	7.87	7.25
Year ago EPS	1.67	3.24	7.10	7.93
Year over Year Growth Est.	-59.88%	-12.35%	11.69%	-1.32%

Agreement - Estimate Revisions

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Up Last 7 Days	1	0	1	1
Up Last 30 Days	2	0	4	2
Up Last 60 Days	2	0	2	2
Down Last 7 Days	0	1	0	0
Down Last 30 Days	2	2	1	3
Down Last 60 Days	2	2	3	3

Magnitude - Consensus Estimate Trend

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Current	0.67	2.84	7.93	7.83
7 Days Ago	0.66	2.88	7.86	7.75
30 Days Ago	0.70	2.94	7.70	7.75
60 Days Ago	0.76	2.94	7.88	7.75
90 Days Ago	0.75	2.94	7.99	7.75

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (4/2021)	Next Year (4/2022)
Most Accurate Estimate	0.67	2.82	7.94	7.94
Zacks Consensus Estimate	0.67	2.84	7.93	7.83
Earnings ESP	-0.96%	-0.70%	0.10%	1.47%

Surprise - Reported Earnings History

	Quarter Ending (1/2021)	Quarter Ending (10/2020)	Quarter Ending (7/2020)	Quarter Ending (4/2020)	Average Surprise
Reported	1.04	3.00	3.24	1.67	NA
Estimate	0.93	2.66	2.00	1.97	NA
Difference	0.11	0.34	1.24	-0.30	0.35
Surprise	11.83%	12.78%	62.00%	-15.23%	17.85%

Quarterly Estimates By Analyst

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At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

Zacks Research
Detailed Estimates

Cadence Design Systems, Inc. (CDNS)
(Delayed Data from NSDQ)

$130.87 USD

-1.88 (-3.75%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
F Value | D Growth | F Momentum | F VGM

Industry Rank:

Bottom 45% (140 out of 253)

Industry: Computer - Software

Cadence Design Systems, Inc. (CDNS) Quote Overview » Estimates » Cadence Design Systems, Inc. (CDNS) Detailed Estimates

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Detailed Estimates

Enter Symbol

Estimates

Next Report Date	4/19/21	Earnings ESP	0.00%
Current Quarter	0.74	Current Year	3.02
EPS Last Quarter	0.83	Next Year	3.36
Last EPS Surprise	10.67%	EPS (TTM)	2.79
ABR	1.64	P/E (F1)	43.33

Growth Estimates	CDNS	IND	S&P
Current Qtr (03/2021)	23.33	25.16	7.20
Next Qtr (06/2021)	12.12	3.84	120.51
Current Year (12/2021)	7.86	3.00	10.94
Next Year (12/2022)	11.26	14.40	14.74
Past 5 Years	21.80	9.50	8.00
Next 5 Years	11.10	14.20	NA
PE	43.33	48.70	22.71
PEG Ratio	3.90	3.43	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for CDNS

Zacks Rank	Buy 2
Zacks Industry Rank	Bottom 45% (140 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	F Value | D Growth | F Momentum | F VGM
Earnings ESP	0.00%
Research Reports for CDNS	Analyst | Snapshot

(= Change in last 30 days)

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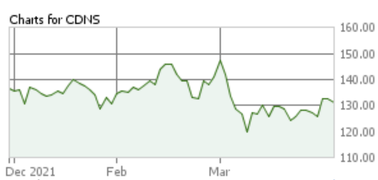
More Premium Research » »

Research for CDNS

Chart for CDNS



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	718.62M	718.30M	2.89B	3.10B
# of Estimates	4	4	4	4
High Estimate	725.00M	727.40M	2.90B	3.18B
Low Estimate	712.20M	709.90M	2.87B	2.97B
Year ago Sales	617.96M	638.42M	2.68B	2.89B
Year over Year Growth Est.	16.29%	12.51%	7.71%	7.34%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.74	0.74	3.02	3.36
# of Estimates	6	4	6	6
Most Recent Consensus	0.75	0.73	3.03	3.25
High Estimate	0.75	0.77	3.05	3.50
Low Estimate	0.73	0.73	2.97	3.25
Year ago EPS	0.60	0.66	2.80	3.02
Year over Year Growth Est.	23.33%	12.12%	7.86%	11.37%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	3	3	6	4
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.74	0.74	3.02	3.36
7 Days Ago	0.74	0.74	3.02	3.36
30 Days Ago	0.74	0.74	3.02	3.37
60 Days Ago	0.68	0.72	2.88	3.13
90 Days Ago	0.68	0.72	2.87	3.08

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.74	0.74	3.02	3.25
Zacks Consensus Estimate	0.74	0.74	3.02	3.36
Earnings ESP	0.00%	0.00%	0.00%	-3.37%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.83	0.70	0.66	0.60	NA
Estimate	0.75	0.61	0.52	0.54	NA
Difference	0.08	0.09	0.14	0.06	0.09
Surprise	10.67%	14.75%	26.92%	11.11%	15.86%

Quarterly Estimates By Analyst

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Cerner Corporation (CERN)
(Delayed Data from NSDQ)

$71.64 USD

-0.85 (-1.17%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
4-Sell 4

Style Scores:
A Value | B Growth | D Momentum | A VGM

Industry Rank:

Bottom 30% (177 out of 253)

Industry: Medical Info Systems

Cerner Corporation (CERN) Quote Overview » Estimates » Cerner Corporation (CERN) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

Enter Symbol

Estimates

Next Report Date	4/27/21	Earnings ESP	0.00%
Current Quarter	0.74	Current Year	3.15
EPS Last Quarter	0.78	Next Year	3.57
Last EPS Surprise	0.00%	EPS (TTM)	2.84
ABR	2.19	P/E (F1)	22.73

Growth Estimates	CERN	IND	S&P
Current Qtr (03/2021)	4.23	157.53	7.20
Next Qtr (06/2021)	19.05	138.03	120.51
Current Year (12/2021)	10.92	12.10	10.94
Next Year (12/2022)	13.33	23.00	14.74
Past 5 Years	5.50	7.40	8.00
Next 5 Years	12.30	17.80	NA
PE	22.73	-34.20	22.71
PEG Ratio	1.85	-1.92	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for CERN

Zacks Rank	Sell 4
Zacks Industry Rank	Bottom 30% (177 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	A Value | B Growth | D Momentum | A VGM
Earnings ESP	0.00%
Research Reports for CERN	Analyst | Snapshot

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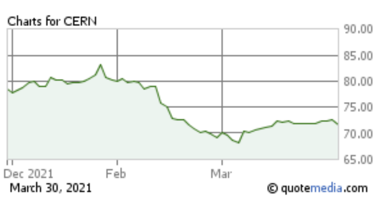
Research for CERN

Chart for CERN



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.40B	1.44B	5.83B	6.15B
# of Estimates	8	8	9	9
High Estimate	1.42B	1.46B	5.86B	6.24B
Low Estimate	1.39B	1.39B	5.75B	5.98B
Year ago Sales	1.41B	1.33B	5.51B	5.83B
Year over Year Growth Est.	-0.81%	8.01%	5.87%	5.44%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.74	0.75	3.15	3.57
# of Estimates	11	9	14	12
Most Recent Consensus	0.74	0.76	3.13	3.51
High Estimate	0.75	0.79	3.18	3.67
Low Estimate	0.72	0.70	3.13	3.51
Year ago EPS	0.71	0.63	2.84	3.15
Year over Year Growth Est.	4.23%	19.05%	10.92%	13.16%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	2	3	3	6
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	4	4	10	3

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.74	0.75	3.15	3.57
7 Days Ago	0.74	0.75	3.15	3.57
30 Days Ago	0.74	0.75	3.15	3.56
60 Days Ago	0.76	0.76	3.21	3.56
90 Days Ago	0.76	0.76	3.21	3.56

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.74	0.75	3.15	3.60
Zacks Consensus Estimate	0.74	0.75	3.15	3.57
Earnings ESP	0.00%	0.00%	0.00%	0.93%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.78	0.72	0.63	0.71	NA
Estimate	0.78	0.71	0.61	0.67	NA
Difference	0.00	0.01	0.02	0.04	0.02
Surprise	0.00%	1.41%	3.28%	5.97%	2.67%

Quarterly Estimates By Analyst

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CSW Industrials, Inc. (CSWI)
(Delayed Data from NSDQ)

$135.05 USD

+0.65 (0.48%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | C Growth | C Momentum | D VGM

Industry Rank:

Bottom 43% (145 out of 253)
Industry: Chemical - Specialty

CSW Industrials, Inc. (CSWI) Quote Overview » Estimates » CSW Industrials, Inc. (CSWI) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/19/21	Earnings ESP	0.00%
Current Quarter	0.95	Current Year	3.44
EPS Last Quarter	0.59	Next Year	5.02
Last EPS Surprise	68.57%	EPS (TTM)	3.33
ABR	1.00	P/E (F1)	39.26

Growth Estimates	CSWI	IND	S&P
Current Qtr (03/2021)	14.46	88.49	7.20
Next Qtr (06/2021)	NA	437.50	120.51
Current Year (03/2021)	7.17	18.20	10.94
Next Year (03/2022)	45.93	18.70	14.74
Past 5 Years	NA	1.20	8.00
Next 5 Years	NA	15.00	NA
PE	39.26	16.70	22.71
PEG Ratio	NA	1.11	NA

Learn More About Estimate Research
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Premium Research for CSWI

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 43% (145 out of 253)
Zacks Sector Rank	Top 19% (3 out of 16)
Style Scores	D Value | C Growth | C Momentum | D VGM
Earnings ESP	0.00%
Research Report for CSWI	Snapshot

(= Change in last 30 days)

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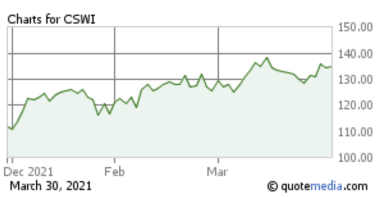
Research for CSWI

Chart for CSWI



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Zacks Consensus Estimate	112.42M	NA	398.26M	527.13M
# of Estimates	1	NA	1	1
High Estimate	112.42M	NA	398.26M	527.13M
Low Estimate	112.42M	NA	398.26M	527.13M
Year ago Sales	98.50M	90.96M	385.87M	398.26M
Year over Year Growth Est.	14.13%	NA	3.21%	32.36%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Zacks Consensus Estimate	0.95	NA	3.44	5.02
# of Estimates	1	NA	1	1
Most Recent Consensus	0.95	NA	3.44	5.02
High Estimate	0.95	NA	3.44	5.02
Low Estimate	0.95	NA	3.44	5.02
Year ago EPS	0.83	0.81	3.21	3.44
Year over Year Growth Est.	14.46%	NA	7.17%	45.93%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Up Last 7 Days	0	NA	0	0
Up Last 30 Days	0	NA	0	0
Up Last 60 Days	0	NA	1	1
Down Last 7 Days	0	NA	0	0
Down Last 30 Days	0	NA	0	0
Down Last 60 Days	1	NA	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Current	0.95	NA	3.44	5.02
7 Days Ago	0.95	NA	3.44	5.02
30 Days Ago	0.95	NA	3.44	5.02
60 Days Ago	0.99	NA	3.25	4.88
90 Days Ago	NA	NA	NA	NA

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (3/2021)	Next Year (3/2022)
Most Accurate Estimate	0.95	NA	3.44	5.02
Zacks Consensus Estimate	0.95	NA	3.44	5.02
Earnings ESP	0.00%	NA	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.59	1.10	0.81	0.83	NA
Estimate	0.35	NA	NA	NA	NA
Difference	0.24	NA	NA	NA	0.24
Surprise	68.57%	NA	NA	NA	68.57%

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Quest Diagnostics Incorporated (DGX)
(Delayed Data from NYSE)

$128.49 USD

+0.45 (0.45%)

Updated Mar 30, 2021 04:02 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
A Value | A Growth | C Momentum | A VGM

Industry Rank:

Bottom 10% (228 out of 253)

Industry: Medical - Outpatient and Home Healthcare

Quest Diagnostics Incorporated (DGX) Quote Overview » Estimates » Quest Diagnostics Incorporated (DGX) Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	*BMO 4/22/21	Earnings ESP	0.01%
Current Quarter	3.76	Current Year	11.27
EPS Last Quarter	4.48	Next Year	7.96
Last EPS Surprise	4.67%	EPS (TTM)	11.15
ABR	1.92	P/E (F1)	11.40

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	DGX	IND	S&P
Current Qtr (03/2021)	300.00	6.26	7.20
Next Qtr (06/2021)	112.68	-2.18	120.51
Current Year (12/2021)	0.81	-2.70	10.94
Next Year (12/2022)	-29.37	19.20	14.74
Past 5 Years	18.80	17.30	8.00
Next 5 Years	26.50	19.60	NA
PE	11.40	44.60	22.71
PEG Ratio	0.43	2.28	NA

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Premium Research for DGX

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 10% (228 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	A Value | A Growth | C Momentum | A VGM
Earnings ESP	0.01%
Research Reports for DGX	Analyst | Snapshot

(= Change in last 30 days)

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Research for DGX

Chart for DGX

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	2.69B	2.45B	9.54B	8.49B
# of Estimates	7	7	8	8
High Estimate	2.84B	2.53B	9.82B	8.72B
Low Estimate	2.64B	2.34B	9.26B	8.31B
Year ago Sales	1.82B	1.83B	9.44B	9.54B
Year over Year Growth Est.	47.83%	34.14%	1.11%	-11.04%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	3.76	3.02	11.27	7.96
# of Estimates	8	8	9	9
Most Recent Consensus	3.66	3.04	11.28	7.95
High Estimate	4.09	3.18	11.71	8.22
Low Estimate	3.55	2.79	10.92	7.64
Year ago EPS	0.94	1.42	11.18	11.27
Year over Year Growth Est.	300.00%	112.68%	0.81%	-29.33%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	2	6	4	5
Up Last 60 Days	3	6	6	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	3	0	3	2
Down Last 60 Days	3	0	3	3

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	3.76	3.02	11.27	7.96
7 Days Ago	3.76	3.02	11.27	7.96
30 Days Ago	3.80	2.90	11.12	7.74
60 Days Ago	3.81	2.61	10.81	7.84
90 Days Ago	3.42	2.58	10.56	7.82

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	3.76	3.07	11.34	7.98
Zacks Consensus Estimate	3.76	3.02	11.27	7.96
Earnings ESP	0.01%	1.57%	0.65%	0.21%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	4.48	4.31	1.42	0.94	NA
Estimate	4.28	3.75	1.41	0.83	NA
Difference	0.20	0.56	0.01	0.11	0.22
Surprise	4.67%	14.93%	0.71%	13.25%	8.39%

Quarterly Estimates By Analyst

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The Estee Lauder Companies Inc. (EL)
(Delayed Data from NYSE)

$295.13 USD

+4.60 (6.47%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
1-Strong Buy 1

Style Scores:
F Value | B Growth | F Momentum | D VGM

Industry Rank:

Bottom 34% (166 out of 253)

Industry: Cosmetics

The Estee Lauder Companies Inc. (EL) Quote Overview » Estimates » The Estee Lauder Companies Inc. (EL) Detailed Estimates

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Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/7/21	Earnings ESP	0.00%
Current Quarter	1.26	Current Year	5.95
EPS Last Quarter	2.61	Next Year	6.90
Last EPS Surprise	56.29%	EPS (TTM)	4.37
ABR	1.37	P/E (F1)	49.56

Growth Estimates	EL	IND	S&P
Current Qtr (03/2021)	48.24	288.46	7.20
Next Qtr (06/2021)	218.87	125.86	120.51
Current Year (06/2021)	44.42	16.30	10.94
Next Year (06/2022)	15.97	16.20	14.74
Past 5 Years	5.60	5.30	8.00
Next 5 Years	10.70	8.10	NA
PE	49.56	87.40	22.71
PEG Ratio	4.65	10.79	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for EL

Zacks Rank	Strong Buy 1
Zacks Industry Rank	Bottom 34% (166 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	F Value | B Growth | F Momentum | D VGM
Earnings ESP	0.00%
Research Reports for EL	Analyst | Snapshot

(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

More Premium Research » »

Research for EL

Chart for EL

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	3.87B	3.54B	15.87B	17.69B
# of Estimates	8	8	9	8
High Estimate	4.09B	3.87B	16.38B	18.39B
Low Estimate	3.68B	3.37B	15.60B	17.11B
Year ago Sales	3.35B	2.43B	14.29B	15.87B
Year over Year Growth Est.	15.83%	45.85%	10.99%	11.48%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	1.26	0.63	5.95	6.90
# of Estimates	10	9	11	10
Most Recent Consensus	1.24	0.65	5.81	6.51
High Estimate	1.45	0.81	6.25	7.52
Low Estimate	1.10	0.42	5.67	6.40
Year ago EPS	0.85	-0.53	4.12	5.95
Year over Year Growth Est.	48.24%	218.87%	44.42%	15.84%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	4	11	9
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	9	4	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	1.26	0.63	5.95	6.90
7 Days Ago	1.26	0.63	5.95	6.90
30 Days Ago	1.26	0.63	5.95	6.90
60 Days Ago	1.50	0.68	5.25	6.33
90 Days Ago	1.50	0.68	5.23	6.31

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	1.26	0.63	5.95	6.90
Zacks Consensus Estimate	1.26	0.63	5.95	6.90
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	2.61	1.44	-0.53	0.85	NA
Estimate	1.67	0.90	-0.19	0.72	NA
Difference	0.94	0.54	-0.34	0.13	0.32
Surprise	56.29%	60.00%	-178.95%	18.06%	-11.15%

Quarterly Estimates By Analyst

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Exponent, Inc. (EXPO)
(Delayed Data from NSDQ)

$96.24 USD

+0.75 (0.79%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D **Value** | A **Growth** | D **Momentum** | C **VGM**

Industry Rank:

Top 23% (59 out of 253)

Industry: Consulting Services

Exponent, Inc. (EXPO) Quote Overview » Estimates » Exponent, Inc. (EXPO) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

Enter Symbol

Estimates

Next Report Date	4/29/21	Earnings ESP	0.00%
Current Quarter	0.43	Current Year	1.62
EPS Last Quarter	0.41	Next Year	1.79
Last EPS Surprise	46.43%	EPS (TTM)	1.55
ABR	1.67	P/E (F1)	59.59

Growth Estimates	EXPO	IND	S&P
Current Qtr (03/2021)	-12.24	24.72	7.20
Next Qtr (06/2021)	29.03	11.64	120.51
Current Year (12/2021)	4.52	5.20	10.94
Next Year (12/2022)	10.49	14.10	14.74
Past 5 Years	14.70	8.50	8.00
Next 5 Years	NA	13.70	NA
PE	59.59	76.20	22.71
PEG Ratio	NA	5.56	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for EXPO

Zacks Rank	Hold 3
Zacks Industry Rank	Top 23% (59 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	D Value | A Growth | D Momentum | C VGM
Earnings ESP	0.00%
Research Report for EXPO	Snapshot

(= Change in last 30 days)

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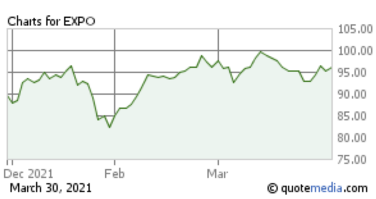
Research for EXPO

Chart for EXPO



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	101.81M	100.94M	408.09M	443.37M
# of Estimates	2	2	2	2
High Estimate	102.52M	101.27M	411.10M	449.20M
Low Estimate	101.10M	100.60M	405.08M	437.54M
Year ago Sales	99.72M	87.86M	378.41M	408.09M
Year over Year Growth Est.	2.10%	14.88%	7.84%	8.65%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.43	0.40	1.62	1.79
# of Estimates	2	2	2	2
Most Recent Consensus	0.43	0.39	1.62	1.77
High Estimate	0.45	0.41	1.62	1.80
Low Estimate	0.40	0.39	1.61	1.77
Year ago EPS	0.49	0.31	1.55	1.62
Year over Year Growth Est.	-12.24%	29.03%	4.52%	10.49%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	0	1	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	1	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.43	0.40	1.62	1.79
7 Days Ago	0.43	0.40	1.62	1.79
30 Days Ago	0.43	0.40	1.62	1.79
60 Days Ago	0.40	0.40	1.61	1.80
90 Days Ago	0.41	0.41	1.62	1.80

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.43	0.40	1.62	1.79
Zacks Consensus Estimate	0.43	0.40	1.62	1.79
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.41	0.34	0.31	0.49	NA
Estimate	0.28	0.27	0.22	0.44	NA
Difference	0.13	0.07	0.09	0.05	0.09
Surprise	46.43%	25.93%	40.91%	11.36%	31.16%

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Fastenal Company (FAST)
(Delayed Data from NSDQ)

$50.62 USD

-0.06 (-0.06%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
4-Sell 4

Style Scores:
C Value | A Growth | D Momentum | B VGM

Industry Rank:

Top 38% (97 out of 253)

Industry: Building Products - Retail

Fastenal Company (FAST) Quote Overview » Estimates » Fastenal Company (FAST) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	*BMO 4/13/21	Earnings ESP	-2.70%
Current Quarter	0.37	Current Year	1.55
EPS Last Quarter	0.34	Next Year	1.70
Last EPS Surprise	3.03%	EPS (TTM)	1.49
ABR	2.83	P/E (F1)	32.66

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	FAST	IND	S&P
Current Qtr (03/2021)	5.71	43.68	7.20
Next Qtr (06/2021)	-2.38	-1.82	120.51
Current Year (12/2021)	4.03	-1.50	10.94
Next Year (12/2022)	9.68	9.30	14.74
Past 5 Years	11.50	13.00	8.00
Next 5 Years	9.00	14.90	NA
PE	32.66	20.40	22.71
PEG Ratio	3.63	1.37	NA

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Premium Research for FAST

Zacks Rank	Sell 4
Zacks Industry Rank	Top 38% (97 out of 253)
Zacks Sector Rank	Bottom 25% (12 out of 16)
Style Scores	C Value | A Growth | D Momentum | B VGM
Earnings ESP	-2.70%
Research Reports for FAST	Analyst | Snapshot

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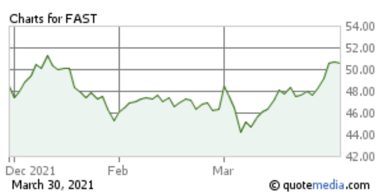
Research for FAST

Chart for FAST



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.43B	1.51B	5.87B	6.36B
# of Estimates	6	6	8	8
High Estimate	1.48B	1.56B	6.09B	6.65B
Low Estimate	1.40B	1.43B	5.62B	6.18B
Year ago Sales	1.37B	1.51B	5.65B	5.87B
Year over Year Growth Est.	4.85%	0.01%	3.97%	8.31%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.37	0.41	1.55	1.70
# of Estimates	8	8	10	9
Most Recent Consensus	0.36	0.41	1.53	1.70
High Estimate	0.38	0.43	1.58	1.74
Low Estimate	0.35	0.38	1.46	1.65
Year ago EPS	0.35	0.42	1.49	1.55
Year over Year Growth Est.	5.71%	-2.38%	4.03%	9.54%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	1	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	2	0	3	3
Down Last 60 Days	1	2	3	4

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.37	0.41	1.55	1.70
7 Days Ago	0.37	0.41	1.55	1.70
30 Days Ago	0.37	0.41	1.56	1.71
60 Days Ago	0.37	0.41	1.55	1.71
90 Days Ago	0.36	0.41	1.53	1.68

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.36	0.41	1.52	1.69
Zacks Consensus Estimate	0.37	0.41	1.55	1.70
Earnings ESP	-2.70%	0.00%	-2.15%	-0.65%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.34	0.38	0.42	0.35	NA
Estimate	0.33	0.37	0.36	0.34	NA
Difference	0.01	0.01	0.06	0.01	0.02
Surprise	3.03%	2.70%	16.67%	2.94%	6.34%

Quarterly Estimates By Analyst

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At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

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Gentex Corporation (GNTX)
(Delayed Data from NSDQ)

$35.89 USD

+0.52 (1.47%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio Trades from $1

Zacks Rank:
3-Hold 3
Style Scores:
C Value | C Growth | C Momentum | C VGM
Industry Rank:

Top 42% (106 out of 253)

Industry: Automotive - Original Equipment

Gentex Corporation (GNTX) Quote Overview » Estimates » Gentex Corporation (GNTX) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	4/23/21	Earnings ESP	0.00%
Current Quarter	0.49	Current Year	2.03
EPS Last Quarter	0.58	Next Year	2.25
Last EPS Surprise	16.00%	EPS (TTM)	1.44
ABR	2.00	P/E (F1)	17.66

Growth Estimates	GNTX	IND	S&P
Current Qtr (03/2021)	36.11	579.21	7.20
Next Qtr (06/2021)	2,450.00	167.81	120.51
Current Year (12/2021)	43.97	26.40	10.94
Next Year (12/2022)	10.84	24.90	14.74
Past 5 Years	5.40	-2.80	8.00
Next 5 Years	4.70	17.40	NA
PE	17.66	-11.20	22.71
PEG Ratio	3.76	-0.64	NA

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Premium Research for GNTX

Zacks Rank	Hold 3
Zacks Industry Rank	Top 42% (106 out of 253)
Zacks Sector Rank	Top 50% (8 out of 16)
Style Scores	C Value | C Growth | C Momentum | C VGM
Earnings ESP	0.00%
Research Reports for GNTX	Analyst | Snapshot

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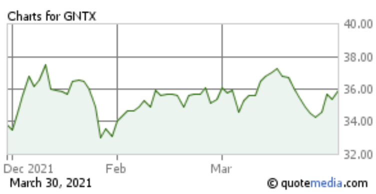
Research for GNTX

Chart for GNTX



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	499.31M	499.84M	2.01B	2.17B
# of Estimates	6	6	6	6
High Estimate	512.59M	513.70M	2.03B	2.23B
Low Estimate	488.12M	490.65M	2.00B	2.12B
Year ago Sales	453.76M	229.93M	1.69B	2.01B
Year over Year Growth Est.	10.04%	117.39%	19.28%	7.53%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.49	0.51	2.03	2.25
# of Estimates	7	6	7	7
Most Recent Consensus	0.50	0.50	2.04	2.24
High Estimate	0.52	0.52	2.08	2.40
Low Estimate	0.45	0.50	1.95	2.05
Year ago EPS	0.36	0.02	1.41	2.03
Year over Year Growth Est.	36.11%	2,450.00%	43.97%	10.84%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	1	5	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	2	0	0	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.49	0.51	2.03	2.25
7 Days Ago	0.49	0.51	2.03	2.25
30 Days Ago	0.49	0.51	2.03	2.25
60 Days Ago	0.51	0.51	1.96	2.31
90 Days Ago	0.48	0.47	1.92	2.25

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.49	0.51	2.03	2.25
Zacks Consensus Estimate	0.49	0.51	2.03	2.25
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.58	0.48	0.02	0.36	NA
Estimate	0.50	0.41	0.12	0.37	NA
Difference	0.08	0.07	-0.10	-0.01	0.01
Surprise	16.00%	17.07%	-83.33%	-2.70%	-13.24%

Quarterly Estimates By Analyst

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International Flavors & Fragrances Inc. (IFF)
(Delayed Data from NYSE)

$139.75 USD

-1.56 (-1.10%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | B Growth | D Momentum | C VGM

Industry Rank:

Bottom 38% (157 out of 253)

Industry: Consumer Products - Staples

International Flavors & Fragrances Inc. (IFF) Quote Overview » Estimates » International Flavors & Fragrances Inc. (IFF) Detailed Estimates

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Estimates

Next Report Date	5/10/21	Earnings ESP	0.00%
Current Quarter	1.42	Current Year	5.82
EPS Last Quarter	1.32	Next Year	6.51
Last EPS Surprise	10.92%	EPS (TTM)	5.70
ABR	1.33	P/E (F1)	24.01

Growth Estimates	IFF	IND	S&P
Current Qtr (03/2021)	-12.35	33.91	7.20
Next Qtr (06/2021)	0.74	-26.79	120.51
Current Year (12/2021)	2.11	8.80	10.94
Next Year (12/2022)	11.86	7.60	14.74
Past 5 Years	1.50	3.40	8.00
Next 5 Years	10.00	12.10	NA
PE	24.01	-124.10	22.71
PEG Ratio	2.40	-10.26	NA

Learn More About Estimate Research

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Premium Research for IFF

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 38% (157 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	D Value | B Growth | D Momentum | C VGM
Earnings ESP	0.00%
Research Reports for IFF	Analyst | Snapshot

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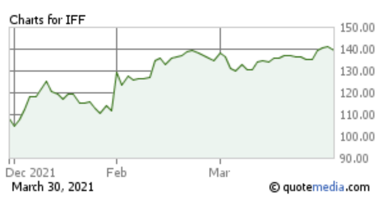
Research for IFF

Chart for IFF



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	2.42B	2.93B	11.08B	11.99B
# of Estimates	5	5	5	5
High Estimate	2.49B	3.00B	11.20B	12.12B
Low Estimate	2.32B	2.87B	10.97B	11.77B
Year ago Sales	1.35B	1.20B	5.08B	11.08B
Year over Year Growth Est.	79.62%	144.50%	118.01%	8.15%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.42	1.37	5.82	6.51
# of Estimates	4	3	4	4
Most Recent Consensus	NA	NA	NA	NA
High Estimate	1.57	1.58	6.10	6.85
Low Estimate	1.05	1.06	5.64	6.11
Year ago EPS	1.62	1.36	5.70	5.82
Year over Year Growth Est.	-12.35%	0.74%	2.11%	11.81%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	3	2	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	2	0	4	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.42	1.37	5.82	6.51
7 Days Ago	1.42	1.37	5.82	6.51
30 Days Ago	1.42	1.37	5.82	6.45
60 Days Ago	1.46	1.44	6.04	6.39
90 Days Ago	1.46	1.44	6.05	6.38

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.42	1.37	5.82	6.68
Zacks Consensus Estimate	1.42	1.37	5.82	6.51
Earnings ESP	0.00%	0.00%	0.00%	2.65%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.32	1.40	1.36	1.62	NA
Estimate	1.19	1.45	1.33	1.60	NA
Difference	0.13	-0.05	0.03	0.02	0.03
Surprise	10.92%	-3.45%	2.26%	1.25%	2.75%

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Ingredion Incorporated (INGR)
(Delayed Data from NYSE)

$92.19 USD

+0.41 (0.41%)

Updated Mar 30, 2021 04:00 PM ET

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Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
A Value | B Growth | F Momentum | B VGM

Industry Rank:

Bottom 30% (177 out of 253)

Industry: Food - Miscellaneous

Ingredion Incorporated (INGR) Quote Overview » Estimates » Ingredion Incorporated (INGR) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	5/4/21	Earnings ESP	NA
Current Quarter	NA	Current Year	6.64
EPS Last Quarter	1.75	Next Year	6.97
Last EPS Surprise	NA	EPS (TTM)	6.23
ABR	1.00	P/E (F1)	13.88

Growth Estimates	INGR	IND	S&P
Current Qtr (03/2021)	NA	29.65	7.20
Next Qtr (06/2021)	NA	3,563.35	120.51
Current Year (12/2021)	6.58	10.60	10.94
Next Year (12/2022)	4.97	15.50	14.74
Past 5 Years	0.50	2.90	8.00
Next 5 Years	NA	9.60	NA
PE	13.88	30.00	22.71
PEG Ratio	NA	3.13	NA

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See Earnings Report Transcript

Premium Research for INGR

Zacks Rank	Buy 2
Zacks Industry Rank	Bottom 30% (177 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	A Value | B Growth | F Momentum | B VGM
Earnings ESP	NA
Research Report for INGR	Snapshot

(= Change in last 30 days)

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Research for INGR

Chart for INGR

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.00M	NA	NA	NA
# of Estimates	NA	NA	NA	NA
High Estimate	NA	NA	NA	NA
Low Estimate	NA	NA	NA	NA
Year ago Sales	1.54B	1.35B	5.99B	NA
Year over Year Growth Est.	NA	NA	NA	NA

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	NA	NA	6.64	6.97
# of Estimates	NA	NA	1	1
Most Recent Consensus	NA	NA	NA	NA
High Estimate	NA	NA	6.64	6.97
Low Estimate	NA	NA	6.64	6.97
Year ago EPS	1.59	1.12	6.23	6.64
Year over Year Growth Est.	NA	NA	6.58%	4.97%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	NA	NA	0	0
Up Last 30 Days	NA	NA	1	0
Up Last 60 Days	NA	NA	1	0
Down Last 7 Days	NA	NA	0	0
Down Last 30 Days	NA	NA	0	0
Down Last 60 Days	NA	NA	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	NA	NA	6.64	6.97
7 Days Ago	NA	NA	6.64	6.97
30 Days Ago	NA	NA	6.41	NA
60 Days Ago	NA	NA	6.44	NA
90 Days Ago	NA	NA	6.44	NA

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	NA	NA	6.64	6.97
Zacks Consensus Estimate	NA	NA	6.64	6.97
Earnings ESP	NA	NA	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.75	1.77	1.12	1.59	NA
Estimate	NA	NA	NA	NA	NA
Difference	NA	NA	NA	NA	NA
Surprise	NA	NA	NA	NA	NA

At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

Visit www.zacksdata.com to get our data and content for your mobile app or website.

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NYSE and AMEX data is at least 20 minutes delayed. NASDAQ data is at least 15 minutes delayed.

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Iron Mountain Incorporated (IRM)
(Delayed Data from NYSE)

$37.16 USD

+0.47 (0.43%)

Updated Mar 30, 2021 04:04 PM ET

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Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | C Growth | B Momentum | B VGM

Industry Rank:

Bottom 20% (203 out of 253)

Industry: REIT and Equity Trust - Other

Iron Mountain Incorporated (IRM) Quote Overview » Estimates » Iron Mountain Incorporated (IRM) Detailed Estimates

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Detailed Estimates

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Estimates

Next Report Date	5/6/21	Earnings ESP	7.25%
Current Quarter	0.64	Current Year	2.66
EPS Last Quarter	0.66	Next Year	2.76
Last EPS Surprise	10.00%	EPS (TTM)	2.39
ABR	2.67	P/E (F1)	13.98

Growth Estimates	IRM	IND	S&P
Current Qtr (03/2021)	8.47	166.27	7.20
Next Qtr (06/2021)	24.53	1,271.45	120.51
Current Year (12/2021)	-13.36	5.20	10.94
Next Year (12/2022)	3.76	6.80	14.74
Past 5 Years	7.90	-1.60	8.00
Next 5 Years	1.70	7.20	NA
PE	13.98	17.00	22.71
PEG Ratio	8.08	2.36	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for IRM

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 20% (203 out of 253)
Zacks Sector Rank	Top 13% (2 out of 16)
Style Scores	B Value | C Growth | B Momentum | B VGM
Earnings ESP	7.25%
Research Reports for IRM	Analyst | Snapshot

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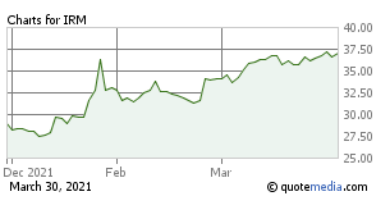
Research for IRM

Chart for IRM



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.05B	1.06B	4.32B	4.36B
# of Estimates	6	6	3	6
High Estimate	1.07B	1.09B	4.40B	4.55B
Low Estimate	1.04B	1.03B	4.18B	4.12B
Year ago Sales	1.07B	982.24M	4.15B	4.32B
Year over Year Growth Est.	-1.65%	7.46%	4.12%	0.88%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.64	0.66	2.66	2.76
# of Estimates	3	3	5	4
Most Recent Consensus	0.69	0.70	2.73	2.58
High Estimate	0.69	0.70	2.80	2.98
Low Estimate	0.59	0.61	2.46	2.58
Year ago EPS	0.59	0.53	3.07	2.66
Year over Year Growth Est.	8.47%	24.53%	-13.36%	3.93%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	1	0	0
Up Last 60 Days	2	2	2	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	0	0	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.64	0.66	2.66	2.76
7 Days Ago	0.64	0.66	2.66	2.76
30 Days Ago	0.62	0.64	2.63	2.76
60 Days Ago	0.61	0.63	2.60	2.70
90 Days Ago	0.61	0.63	2.60	2.70

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.69	0.70	2.66	2.58
Zacks Consensus Estimate	0.64	0.66	2.66	2.76
Earnings ESP	7.25%	5.53%	0.00%	-6.61%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.66	0.61	0.53	0.59	NA
Estimate	0.60	0.55	0.42	0.45	NA
Difference	0.06	0.06	0.11	0.14	0.09
Surprise	10.00%	10.91%	26.19%	31.11%	19.55%

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J.B. Hunt Transport Services, Inc. (JBHT)

(Delayed Data from NSDQ)

$169.34 USD

+2.00 (1.66%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:

3-Hold 3

Style Scores:

C Value | B Growth | F Momentum | C VGM

Industry Rank:

Top 21% (53 out of 253)

Industry: Transportation - Truck

J.B. Hunt Transport Services, Inc. (JBHT) Quote Overview » Estimates » J.B. Hunt Transport Services, Inc. (JBHT) Detailed Estimates

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Detailed Estimates

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Estimates

Next Report Date	*AMC 4/15/21	Earnings ESP	-2.89%
Current Quarter	1.21	Current Year	6.11
EPS Last Quarter	1.44	Next Year	7.13
Last EPS Surprise	13.39%	EPS (TTM)	4.74
ABR	1.88	P/E (F1)	27.73

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	JBHT	IND	S&P
Current Qtr (03/2021)	23.47	54.58	7.20
Next Qtr (06/2021)	27.19	54.95	120.51
Current Year (12/2021)	28.90	25.80	10.94
Next Year (12/2022)	16.69	10.40	14.74
Past 5 Years	6.10	7.70	8.00
Next 5 Years	15.00	15.10	NA
PE	27.73	21.10	22.71
PEG Ratio	1.85	1.40	NA

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Premium Research for JBHT

Zacks Rank	Hold 3
Zacks Industry Rank	Top 21% (53 out of 253)
Zacks Sector Rank	Bottom 31% (11 out of 16)
Style Scores	C Value | B Growth | F Momentum | C VGM
Earnings ESP	-2.89%
Research Reports for JBHT	Analyst | Snapshot

(= Change in last 30 days)

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Research for JBHT

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	2.46B	2.55B	10.77B	11.60B
# of Estimates	4	4	6	6
High Estimate	2.56B	2.65B	10.89B	11.95B
Low Estimate	2.36B	2.47B	10.59B	11.19B
Year ago Sales	2.28B	2.15B	9.64B	10.77B
Year over Year Growth Est.	7.96%	18.73%	11.80%	7.64%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.21	1.45	6.11	7.13
# of Estimates	7	5	9	9
Most Recent Consensus	1.16	1.46	6.05	7.35
High Estimate	1.39	1.48	6.25	7.50
Low Estimate	1.14	1.41	5.78	6.41
Year ago EPS	0.98	1.14	4.74	6.11
Year over Year Growth Est.	23.47%	27.19%	28.90%	16.82%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	1	0	1
Up Last 30 Days	0	1	1	3
Up Last 60 Days	0	1	1	3
Down Last 7 Days	1	0	0	0
Down Last 30 Days	2	0	1	0
Down Last 60 Days	2	0	2	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.21	1.45	6.11	7.13
7 Days Ago	1.22	1.43	6.11	7.12
30 Days Ago	1.22	1.44	6.11	7.13
60 Days Ago	1.22	1.44	6.11	7.09
90 Days Ago	1.17	1.46	6.02	6.97

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.18	1.46	6.20	7.37
Zacks Consensus Estimate	1.21	1.45	6.11	7.13
Earnings ESP	-2.89%	0.97%	1.45%	3.30%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.44	1.18	1.14	0.98	NA
Estimate	1.27	1.26	0.83	1.04	NA
Difference	0.17	-0.08	0.31	-0.06	0.09
Surprise	13.39%	-6.35%	37.35%	-5.77%	9.66%

Quarterly Estimates By Analyst

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J & J Snack Foods Corp. (JJSF)
(Delayed Data from NSDQ)

$156.91 USD

-1.06 (-0.67%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
F Value | **C** Growth | **B** Momentum | **C** VGM

Industry Rank:

Bottom 30% (177 out of 253)

Industry: Food - Miscellaneous

J & J Snack Foods Corp. (JJSF) Quote Overview » Estimates » J & J Snack Foods Corp. (JJSF) Detailed Estimates

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Estimates

Next Report Date	4/26/21	Earnings ESP	0.00%
Current Quarter	0.12	Current Year	2.09
EPS Last Quarter	0.09	Next Year	4.11
Last EPS Surprise	-35.71%	EPS (TTM)	0.42
ABR	2.00	P/E (F1)	74.96

Growth Estimates	JJSF	IND	S&P
Current Qtr (03/2021)	-68.42	29.65	7.20
Next Qtr (06/2021)	292.50	3,563.35	120.51
Current Year (09/2021)	88.29	10.60	10.94
Next Year (09/2022)	96.65	15.50	14.74
Past 5 Years	-22.50	2.90	8.00
Next 5 Years	NA	9.60	NA
PE	74.96	30.00	22.71
PEG Ratio	NA	3.13	NA

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Premium Research for JJSF

Zacks Rank	Buy 2
Zacks Industry Rank	Bottom 30% (177 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	F Value | C Growth | B Momentum | C VGM
Earnings ESP	0.00%
Research Report for JJSF	Snapshot

(= Change in last 30 days)

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Research for JJSF

Chart for JJSF

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	240.80M	270.30M	1.04B	1.11B
# of Estimates	3	3	3	3
High Estimate	247.00M	282.20M	1.06B	1.15B
Low Estimate	237.50M	254.00M	1.02B	1.07B
Year ago Sales	272.04M	214.56M	1.02B	1.04B
Year over Year Growth Est.	-11.48%	25.98%	1.32%	6.91%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	0.12	0.77	2.09	4.11
# of Estimates	3	3	3	3
Most Recent Consensus	0.05	0.72	2.07	4.58
High Estimate	0.20	0.90	2.35	4.58
Low Estimate	0.05	0.69	1.86	3.64
Year ago EPS	0.38	-0.40	1.11	2.09
Year over Year Growth Est.	-68.42%	292.50%	88.29%	96.33%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	1	1
Up Last 30 Days	0	0	1	1
Up Last 60 Days	0	0	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	0.12	0.77	2.09	4.11
7 Days Ago	0.12	0.77	2.05	3.91
30 Days Ago	0.12	0.77	2.05	3.91
60 Days Ago	0.12	0.77	2.05	3.91
90 Days Ago	0.31	0.95	2.67	3.80

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	0.12	0.77	1.86	3.64
Zacks Consensus Estimate	0.12	0.77	2.09	4.11
Earnings ESP	0.00%	0.00%	-11.15%	-11.36%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.09	0.35	-0.40	0.38	NA
Estimate	0.14	0.05	-0.11	0.82	NA
Difference	-0.05	0.30	-0.29	-0.44	-0.12
Surprise	-35.71%	600.00%	-263.64%	-53.66%	61.75%

Quarterly Estimates By Analyst

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Jack Henry & Associates, Inc. (JKHY)
(Delayed Data from NSDQ)

$153.40 USD

-3.01 (-1.92%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfol Trades from $1

Zacks Rank:
3-Hold 3
Style Scores:
D Value | B Growth | B Momentum | C VGM
Industry Rank:
Top 43% (109 out of 253)
Industry: Electronics - Miscellaneous Services

Jack Henry & Associates, Inc. (JKHY) Quote Overview » Estimates » Jack Henry & Associates, Inc. (JKHY) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/3/21	Earnings ESP	0.00%
Current Quarter	0.86	Current Year	3.89
EPS Last Quarter	0.94	Next Year	4.38
Last EPS Surprise	6.82%	EPS (TTM)	3.89
ABR	2.30	P/E (F1)	39.47

Growth Estimates	JKHY	IND	S&P
Current Qtr (03/2021)	-10.42	-75.94	7.20
Next Qtr (06/2021)	12.50	-65.48	120.51
Current Year (06/2021)	0.78	4.00	10.94
Next Year (06/2022)	12.60	15.40	14.74
Past 5 Years	7.50	7.50	8.00
Next 5 Years	10.90	10.90	NA
PE	39.47	3.10	22.71
PEG Ratio	3.64	0.28	NA

Learn More About Estimate Research

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Premium Research for JKHY

Zacks Rank	Hold 3
Zacks Industry Rank	Top 43% (109 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	D Value | B Growth | B Momentum | C VGM
Earnings ESP	0.00%
Research Reports for JKHY	Analyst | Snapshot

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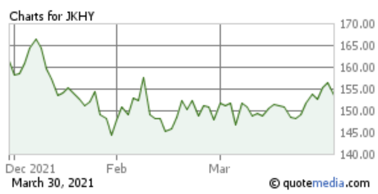
Research for JKHY

Chart for JKHY



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	436.61M	441.94M	1.75B	1.87B
# of Estimates	3	3	4	4
High Estimate	442.22M	450.30M	1.77B	1.89B
Low Estimate	427.00M	430.00M	1.72B	1.85B
Year ago Sales	429.41M	410.54M	1.70B	1.75B
Year over Year Growth Est.	1.68%	7.65%	2.90%	7.34%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	0.86	0.90	3.89	4.38
# of Estimates	4	4	6	6
Most Recent Consensus	0.86	0.89	3.88	4.35
High Estimate	0.86	0.93	3.90	4.46
Low Estimate	0.85	0.88	3.87	4.20
Year ago EPS	0.96	0.80	3.86	3.89
Year over Year Growth Est.	-10.42%	12.50%	0.78%	12.55%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	1
Up Last 60 Days	1	3	6	4
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	1	1	0	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	0.86	0.90	3.89	4.38
7 Days Ago	0.86	0.90	3.89	4.38
30 Days Ago	0.86	0.90	3.87	4.36
60 Days Ago	0.85	0.88	3.80	4.34
90 Days Ago	0.85	0.88	3.80	4.34

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	0.86	0.90	3.90	4.41
Zacks Consensus Estimate	0.86	0.90	3.89	4.38
Earnings ESP	0.00%	0.00%	0.34%	0.69%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.94	1.19	0.80	0.96	NA
Estimate	0.88	1.07	0.78	0.81	NA
Difference	0.06	0.12	0.02	0.15	0.09
Surprise	6.82%	11.21%	2.56%	18.52%	9.78%

Quarterly Estimates By Analyst

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NYSE and AMEX data is at least 20 minutes delayed. NASDAQ data is at least 15 minutes delayed.

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ManTech International Corporation (MANT)
(Delayed Data from NSDQ)

$86.67 USD

-0.53 (-0.61%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfol Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | C Growth | F Momentum | C VGM

Industry Rank:

Bottom 27% (184 out of 253)

Industry: Computer - Services

ManTech International Corporation (MANT) Quote Overview » Estimates » ManTech International Corporation (MANT) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	0.83	Current Year	3.55
EPS Last Quarter	0.89	Next Year	3.79
Last EPS Surprise	12.66%	EPS (TTM)	3.37
ABR	2.00	P/E (F1)	24.45

Growth Estimates	MANT	IND	S&P
Current Qtr (03/2021)	2.47	79.27	7.20
Next Qtr (06/2021)	5.95	212.43	120.51
Current Year (12/2021)	5.65	14.10	10.94
Next Year (12/2022)	6.76	20.50	14.74
Past 5 Years	19.50	9.40	8.00
Next 5 Years	5.10	10.00	NA
PE	24.45	0.80	22.71
PEG Ratio	4.83	0.08	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for MANT

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 27% (184 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	B Value | C Growth | F Momentum | C VGM
Earnings ESP	0.00%
Research Report for MANT	Snapshot

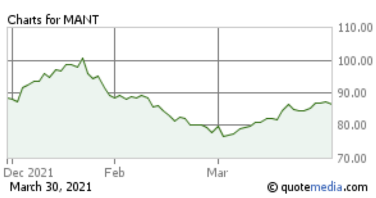
(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

More Premium Research » »

Research for MANT

Chart for MANT



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	648.59M	673.63M	2.69B	2.83B
# of Estimates	3	3	4	4
High Estimate	655.46M	681.28M	2.71B	2.86B
Low Estimate	641.50M	667.30M	2.66B	2.80B
Year ago Sales	610.91M	632.49M	2.52B	2.69B
Year over Year Growth Est.	6.17%	6.50%	6.70%	5.16%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.83	0.89	3.55	3.79
# of Estimates	5	3	6	5
Most Recent Consensus	0.84	0.88	3.55	3.73
High Estimate	0.87	0.90	3.58	3.93
Low Estimate	0.78	0.87	3.50	3.70
Year ago EPS	0.81	0.84	3.36	3.55
Year over Year Growth Est.	2.47%	5.95%	5.65%	6.79%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	1	4	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	0	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.83	0.89	3.55	3.79
7 Days Ago	0.83	0.89	3.55	3.79
30 Days Ago	0.83	0.89	3.55	3.79
60 Days Ago	0.85	0.88	3.50	3.73
90 Days Ago	0.85	0.88	3.50	3.73

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.83	0.89	3.55	3.79
Zacks Consensus Estimate	0.83	0.89	3.55	3.79
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.89	0.83	0.84	0.81	NA
Estimate	0.79	0.76	0.66	0.73	NA
Difference	0.10	0.07	0.18	0.08	0.11
Surprise	12.66%	9.21%	27.27%	10.96%	15.03%

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McCormick & Company, Incorporated (MKC)
(Delayed Data from NYSE)

$89.90 USD

-0.23 (-0.26%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
D Value | C Growth | B Momentum | C VGM

Industry Rank:

Bottom 30% (177 out of 253)

Industry: Food - Miscellaneous

McCormick & Company, Incorporated (MKC) Quote Overview » Estimates » McCormick & Company, Incorporated (MKC) Detailed Estimates

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Estimates

Next Report Date	6/24/21	Earnings ESP	0.00%
Current Quarter	0.67	Current Year	2.96
EPS Last Quarter	0.72	Next Year	3.09
Last EPS Surprise	26.32%	EPS (TTM)	3.01
ABR	3.43	P/E (F1)	30.41

Growth Estimates	MKC	IND	S&P
Current Qtr (05/2021)	-9.46	17.21	7.20
Next Qtr (08/2021)	1.30	29.65	120.51
Current Year (11/2021)	4.59	10.60	10.94
Next Year (11/2022)	4.39	15.50	14.74
Past 5 Years	9.80	2.90	8.00
Next 5 Years	6.60	9.60	NA
PE	30.41	30.00	22.71
PEG Ratio	4.63	3.13	NA

Learn More About Estimate Research

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Premium Research for MKC

Zacks Rank	Buy 2
Zacks Industry Rank	Bottom 30% (177 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	D Value | C Growth | B Momentum | C VGM
Earnings ESP	0.00%
Research Reports for MKC	Analyst | Snapshot

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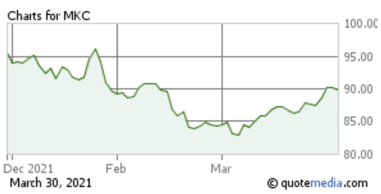
Research for MKC

Chart for MKC



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Sales Estimates

	Current Qtr (5/2021)	Next Qtr (8/2021)	Current Year (11/2021)	Next Year (11/2022)
Zacks Consensus Estimate	1.52B	1.50B	6.06B	6.15B
# of Estimates	4	4	4	4
High Estimate	1.57B	1.53B	6.06B	6.25B
Low Estimate	1.47B	1.47B	6.04B	6.09B
Year ago Sales	1.40B	1.43B	5.60B	6.06B
Year over Year Growth Est.	8.68%	4.89%	8.11%	1.61%

Earnings Estimates

	Current Qtr (5/2021)	Next Qtr (8/2021)	Current Year (11/2021)	Next Year (11/2022)
Zacks Consensus Estimate	0.67	0.78	2.96	3.09
# of Estimates	4	4	6	5
Most Recent Consensus	NA	0.68	2.95	3.15
High Estimate	0.69	0.81	3.00	3.15
Low Estimate	0.65	0.75	2.92	3.02
Year ago EPS	0.74	0.77	2.83	2.96
Year over Year Growth Est.	-9.46%	1.30%	4.59%	4.44%

Agreement - Estimate Revisions

	Current Qtr (5/2021)	Next Qtr (8/2021)	Current Year (11/2021)	Next Year (11/2022)
Up Last 7 Days	0	0	1	0
Up Last 30 Days	0	0	1	0
Up Last 60 Days	0	0	1	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (5/2021)	Next Qtr (8/2021)	Current Year (11/2021)	Next Year (11/2022)
Current	0.67	0.78	2.96	3.09
7 Days Ago	0.67	0.78	2.95	3.09
30 Days Ago	0.67	0.78	2.95	3.09
60 Days Ago	0.67	0.78	2.95	3.09
90 Days Ago	0.71	0.76	2.93	3.02

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (5/2021)	Next Qtr (8/2021)	Current Year (11/2021)	Next Year (11/2022)
Most Accurate Estimate	0.67	0.78	3.00	3.09
Zacks Consensus Estimate	0.67	0.78	2.96	3.09
Earnings ESP	0.00%	0.00%	1.46%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (2/2021)	Quarter Ending (11/2020)	Quarter Ending (8/2020)	Quarter Ending (5/2020)	Average Surprise
Reported	0.72	0.79	0.77	0.74	NA
Estimate	0.57	0.81	0.76	0.58	NA
Difference	0.15	-0.02	0.01	0.16	0.08
Surprise	26.32%	-2.47%	0.66%	26.72%	12.81%

Quarterly Estimates By Analyst

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Altria Group, Inc. (MO)
(Delayed Data from NYSE)

$51.26 USD

-1.04 (-1.99%)

Updated Mar 30, 2021 04:04 PM ET

Pre-Market: **$51.25** -0.01 (-0.02%)

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | C Growth | C Momentum | C VGM

Industry Rank:

8:38 AM ET

Top 30% (76 out of 253)

Industry: Tobacco

Altria Group, Inc. (MO) Quote Overview » Estimates » Altria Group, Inc. (MO) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	*BMO 4/29/21	Earnings ESP	0.14%
Current Quarter	1.04	Current Year	4.56
EPS Last Quarter	0.99	Next Year	4.81
Last EPS Surprise	-1.98%	EPS (TTM)	4.36
ABR	1.77	P/E (F1)	11.24

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	MO	IND	S&P
Current Qtr (03/2021)	-4.59	15.99	7.20
Next Qtr (06/2021)	6.42	11.71	120.51
Current Year (12/2021)	4.59	6.00	10.94
Next Year (12/2022)	5.48	8.00	14.74
Past 5 Years	9.20	4.40	8.00
Next 5 Years	4.00	5.60	NA
PE	11.24	7.60	22.71
PEG Ratio	2.81	1.36	NA

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Premium Research for MO

Zacks Rank	Hold 3
Zacks Industry Rank	Top 30% (76 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	B Value | C Growth | C Momentum | C VGM
Earnings ESP	0.14%
Research Reports for MO	Analyst | Snapshot

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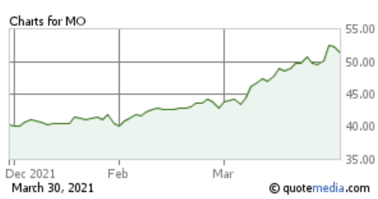
Research for MO

Chart for MO



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	4.97B	5.41B	21.38B	21.89B
# of Estimates	4	4	5	5
High Estimate	5.09B	5.50B	21.70B	23.08B
Low Estimate	4.84B	5.34B	21.14B	21.11B
Year ago Sales	5.05B	5.06B	20.84B	21.38B
Year over Year Growth Est.	-1.47%	6.80%	2.61%	2.38%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.04	1.16	4.56	4.81
# of Estimates	7	5	8	7
Most Recent Consensus	1.04	1.14	4.52	4.75
High Estimate	1.06	1.18	4.58	4.91
Low Estimate	1.00	1.14	4.52	4.66
Year ago EPS	1.09	1.09	4.36	4.56
Year over Year Growth Est.	-4.59%	6.42%	4.59%	5.51%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	0	1	1
Up Last 60 Days	1	1	1	1
Down Last 7 Days	0	0	1	1
Down Last 30 Days	1	1	2	2
Down Last 60 Days	2	1	4	3

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.04	1.16	4.56	4.81
7 Days Ago	1.04	1.17	4.57	4.84
30 Days Ago	1.04	1.17	4.57	4.84
60 Days Ago	1.05	1.17	4.59	4.84
90 Days Ago	1.05	1.15	4.57	4.71

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.04	1.16	4.54	4.72
Zacks Consensus Estimate	1.04	1.16	4.56	4.81
Earnings ESP	0.14%	-0.34%	-0.34%	-1.80%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.99	1.19	1.09	1.09	NA
Estimate	1.01	1.15	1.06	0.97	NA
Difference	-0.02	0.04	0.03	0.12	0.04
Surprise	-1.98%	3.48%	2.83%	12.37%	4.18%

Quarterly Estimates By Analyst

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MSA Safety Incorporporated (MSA)
(Delayed Data from NYSE)

$150.05 USD

+2.16 (1.46%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3
Style Scores:
D Value | B Growth | F Momentum | D VGM
Industry Rank:

Top 40% (101 out of 253)

Industry: Security and Safety Services

MSA Safety Incorporporated (MSA) Quote Overview » Estimates » MSA Safety Incorporporated (MSA) Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	0.94	Current Year	4.76
EPS Last Quarter	1.27	Next Year	5.42
Last EPS Surprise	23.30%	EPS (TTM)	4.50
ABR	2.33	P/E (F1)	31.55

Growth Estimates	MSA	IND	S&P
Current Qtr (03/2021)	-20.34	276.26	7.20
Next Qtr (06/2021)	1.80	35,091.66	120.51
Current Year (12/2021)	5.78	15.60	10.94
Next Year (12/2022)	13.87	10.10	14.74
Past 5 Years	11.40	8.60	8.00
Next 5 Years	NA	10.90	NA
PE	31.55	171.60	22.71
PEG Ratio	NA	15.74	NA

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See Earnings Report Transcript

Premium Research for MSA

Zacks Rank	Hold 3
Zacks Industry Rank	Top 40% (101 out of 253)
Zacks Sector Rank	Top 38% (6 out of 16)
Style Scores	D Value | B Growth | F Momentum | D VGM
Earnings ESP	0.00%
Research Report for MSA	Snapshot

(= Change in last 30 days)

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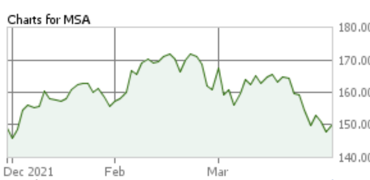
Research for MSA

Chart for MSA



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	304.12M	330.09M	1.39B	1.48B
# of Estimates	3	3	3	3
High Estimate	306.40M	330.97M	1.40B	1.49B
Low Estimate	300.40M	329.30M	1.38B	1.47B
Year ago Sales	341.15M	314.44M	1.35B	1.39B
Year over Year Growth Est.	-10.86%	4.98%	3.25%	6.23%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.94	1.13	4.76	5.42
# of Estimates	3	3	3	3
Most Recent Consensus	0.98	1.18	4.85	5.50
High Estimate	0.98	1.18	4.85	5.50
Low Estimate	0.88	1.10	4.62	5.35
Year ago EPS	1.18	1.11	4.50	4.76
Year over Year Growth Est.	-20.34%	1.80%	5.78%	13.93%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	1	1
Down Last 7 Days	2	2	2	2
Down Last 30 Days	3	3	3	3
Down Last 60 Days	1	1	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.94	1.13	4.76	5.42
7 Days Ago	1.05	1.17	4.86	5.51
30 Days Ago	1.12	1.19	4.93	5.56
60 Days Ago	1.15	1.15	4.79	5.33
90 Days Ago	1.15	1.15	4.79	5.33

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.94	1.13	4.76	5.42
Zacks Consensus Estimate	0.94	1.13	4.76	5.42
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.27	0.94	1.11	1.18	NA
Estimate	1.03	1.10	0.99	1.03	NA
Difference	0.24	-0.16	0.12	0.15	0.09
Surprise	23.30%	-14.55%	12.12%	14.56%	8.86%

Quarterly Estimates By Analyst

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MSCI Inc (MSCI)
(Delayed Data from NYSE)

$417.51 USD

-8.86 (-8.86%)

Updated Mar 30, 2021 04:02 PM ET

Add to portfolio

Zacks Rank:
3-Hold 3

Style Scores:
D Value | B Growth | B Momentum | C VGM

Industry Rank:

Top 40% (101 out of 253)

Industry: Business - Software Services

MSCI Inc (MSCI) Quote Overview » Estimates » MSCI Inc (MSCI) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/27/21	Earnings ESP	-3.25%
Current Quarter	2.27	Current Year	9.30
EPS Last Quarter	1.96	Next Year	10.46
Last EPS Surprise	-1.01%	EPS (TTM)	7.83
ABR	2.00	P/E (F1)	44.87

Growth Estimates	MSCI	IND	S&P
Current Qtr (03/2021)	19.47	35.04	7.20
Next Qtr (06/2021)	28.81	21.82	120.51
Current Year (12/2021)	18.77	4.20	10.94
Next Year (12/2022)	12.47	14.30	14.74
Past 5 Years	25.80	11.60	8.00
Next 5 Years	NA	15.80	NA
PE	44.87	NA	22.71
PEG Ratio	NA	NA	NA

Learn More About Estimate Research

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Premium Research for MSCI

Zacks Rank	Hold 3
Zacks Industry Rank	Top 40% (101 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	D Value | B Growth | B Momentum | C VGM
Earnings ESP	-3.25%
Research Reports for MSCI	Analyst | Snapshot

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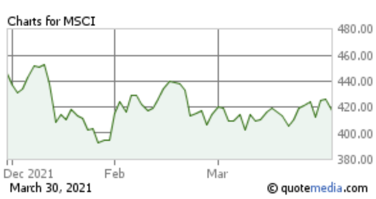
Research for MSCI

Chart for MSCI



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	467.80M	476.92M	1.93B	2.11B
# of Estimates	4	4	5	5
High Estimate	477.00M	489.00M	1.96B	2.14B
Low Estimate	463.20M	469.00M	1.91B	2.06B
Year ago Sales	416.78M	409.62M	1.70B	1.93B
Year over Year Growth Est.	12.24%	16.43%	13.76%	9.57%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	2.27	2.28	9.30	10.46
# of Estimates	5	5	5	5
Most Recent Consensus	2.44	2.25	9.54	10.75
High Estimate	2.44	2.34	9.54	10.75
Low Estimate	2.17	2.22	9.10	9.99
Year ago EPS	1.90	1.77	7.83	9.30
Year over Year Growth Est.	19.47%	28.81%	18.77%	12.39%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	3	3	3	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	2.27	2.28	9.30	10.46
7 Days Ago	2.27	2.28	9.30	10.46
30 Days Ago	2.28	2.27	9.26	10.37
60 Days Ago	2.19	2.23	9.08	10.26
90 Days Ago	2.01	2.08	8.43	9.55

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	2.20	2.29	9.31	10.52
Zacks Consensus Estimate	2.27	2.28	9.30	10.46
Earnings ESP	-3.25%	0.62%	0.06%	0.61%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.96	2.20	1.77	1.90	NA
Estimate	1.98	1.83	1.70	1.68	NA
Difference	-0.02	0.37	0.07	0.22	0.16
Surprise	-1.01%	20.22%	4.12%	13.10%	9.11%

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Motorola Solutions, Inc. (MSI)
(Delayed Data from NYSE)

$186.61 USD

-2.27 (-1.20%)

Updated Mar 30, 2021 04:04 PM ET

Add to portfolio Trades from $1

Zacks Rank:
4-Sell 4

Style Scores:
B Value | B Growth | B Momentum | A VGM

Industry Rank:

Top 34% (87 out of 253)

Industry: Wireless Equipment

Motorola Solutions, Inc. (MSI) Quote Overview » Estimates » Motorola Solutions, Inc. (MSI) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	5/6/21	Earnings ESP	0.00%
Current Quarter	1.62	Current Year	8.63
EPS Last Quarter	2.86	Next Year	9.59
Last EPS Surprise	4.38%	EPS (TTM)	7.69
ABR	1.50	P/E (F1)	21.63

Growth Estimates	MSI	IND	S&P
Current Qtr (03/2021)	8.72	163.99	7.20
Next Qtr (06/2021)	23.74	69.88	120.51
Current Year (12/2021)	12.22	29.00	10.94
Next Year (12/2022)	11.12	29.30	14.74
Past 5 Years	15.90	1.80	8.00
Next 5 Years	9.00	16.40	NA
PE	21.63	7.70	22.71
PEG Ratio	2.40	0.47	NA

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Premium Research for MSI

Zacks Rank	Sell 4
Zacks Industry Rank	Top 34% (87 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	B Value | B Growth | B Momentum | A VGM
Earnings ESP	0.00%
Research Reports for MSI	Analyst | Snapshot

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.75B	1.83B	8.02B	8.48B
# of Estimates	5	5	5	5
High Estimate	1.75B	1.93B	8.09B	8.59B
Low Estimate	1.75B	1.73B	7.97B	8.37B
Year ago Sales	1.66B	1.62B	7.41B	8.02B
Year over Year Growth Est.	5.76%	13.16%	8.20%	5.75%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.62	1.72	8.63	9.59
# of Estimates	6	5	7	7
Most Recent Consensus	1.61	1.75	8.67	9.52
High Estimate	1.67	1.91	8.70	10.00
Low Estimate	1.61	1.56	8.55	9.35
Year ago EPS	1.49	1.39	7.69	8.63
Year over Year Growth Est.	8.72%	23.74%	12.22%	11.17%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	3	0	5	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	3	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.62	1.72	8.63	9.59
7 Days Ago	1.62	1.72	8.63	9.59
30 Days Ago	1.62	1.72	8.63	9.59
60 Days Ago	1.56	1.84	8.56	9.40
90 Days Ago	1.56	1.84	8.56	9.49

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.62	1.72	8.63	9.59
Zacks Consensus Estimate	1.62	1.72	8.63	9.59
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	2.86	1.95	1.39	1.49	NA
Estimate	2.74	1.76	1.20	1.25	NA
Difference	0.12	0.19	0.19	0.24	0.19
Surprise	4.38%	10.80%	15.83%	19.20%	12.55%

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Vail Resorts, Inc. (MTN)
(Delayed Data from NYSE)

$290.16 USD

+6.03 (2.12%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfo Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | F Growth | A Momentum | D VGM

Industry Rank:

Bottom 19% (205 out of 253)

Industry: Leisure and Recreation Services

Vail Resorts, Inc. (MTN) Quote Overview » Estimates » Vail Resorts, Inc. (MTN) Detailed Estimates

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Estimates

Next Report Date	6/3/21	Earnings ESP	0.00%
Current Quarter	5.68	Current Year	2.31
EPS Last Quarter	3.62	Next Year	7.32
Last EPS Surprise	65.30%	EPS (TTM)	-0.09
ABR	2.64	P/E (F1)	125.37

Growth Estimates	MTN	IND	S&P
Current Qtr (04/2021)	51.87	63.62	7.20
Next Qtr (07/2021)	14.66	62.32	120.51
Current Year (07/2021)	-27.59	30.00	10.94
Next Year (07/2022)	216.88	44.90	14.74
Past 5 Years	NA	-17.70	8.00
Next 5 Years	NA	22.20	NA
PE	125.37	34.50	22.71
PEG Ratio	NA	1.55	NA

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Premium Research for MTN

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 19% (205 out of 253)
Zacks Sector Rank	Bottom 38% (10 out of 16)
Style Scores	D Value | F Growth | A Momentum | D VGM
Earnings ESP	0.00%
Research Reports for MTN	Analyst | Snapshot

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Sales Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Zacks Consensus Estimate	808.42M	184.22M	1.81B	2.46B
# of Estimates	8	8	8	8
High Estimate	852.70M	204.82M	1.87B	2.63B
Low Estimate	720.06M	165.64M	1.74B	2.32B
Year ago Sales	694.09M	77.21M	1.96B	1.81B
Year over Year Growth Est.	16.47%	138.59%	-7.88%	36.12%

Earnings Estimates

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Zacks Consensus Estimate	5.68	-3.26	2.31	7.32
# of Estimates	9	8	9	9
Most Recent Consensus	5.72	-3.38	2.22	6.59
High Estimate	6.13	-3.06	2.79	8.45
Low Estimate	5.35	-3.58	1.81	6.36
Year ago EPS	3.74	-3.82	3.19	2.31
Year over Year Growth Est.	51.87%	14.66%	-27.59%	216.79%

Agreement - Estimate Revisions

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	8	1	9	6
Up Last 60 Days	8	1	9	6
Down Last 7 Days	0	0	0	2
Down Last 30 Days	0	7	0	3
Down Last 60 Days	0	7	0	3

Magnitude - Consensus Estimate Trend

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Current	5.68	-3.26	2.31	7.32
7 Days Ago	5.68	-3.26	2.31	7.36
30 Days Ago	3.51	-3.05	-1.14	6.88
60 Days Ago	3.51	-3.05	-1.14	6.88
90 Days Ago	3.44	-3.01	-0.94	6.75

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (4/2021)	Next Qtr (7/2021)	Current Year (7/2021)	Next Year (7/2022)
Most Accurate Estimate	5.68	-3.26	2.31	7.32
Zacks Consensus Estimate	5.68	-3.26	2.31	7.32
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (1/2021)	Quarter Ending (10/2020)	Quarter Ending (7/2020)	Quarter Ending (4/2020)	Average Surprise
Reported	3.62	-3.63	-3.82	3.74	NA
Estimate	2.19	-3.59	-3.56	2.67	NA
Difference	1.43	-0.04	-0.26	1.07	0.55
Surprise	65.30%	-1.11%	-7.30%	40.07%	24.24%

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Maxim Integrated Products, Inc. (MXIM)
(Delayed Data from NSDQ)

$89.92 USD

-1.12 (-1.12%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | C Growth | C Momentum | C VGM

Industry Rank:

Top 14% (35 out of 253)

Industry: Semiconductor - Analog and Mixed

Maxim Integrated Products, Inc. (MXIM) Quote Overview » Estimates » Maxim Integrated Products, Inc. (MXIM) Detailed Estimates

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Estimates

Next Report Date	4/27/21	Earnings ESP	0.00%
Current Quarter	0.75	Current Year	2.98
EPS Last Quarter	0.73	Next Year	3.26
Last EPS Surprise	8.96%	EPS (TTM)	2.64
ABR	2.64	P/E (F1)	30.13

Growth Estimates	MXIM	IND	S&P
Current Qtr (03/2021)	22.95	321.54	7.20
Next Qtr (06/2021)	37.93	342.17	120.51
Current Year (06/2021)	31.86	17.00	10.94
Next Year (06/2022)	9.40	20.50	14.74
Past 5 Years	7.30	1.30	8.00
Next 5 Years	10.00	22.90	NA
PE	30.13	45.90	22.71
PEG Ratio	3.01	2.00	NA

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Premium Research for MXIM

Zacks Rank	Hold 3
Zacks Industry Rank	Top 14% (35 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	D Value | C Growth | C Momentum | C VGM
Earnings ESP	0.00%
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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	641.30M	664.38M	2.55B	2.72B
# of Estimates	8	8	9	9
High Estimate	648.10M	682.00M	2.57B	2.77B
Low Estimate	634.60M	650.00M	2.52B	2.65B
Year ago Sales	561.92M	545.37M	2.19B	2.55B
Year over Year Growth Est.	14.13%	21.82%	16.36%	6.75%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	0.75	0.80	2.98	3.26
# of Estimates	9	8	9	9
Most Recent Consensus	0.73	0.81	3.00	3.24
High Estimate	0.77	0.82	3.04	3.38
Low Estimate	0.70	0.77	2.89	3.10
Year ago EPS	0.61	0.58	2.26	2.98
Year over Year Growth Est.	22.95%	37.93%	31.86%	9.36%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	1	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	0.75	0.80	2.98	3.26
7 Days Ago	0.75	0.80	2.98	3.26
30 Days Ago	0.75	0.80	2.98	3.26
60 Days Ago	0.74	0.79	2.97	3.26
90 Days Ago	0.70	0.76	2.82	3.17

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	0.75	0.80	2.98	3.26
Zacks Consensus Estimate	0.75	0.80	2.98	3.26
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.73	0.72	0.58	0.61	NA
Estimate	0.67	0.58	0.58	0.57	NA
Difference	0.06	0.14	0.00	0.04	0.06
Surprise	8.96%	24.14%	0.00%	7.02%	10.03%

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Northrop Grumman Corporation (NOC)
(Delayed Data from NYSE)

$322.68 USD

-0.47 (-2.15%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
A Value | A Growth | D Momentum | A VGM

Industry Rank:

Bottom 42% (147 out of 253)

Industry: Aerospace - Defense

Northrop Grumman Corporation (NOC) Quote Overview » Estimates » Northrop Grumman Corporation (NOC) Detailed Estimates

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Estimates

Next Report Date	*BMO 4/29/21	Earnings ESP	2.88%
Current Quarter	5.47	Current Year	23.60
EPS Last Quarter	6.59	Next Year	25.35
Last EPS Surprise	15.61%	EPS (TTM)	23.64
ABR	1.58	P/E (F1)	13.68

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	NOC	IND	S&P
Current Qtr (03/2021)	6.21	54.86	7.20
Next Qtr (06/2021)	-3.33	768.97	120.51
Current Year (12/2021)	-0.21	24.40	10.94
Next Year (12/2022)	7.42	19.70	14.74
Past 5 Years	19.20	7.30	8.00
Next 5 Years	NA	10.30	NA
PE	13.68	-125.70	22.71
PEG Ratio	NA	-12.20	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for NOC

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 42% (147 out of 253)
Zacks Sector Rank	Top 25% (4 out of 16)
Style Scores	A Value | A Growth | D Momentum | A VGM
Earnings ESP	2.88%
Research Reports for NOC	Analyst | Snapshot

(= Change in last 30 days)

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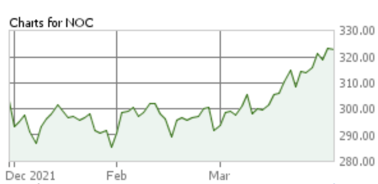
Research for NOC

Chart for NOC



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	8.52B	8.71B	35.50B	37.09B
# of Estimates	5	5	6	6
High Estimate	8.69B	8.87B	35.55B	37.96B
Low Estimate	8.32B	8.56B	35.45B	35.45B
Year ago Sales	8.62B	8.88B	36.80B	35.50B
Year over Year Growth Est.	-1.14%	-1.91%	-3.53%	4.48%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	5.47	5.81	23.60	25.35
# of Estimates	8	6	8	8
Most Recent Consensus	5.63	5.78	23.52	25.21
High Estimate	5.64	5.89	24.00	27.93
Low Estimate	5.24	5.62	23.25	23.10
Year ago EPS	5.15	6.01	23.65	23.60
Year over Year Growth Est.	6.21%	-3.33%	-0.21%	7.43%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	1	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	1	1	0
Down Last 60 Days	2	2	4	2

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	5.47	5.81	23.60	25.35
7 Days Ago	5.47	5.81	23.60	25.35
30 Days Ago	5.50	5.85	23.65	25.37
60 Days Ago	5.54	5.86	23.85	25.72
90 Days Ago	5.52	5.90	24.00	26.62

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	5.63	5.78	23.52	25.21
Zacks Consensus Estimate	5.47	5.81	23.60	25.35
Earnings ESP	2.88%	-0.46%	-0.32%	-0.55%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	6.59	5.89	6.01	5.15	NA
Estimate	5.70	5.60	5.36	5.42	NA
Difference	0.89	0.29	0.65	-0.27	0.39
Surprise	15.61%	5.18%	12.13%	-4.98%	6.99%

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Old Dominion Freight Line, Inc. (ODFL)
(Delayed Data from NSDQ)

$240.61 USD

+5.27 (7.24%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | B Growth | B Momentum | C VGM

Industry Rank:

Top 21% (53 out of 253)

Industry: Transportation - Truck

Old Dominion Freight Line, Inc. (ODFL) Quote Overview » Estimates » Old Dominion Freight Line, Inc. (ODFL) Detailed Estimates

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Estimates

Next Report Date	*BMO 4/22/21	Earnings ESP	-0.31%
Current Quarter	1.60	Current Year	7.22
EPS Last Quarter	1.61	Next Year	8.21
Last EPS Surprise	2.55%	EPS (TTM)	5.68
ABR	2.35	P/E (F1)	33.35

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	ODFL	IND	S&P
Current Qtr (03/2021)	44.14	54.58	7.20
Next Qtr (06/2021)	46.40	54.95	120.51
Current Year (12/2021)	27.11	25.80	10.94
Next Year (12/2022)	13.71	10.40	14.74
Past 5 Years	19.80	7.70	8.00
Next 5 Years	15.30	15.10	NA
PE	33.35	21.10	22.71
PEG Ratio	2.18	1.40	NA

Learn More About Estimate Research

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Premium Research for ODFL

Zacks Rank	Hold 3
Zacks Industry Rank	Top 21% (53 out of 253)
Zacks Sector Rank	Bottom 31% (11 out of 16)
Style Scores	D Value | B Growth | B Momentum | C VGM
Earnings ESP	-0.31%
Research Reports for ODFL	Analyst | Snapshot

(= Change in last 30 days)

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Research for ODFL

Chart for ODFL

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.12B	1.18B	4.66B	5.09B
# of Estimates	3	3	5	5
High Estimate	1.15B	1.21B	4.79B	5.30B
Low Estimate	1.09B	1.13B	4.50B	4.88B
Year ago Sales	987.36M	896.21M	4.02B	4.66B
Year over Year Growth Est.	13.22%	31.65%	15.96%	9.35%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.60	1.83	7.22	8.21
# of Estimates	6	4	8	8
Most Recent Consensus	1.61	1.94	7.12	7.87
High Estimate	1.63	1.94	7.60	8.95
Low Estimate	1.57	1.76	7.00	7.78
Year ago EPS	1.11	1.25	5.68	7.22
Year over Year Growth Est.	44.14%	46.40%	27.11%	13.78%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	2
Up Last 60 Days	3	2	7	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	0	1	0
Down Last 60 Days	0	1	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.60	1.83	7.22	8.21
7 Days Ago	1.60	1.83	7.22	8.21
30 Days Ago	1.60	1.86	7.18	8.15
60 Days Ago	1.45	1.77	6.87	8.07
90 Days Ago	1.41	1.69	6.82	7.92

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.60	1.83	7.45	8.38
Zacks Consensus Estimate	1.60	1.83	7.22	8.21
Earnings ESP	-0.31%	0.00%	3.26%	2.01%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.61	1.71	1.25	1.11	NA
Estimate	1.57	1.51	1.03	1.11	NA
Difference	0.04	0.20	0.22	0.00	0.12
Surprise	2.55%	13.25%	21.36%	0.00%	9.29%

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PerkinElmer, Inc. (PKI)
(Delayed Data from NYSE)

$127.73 USD

-0.92 (-0.72%)

Updated Mar 30, 2021 04:03 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | A Growth | D Momentum | A VGM

Industry Rank:

Top 20% (50 out of 253)

Industry: Instruments - Scientific

PerkinElmer, Inc. (PKI) Quote Overview » Estimates » PerkinElmer, Inc. (PKI) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	5/4/21	Earnings ESP	-4.82%
Current Quarter	3.03	Current Year	8.52
EPS Last Quarter	3.96	Next Year	5.90
Last EPS Surprise	9.70%	EPS (TTM)	8.29
ABR	2.00	P/E (F1)	15.00

Growth Estimates	PKI	IND	S&P
Current Qtr (03/2021)	352.24	224.63	7.20
Next Qtr (06/2021)	50.32	44.81	120.51
Current Year (12/2021)	2.65	-7.00	10.94
Next Year (12/2022)	-30.75	10.10	14.74
Past 5 Years	26.30	6.80	8.00
Next 5 Years	19.50	11.40	NA
PE	15.00	27.90	22.71
PEG Ratio	0.77	2.45	NA

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See Earnings Report Transcript

Premium Research for PKI

Zacks Rank	Hold 3
Zacks Industry Rank	Top 20% (50 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	B Value | A Growth | D Momentum | A VGM
Earnings ESP	-4.82%
Research Reports for PKI	Analyst | Snapshot

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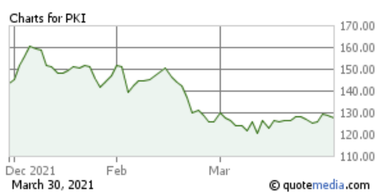
Research for PKI

Chart for PKI



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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.19B	1.05B	4.09B	3.47B
# of Estimates	5	5	5	5
High Estimate	1.21B	1.10B	4.19B	3.57B
Low Estimate	1.15B	979.70M	4.04B	3.40B
Year ago Sales	652.40M	811.72M	3.78B	4.09B
Year over Year Growth Est.	82.15%	29.29%	8.13%	-15.04%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	3.03	2.36	8.52	5.90
# of Estimates	7	5	7	7
Most Recent Consensus	2.88	2.37	8.02	5.90
High Estimate	3.14	2.54	8.75	6.40
Low Estimate	2.88	2.14	8.02	5.36
Year ago EPS	0.67	1.57	8.30	8.52
Year over Year Growth Est.	352.24%	50.32%	2.65%	-30.68%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	2	2	5	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	1	1	1
Down Last 60 Days	1	1	2	4

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	3.03	2.36	8.52	5.90
7 Days Ago	3.03	2.36	8.52	5.90
30 Days Ago	3.05	2.39	8.70	6.02
60 Days Ago	2.64	2.23	8.33	6.31
90 Days Ago	2.19	1.84	7.81	6.15

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	2.88	2.37	8.02	5.90
Zacks Consensus Estimate	3.03	2.36	8.52	5.90
Earnings ESP	-4.82%	0.34%	-5.82%	-0.02%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	3.96	2.09	1.57	0.67	NA
Estimate	3.61	1.42	0.93	0.47	NA
Difference	0.35	0.67	0.64	0.20	0.47
Surprise	9.70%	47.18%	68.82%	42.55%	42.06%

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Philip Morris International Inc. (PM)
(Delayed Data from NYSE)

$89.35 USD

-1.64 (-1.49%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | A Growth | F Momentum | B VGM

Industry Rank:

Top 30% (76 out of 253)

Industry: Tobacco

Philip Morris International Inc. (PM) Quote Overview » Estimates » Philip Morris International Inc. (PM) Detailed Estimates

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Estimates

Next Report Date	*BMO4/20/21	Earnings ESP	-0.92%
Current Quarter	1.40	Current Year	5.98
EPS Last Quarter	1.26	Next Year	6.53
Last EPS Surprise	2.44%	EPS (TTM)	5.18
ABR	1.96	P/E (F1)	14.95

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	PM	IND	S&P
Current Qtr (03/2021)	15.70	15.99	7.20
Next Qtr (06/2021)	20.93	11.71	120.51
Current Year (12/2021)	15.67	6.00	10.94
Next Year (12/2022)	9.20	8.00	14.74
Past 5 Years	1.10	4.40	8.00
Next 5 Years	8.30	5.60	NA
PE	14.95	7.60	22.71
PEG Ratio	1.79	1.36	NA

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Premium Research for PM

Zacks Rank	Hold 3
Zacks Industry Rank	Top 30% (76 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	B Value | A Growth | F Momentum | B VGM
Earnings ESP	-0.92%
Research Reports for PM	Analyst | Snapshot

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Research for PM

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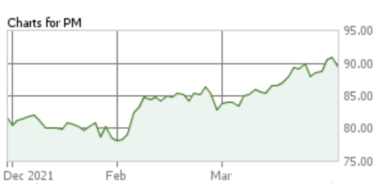

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	7.35B	7.87B	31.24B	33.04B
# of Estimates	4	4	5	6
High Estimate	7.90B	8.11B	31.78B	34.23B
Low Estimate	7.02B	7.59B	30.86B	31.78B
Year ago Sales	7.15B	6.65B	28.69B	31.24B
Year over Year Growth Est.	2.69%	18.33%	8.87%	5.77%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.40	1.56	5.98	6.53
# of Estimates	7	5	8	8
Most Recent Consensus	1.39	1.63	5.93	6.40
High Estimate	1.42	1.63	6.03	6.65
Low Estimate	1.39	1.52	5.93	6.40
Year ago EPS	1.21	1.29	5.17	5.98
Year over Year Growth Est.	15.70%	20.93%	15.67%	9.30%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	1	1
Up Last 30 Days	0	0	1	1
Up Last 60 Days	4	3	8	4
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	1	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.40	1.56	5.98	6.53
7 Days Ago	1.41	1.54	5.96	6.51
30 Days Ago	1.41	1.54	5.96	6.51
60 Days Ago	1.28	1.50	5.80	6.37
90 Days Ago	1.27	1.50	5.71	6.30

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.39	1.63	5.93	6.40
Zacks Consensus Estimate	1.40	1.56	5.98	6.53
Earnings ESP	-0.92%	4.62%	-0.75%	-2.01%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.26	1.42	1.29	1.21	NA
Estimate	1.23	1.36	1.09	1.13	NA
Difference	0.03	0.06	0.20	0.08	0.09
Surprise	2.44%	4.41%	18.35%	7.08%	8.07%

Annual Estimates By Analyst

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Pool Corporation (POOL)
(Delayed Data from NSDQ)

$342.37 USD

-1.11 (-1.11%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfo Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | B Growth | D Momentum | C VGM

Industry Rank:

Top 8% (19 out of 253)

Industry: Leisure and Recreation Products

Pool Corporation (POOL) Quote Overview » Estimates » Pool Corporation (POOL) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/22/21	Earnings ESP	0.00%
Current Quarter	1.20	Current Year	9.41
EPS Last Quarter	1.45	Next Year	10.30
Last EPS Surprise	88.31%	EPS (TTM)	8.74
ABR	1.86	P/E (F1)	36.37

Growth Estimates	POOL	IND	S&P
Current Qtr (03/2021)	69.01	506.11	7.20
Next Qtr (06/2021)	16.02	51.66	120.51
Current Year (12/2021)	11.76	12.50	10.94
Next Year (12/2022)	9.46	5.80	14.74
Past 5 Years	23.10	8.00	8.00
Next 5 Years	NA	21.20	NA
PE	36.37	25.70	22.71
PEG Ratio	NA	1.21	NA

Learn More About Estimate Research

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Premium Research for POOL

Zacks Rank	Hold 3
Zacks Industry Rank	Top 8% (19 out of 253)
Zacks Sector Rank	Bottom 38% (10 out of 16)
Style Scores	D Value | B Growth | D Momentum | C VGM
Earnings ESP	0.00%
Research Reports for POOL	Analyst | Snapshot

(= Change in last 30 days)

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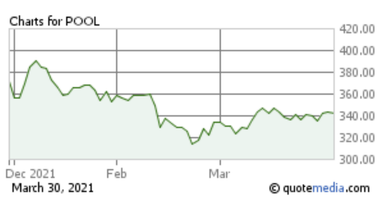
Research for POOL

Chart for POOL



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	821.06M	1.50B	4.33B	4.58B
# of Estimates	4	4	4	4
High Estimate	845.00M	1.56B	4.40B	4.66B
Low Estimate	794.21M	1.44B	4.30B	4.54B
Year ago Sales	677.29M	1.28B	3.94B	4.33B
Year over Year Growth Est.	21.23%	17.43%	10.10%	5.62%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.20	4.49	9.41	10.30
# of Estimates	4	4	4	5
Most Recent Consensus	1.19	4.43	9.45	10.35
High Estimate	1.30	4.84	9.74	10.50
Low Estimate	1.10	4.25	9.15	10.09
Year ago EPS	0.71	3.87	8.42	9.41
Year over Year Growth Est.	69.01%	16.02%	11.76%	9.41%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	0
Up Last 60 Days	2	1	5	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	1	2	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.20	4.49	9.41	10.30
7 Days Ago	1.20	4.49	9.41	10.30
30 Days Ago	1.20	4.49	9.29	10.35
60 Days Ago	1.08	4.32	9.02	9.64
90 Days Ago	1.06	4.21	8.97	9.84

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.20	4.49	9.15	10.09
Zacks Consensus Estimate	1.20	4.49	9.41	10.30
Earnings ESP	0.00%	0.00%	-2.79%	-2.02%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.45	2.71	3.87	0.71	NA
Estimate	0.77	2.14	3.09	0.65	NA
Difference	0.68	0.57	0.78	0.06	0.52
Surprise	88.31%	26.64%	25.24%	9.23%	37.36%

Quarterly Estimates By Analyst

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Post Holdings, Inc. (POST)
(Delayed Data from NYSE)

$106.69 USD

-0.59 (-0.55%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
B Value | C Growth | F Momentum | B VGM

Industry Rank:

Bottom 30% (177 out of 253)

Industry: Food - Miscellaneous

Post Holdings, Inc. (POST) Quote Overview » Estimates » Post Holdings, Inc. (POST) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

Enter Symbol

Estimates

Next Report Date	5/6/21	Earnings ESP	0.00%
Current Quarter	0.55	Current Year	3.63
EPS Last Quarter	0.72	Next Year	4.90
Last EPS Surprise	12.50%	EPS (TTM)	2.70
ABR	1.00	P/E (F1)	29.41

Growth Estimates	POST	IND	S&P
Current Qtr (03/2021)	-15.38	29.65	7.20
Next Qtr (06/2021)	54.67	3,563.35	120.51
Current Year (09/2021)	33.95	10.60	10.94
Next Year (09/2022)	34.99	15.50	14.74
Past 5 Years	23.50	2.90	8.00
Next 5 Years	NA	9.60	NA
PE	29.41	30.00	22.71
PEG Ratio	NA	3.13	NA

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Premium Research for POST

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 30% (177 out of 253)
Zacks Sector Rank	Bottom 19% (13 out of 16)
Style Scores	B Value | C Growth | F Momentum | B VGM
Earnings ESP	0.00%
Research Reports for POST	Analyst | Snapshot

(= Change in last 30 days)

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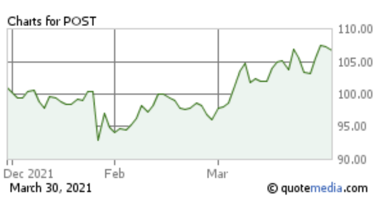
Research for POST

Chart for POST



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	1.41B	1.46B	5.87B	6.16B
# of Estimates	4	4	4	4
High Estimate	1.45B	1.54B	5.99B	6.27B
Low Estimate	1.37B	1.38B	5.76B	6.04B
Year ago Sales	1.49B	1.34B	5.70B	5.87B
Year over Year Growth Est.	-5.57%	9.37%	2.93%	4.99%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	0.55	1.16	3.63	4.90
# of Estimates	4	4	4	4
Most Recent Consensus	0.54	1.01	3.48	4.47
High Estimate	0.61	1.63	4.25	5.30
Low Estimate	0.47	0.97	3.20	4.47
Year ago EPS	0.65	0.75	2.71	3.63
Year over Year Growth Est.	-15.38%	54.67%	33.95%	35.12%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	1	1	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	3	3	3	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	0.55	1.16	3.63	4.90
7 Days Ago	0.55	1.16	3.63	4.90
30 Days Ago	0.55	1.16	3.63	4.90
60 Days Ago	0.65	1.23	3.70	4.88
90 Days Ago	0.66	1.23	3.69	4.86

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	0.55	1.16	3.63	4.90
Zacks Consensus Estimate	0.55	1.16	3.63	4.90
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.72	0.58	0.75	0.65	NA
Estimate	0.64	0.74	0.67	0.91	NA
Difference	0.08	-0.16	0.08	-0.26	-0.07
Surprise	12.50%	-21.62%	11.94%	-28.57%	-6.44%

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RLI Corp. (RLI)
(Delayed Data from NYSE)

$112.40 USD

-0.43 (-0.38%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
F Value | C Growth | B Momentum | D VGM

Industry Rank:

Top 43% (108 out of 253)

Industry: Insurance - Property and Casualty

RLI Corp. (RLI) Quote Overview » Estimates » RLI Corp. (RLI) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/20/21	Earnings ESP	0.00%
Current Quarter	0.74	Current Year	2.83
EPS Last Quarter	0.75	Next Year	3.13
Last EPS Surprise	33.93%	EPS (TTM)	2.60
ABR	2.50	P/E (F1)	39.79

Growth Estimates	RLI	IND	S&P
Current Qtr (03/2021)	12.12	113.51	7.20
Next Qtr (06/2021)	-1.30	-79.36	120.51
Current Year (12/2021)	9.27	10.00	10.94
Next Year (12/2022)	10.60	14.50	14.74
Past 5 Years	1.50	1.80	8.00
Next 5 Years	NA	9.40	NA
PE	39.79	17.70	22.71
PEG Ratio	NA	1.88	NA

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Premium Research for RLI

Zacks Rank	Buy 2
Zacks Industry Rank	Top 43% (108 out of 253)
Zacks Sector Rank	Top 13% (2 out of 16)
Style Scores	F Value | C Growth | B Momentum | D VGM
Earnings ESP	0.00%
Research Reports for RLI	Analyst | Snapshot

(= Change in last 30 days)

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Research for RLI

Chart for RLI

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	242.15M	247.47M	1.00B	1.09B
# of Estimates	1	1	1	1
High Estimate	242.15M	247.47M	1.00B	1.09B
Low Estimate	242.15M	247.47M	1.00B	1.09B
Year ago Sales	233.36M	225.65M	933.64M	1.00B
Year over Year Growth Est.	3.77%	9.67%	7.52%	8.91%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.74	0.76	2.83	3.13
# of Estimates	1	1	2	2
Most Recent Consensus	0.74	0.76	2.75	2.90
High Estimate	0.74	0.76	2.90	3.35
Low Estimate	0.74	0.76	2.75	2.90
Year ago EPS	0.66	0.77	2.59	2.83
Year over Year Growth Est.	12.12%	-1.30%	9.27%	10.60%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	1
Up Last 60 Days	0	0	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.74	0.76	2.83	3.13
7 Days Ago	0.74	0.76	2.83	3.13
30 Days Ago	0.74	0.76	2.78	3.08
60 Days Ago	0.74	0.76	2.75	3.05
90 Days Ago	0.69	0.71	2.60	3.35

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.74	0.76	2.75	2.90
Zacks Consensus Estimate	0.74	0.76	2.83	3.13
Earnings ESP	0.00%	0.00%	-2.66%	-7.20%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.75	0.42	0.77	0.66	NA
Estimate	0.56	-0.10	0.45	0.73	NA
Difference	0.19	0.52	0.32	-0.07	0.24
Surprise	33.93%	520.00%	71.11%	-9.59%	153.86%

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Rollins, Inc. (ROL)
(Delayed Data from NYSE)

$33.92 USD

-0.26 (-0.76%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
D Value | A Growth | C Momentum | C VGM

Industry Rank:

Top 30% (76 out of 253)

Industry: Building Products - Maintenance Service

Rollins, Inc. (ROL) Quote Overview » Estimates » Rollins, Inc. (ROL) Detailed Estimates

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Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	0.11	Current Year	0.62
EPS Last Quarter	0.13	Next Year	0.67
Last EPS Surprise	18.18%	EPS (TTM)	0.54
ABR	2.33	P/E (F1)	55.01

Growth Estimates	ROL	IND	S&P
Current Qtr (03/2021)	22.22	129.42	7.20
Next Qtr (06/2021)	13.33	1.16	120.51
Current Year (12/2021)	14.81	17.80	10.94
Next Year (12/2022)	8.06	21.30	14.74
Past 5 Years	11.60	9.80	8.00
Next 5 Years	NA	12.00	NA
PE	55.01	18.70	22.71
PEG Ratio	NA	1.56	NA

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Premium Research for ROL

Zacks Rank	Hold 3
Zacks Industry Rank	Top 30% (76 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	D Value | A Growth | C Momentum | C VGM
Earnings ESP	0.00%
Research Reports for ROL	Analyst | Snapshot

(= Change in last 30 days)

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Research for ROL

Chart for ROL

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Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	517.60M	602.15M	2.32B	2.47B
# of Estimates	2	2	3	2
High Estimate	520.00M	603.00M	2.32B	2.47B
Low Estimate	515.20M	601.30M	2.31B	2.46B
Year ago Sales	487.90M	553.33M	2.16B	2.32B
Year over Year Growth Est.	6.09%	8.82%	7.30%	6.37%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.11	0.17	0.62	0.67
# of Estimates	3	3	3	1
Most Recent Consensus	0.12	0.17	0.62	0.67
High Estimate	0.13	0.18	0.62	0.67
Low Estimate	0.10	0.16	0.61	0.67
Year ago EPS	0.09	0.15	0.54	0.62
Year over Year Growth Est.	22.22%	13.33%	14.81%	8.60%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.11	0.17	0.62	0.67
7 Days Ago	0.11	0.17	0.62	0.67
30 Days Ago	0.11	0.17	0.62	0.67
60 Days Ago	0.11	0.17	0.62	0.67
90 Days Ago	0.10	0.14	0.53	0.67

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.11	0.17	0.62	0.67
Zacks Consensus Estimate	0.11	0.17	0.62	0.67
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.13	0.17	0.15	0.09	NA
Estimate	0.11	0.15	0.11	0.09	NA
Difference	0.02	0.02	0.04	0.00	0.02
Surprise	18.18%	13.04%	35.29%	-7.14%	14.84%

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Selective Insurance Group, Inc. (SIGI)
(Delayed Data from NSDQ)

$73.30 USD

+0.13 (0.18%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
2-Buy 2

Style Scores:
B Value | C Growth | D Momentum | B VGM

Industry Rank:

Top 43% (108 out of 253)

Industry: Insurance - Property and Casualty

Selective Insurance Group, Inc. (SIGI) Quote Overview » Estimates » Selective Insurance Group, Inc. (SIGI) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/4/21	Earnings ESP	0.00%
Current Quarter	0.81	Current Year	4.50
EPS Last Quarter	1.84	Next Year	4.85
Last EPS Surprise	67.27%	EPS (TTM)	4.14
ABR	3.00	P/E (F1)	16.29

Growth Estimates	SIGI	IND	S&P
Current Qtr (03/2021)	-3.57	113.51	7.20
Next Qtr (06/2021)	232.50	-79.36	120.51
Current Year (12/2021)	8.43	10.00	10.94
Next Year (12/2022)	7.78	14.50	14.74
Past 5 Years	10.20	1.80	8.00
Next 5 Years	NA	9.40	NA
PE	16.29	17.70	22.71
PEG Ratio	NA	1.88	NA

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Premium Research for SIGI

Zacks Rank	Buy 2
Zacks Industry Rank	Top 43% (108 out of 253)
Zacks Sector Rank	Top 13% (2 out of 16)
Style Scores	B Value | C Growth | D Momentum | B VGM
Earnings ESP	0.00%
Research Reports for SIGI	Analyst | Snapshot

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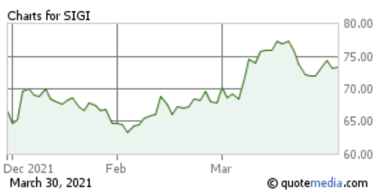
Research for SIGI

Chart for SIGI



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	770.20M	782.85M	3.16B	3.36B
# of Estimates	2	2	2	2
High Estimate	782.10M	794.80M	3.21B	3.42B
Low Estimate	758.30M	770.90M	3.11B	3.31B
Year ago Sales	709.50M	669.80M	2.93B	3.16B
Year over Year Growth Est.	8.56%	16.88%	7.96%	6.50%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.81	1.33	4.50	4.85
# of Estimates	1	1	1	1
Most Recent Consensus	0.81	1.33	4.50	4.85
High Estimate	0.81	1.33	4.50	4.85
Low Estimate	0.81	1.33	4.50	4.85
Year ago EPS	0.84	0.40	4.15	4.50
Year over Year Growth Est.	-3.57%	232.50%	8.43%	7.78%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	1	1	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.81	1.33	4.50	4.85
7 Days Ago	0.81	1.33	4.50	4.85
30 Days Ago	0.81	1.33	4.50	4.85
60 Days Ago	0.71	1.22	4.20	4.65
90 Days Ago	0.71	1.22	4.20	4.65

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.81	1.33	4.50	4.85
Zacks Consensus Estimate	0.81	1.33	4.50	4.85
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.84	1.06	0.40	0.84	NA
Estimate	1.10	1.18	0.37	0.96	NA
Difference	0.74	-0.12	0.03	-0.12	0.13
Surprise	67.27%	-10.17%	8.11%	-12.50%	13.18%

Quarterly Estimates By Analyst

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Sirius XM Holdings Inc. (SIRI)
(Delayed Data from NSDQ)

$6.12 USD

-0.03 (-0.03%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
4-Sell 4

Style Scores:
B Value | A Growth | D Momentum | A VGM

Industry Rank:

Bottom 41% (150 out of 253)

Industry: Broadcast Radio and Television

Sirius XM Holdings Inc. (SIRI) Quote Overview » Estimates » Sirius XM Holdings Inc. (SIRI) Detailed Estimates

Detailed Estimates

View All Zacks #1 Ranked Stocks

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Estimates

Next Report Date	*BMO 4/28/21	Earnings ESP	0.00%
Current Quarter	0.06	Current Year	0.26
EPS Last Quarter	0.07	Next Year	0.32
Last EPS Surprise	40.00%	EPS (TTM)	0.25
ABR	1.58	P/E (F1)	23.18

*BMO = Before Market Open *AMC = After Market Close

Growth Estimates	SIRI	IND	S&P
Current Qtr (03/2021)	-14.29	395.56	7.20
Next Qtr (06/2021)	20.00	76.18	120.51
Current Year (12/2021)	4.00	-3.90	10.94
Next Year (12/2022)	23.08	22.40	14.74
Past 5 Years	17.60	19.20	8.00
Next 5 Years	14.80	15.80	NA
PE	23.18	-85.30	22.71
PEG Ratio	1.56	-5.40	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for SIRI

Zacks Rank	Sell 4
Zacks Industry Rank	Bottom 41% (150 out of 253)
Zacks Sector Rank	Bottom 38% (10 out of 16)
Style Scores	B Value | A Growth | D Momentum | A VGM
Earnings ESP	0.00%
Research Reports for SIRI	Analyst | Snapshot

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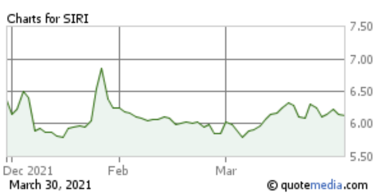
Research for SIRI

Chart for SIRI



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.99B	2.04B	8.40B	8.82B
# of Estimates	3	3	5	5
High Estimate	1.99B	2.06B	8.48B	8.93B
Low Estimate	1.98B	2.02B	8.35B	8.74B
Year ago Sales	1.95B	1.87B	8.04B	8.40B
Year over Year Growth Est.	1.88%	8.93%	4.49%	4.99%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.06	0.06	0.26	0.32
# of Estimates	4	4	5	5
Most Recent Consensus	NA	NA	NA	0.31
High Estimate	0.06	0.07	0.27	0.33
Low Estimate	0.06	0.06	0.26	0.31
Year ago EPS	0.07	0.05	0.25	0.26
Year over Year Growth Est.	-14.29%	20.00%	4.00%	22.31%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	2	2

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.06	0.06	0.26	0.32
7 Days Ago	0.06	0.06	0.26	0.32
30 Days Ago	0.06	0.06	0.27	0.32
60 Days Ago	0.06	0.06	0.27	0.32
90 Days Ago	0.05	0.06	0.27	0.32

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.06	0.06	0.26	0.32
Zacks Consensus Estimate	0.06	0.06	0.26	0.32
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.07	0.06	0.05	0.07	NA
Estimate	0.05	0.06	0.05	0.05	NA
Difference	0.02	0.00	0.00	0.02	0.01
Surprise	40.00%	0.00%	0.00%	40.00%	20.00%

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BioTechne Corp (TECH)
(Delayed Data from NSDQ)

$373.47 USD

+6.48 (1.77%)

Updated Mar 30, 2021 04:00 PM ET

Add to portfolio | Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | B Growth | C Momentum | C VGM

Industry Rank:

Bottom 25% (190 out of 253)

Industry: Medical - Biomedical and Genetics

BioTechne Corp (TECH) Quote Overview » Estimates » BioTechne Corp (TECH) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/29/21	Earnings ESP	0.00%
Current Quarter	1.50	Current Year	6.01
EPS Last Quarter	1.62	Next Year	6.93
Last EPS Surprise	19.12%	EPS (TTM)	5.44
ABR	1.44	P/E (F1)	62.12

Growth Estimates	TECH	IND	S&P
Current Qtr (03/2021)	7.91	407.85	7.20
Next Qtr (06/2021)	46.00	223.72	120.51
Current Year (06/2021)	32.09	7.50	10.94
Next Year (06/2022)	15.31	1.80	14.74
Past 5 Years	2.50	14.30	8.00
Next 5 Years	15.00	21.80	NA
PE	62.12	-38.10	22.71
PEG Ratio	4.14	-1.75	NA

Learn More About Estimate Research

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See Earnings Report Transcript

Premium Research for TECH

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 25% (190 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	C Value | B Growth | C Momentum | C VGM
Earnings ESP	0.00%
Research Report for TECH	Snapshot

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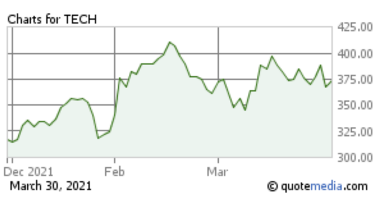
Research for TECH

Chart for TECH



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	225.85M	227.65M	881.97M	994.97M
# of Estimates	4	4	4	4
High Estimate	229.60M	234.60M	892.70M	1.03B
Low Estimate	224.07M	224.70M	877.60M	975.25M
Year ago Sales	194.68M	175.83M	738.69M	881.97M
Year over Year Growth Est.	16.01%	29.47%	19.40%	12.81%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Zacks Consensus Estimate	1.50	1.46	6.01	6.93
# of Estimates	4	4	5	5
Most Recent Consensus	1.52	1.47	6.02	6.89
High Estimate	1.59	1.51	6.15	7.18
Low Estimate	1.42	1.42	5.86	6.80
Year ago EPS	1.39	1.00	4.55	6.01
Year over Year Growth Est.	7.91%	46.00%	32.09%	15.21%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	1
Up Last 60 Days	4	3	5	5
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	1	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Current	1.50	1.46	6.01	6.93
7 Days Ago	1.50	1.46	6.01	6.93
30 Days Ago	1.50	1.46	5.93	6.89
60 Days Ago	1.46	1.45	5.68	6.55
90 Days Ago	1.46	1.45	5.68	6.55

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (6/2021)	Next Year (6/2022)
Most Accurate Estimate	1.50	1.46	6.05	6.80
Zacks Consensus Estimate	1.50	1.46	6.01	6.93
Earnings ESP	0.00%	0.00%	0.63%	-1.82%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.62	1.43	1.00	1.39	NA
Estimate	1.36	1.14	0.75	1.13	NA
Difference	0.26	0.29	0.25	0.26	0.27
Surprise	19.12%	25.44%	33.33%	23.01%	25.23%

Tetra Tech, Inc. (TTEK)
(Delayed Data from NSDQ)

$133.63 USD

+2.87 (2.19%)

Updated Mar 30, 2021 04:00 PM ET

Zacks Rank:

2-Buy 2

Style Scores:

D Value | C Growth | D Momentum | D VGM

Industry Rank:

Top 28% (71 out of 253)
Industry: Pollution Control

Tetra Tech, Inc. (TTEK) Quote Overview » Estimates » Tetra Tech, Inc. (TTEK) Detailed Estimates

Detailed Estimates

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Enter Symbol

Estimates

Next Report Date	5/5/21	Earnings ESP	0.00%
Current Quarter	0.75	Current Year	3.59
EPS Last Quarter	0.96	Next Year	3.87
Last EPS Surprise	17.07%	EPS (TTM)	3.38
ABR	1.67	P/E (F1)	37.25

Growth Estimates	TTEK	IND	S&P
Current Qtr (03/2021)	2.74	22.48	7.20
Next Qtr (06/2021)	14.10	20.31	120.51
Current Year (09/2021)	10.12	2.40	10.94
Next Year (09/2022)	7.80	15.80	14.74
Past 5 Years	13.50	11.40	8.00
Next 5 Years	15.00	14.00	NA
PE	37.25	27.40	22.71
PEG Ratio	2.48	1.96	NA

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Premium Research for TTEK

Zacks Rank	Buy 2
Zacks Industry Rank	Top 28% (71 out of 253)
Zacks Sector Rank	Top 38% (6 out of 16)
Style Scores	D Value | C Growth | D Momentum | D VGM
Earnings ESP	0.00%
Research Reports for TTEK	Analyst | Snapshot

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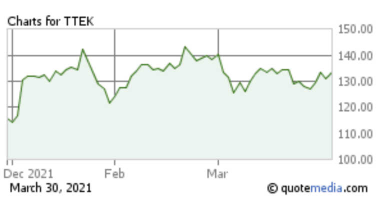
Research for TTEK

Chart for TTEK



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	626.87M	671.88M	2.64B	2.77B
# of Estimates	4	4	4	4
High Estimate	760.00M	790.00M	3.14B	3.34B
Low Estimate	579.10M	602.10M	2.42B	2.55B
Year ago Sales	584.46M	560.28M	2.35B	2.64B
Year over Year Growth Est.	7.26%	19.92%	12.20%	5.22%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Zacks Consensus Estimate	0.75	0.89	3.59	3.87
# of Estimates	4	4	4	4
Most Recent Consensus	0.75	0.94	3.70	4.06
High Estimate	0.76	0.94	3.70	4.06
Low Estimate	0.74	0.86	3.54	3.76
Year ago EPS	0.73	0.78	3.26	3.59
Year over Year Growth Est.	2.74%	14.10%	10.12%	7.73%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	1	1	1
Up Last 60 Days	1	1	2	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Current	0.75	0.89	3.59	3.87
7 Days Ago	0.75	0.89	3.59	3.87
30 Days Ago	0.75	0.89	3.59	3.86
60 Days Ago	0.75	0.89	3.54	3.88
90 Days Ago	0.73	0.88	3.41	3.74

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (9/2021)	Next Year (9/2022)
Most Accurate Estimate	0.75	0.94	3.70	4.06
Zacks Consensus Estimate	0.75	0.89	3.59	3.87
Earnings ESP	0.00%	5.92%	3.14%	5.05%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.96	0.91	0.78	0.73	NA
Estimate	0.82	0.81	0.73	0.72	NA
Difference	0.14	0.10	0.05	0.01	0.08
Surprise	17.07%	12.35%	6.85%	1.39%	9.42%

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Waters Corporation (WAT)
(Delayed Data from NYSE)

$282.51 USD

-1.51 (-0.53%)

Updated Mar 30, 2021 04:03 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | A Growth | C Momentum | B VGM

Industry Rank:

Top 20% (50 out of 253)

Industry: Instruments - Scientific

Waters Corporation (WAT) Quote Overview » Estimates » Waters Corporation (WAT) Detailed Estimates

Detailed Estimates

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Estimates

Next Report Date	4/27/21	Earnings ESP	0.00%
Current Quarter	1.56	Current Year	9.52
EPS Last Quarter	3.65	Next Year	10.64
Last EPS Surprise	27.18%	EPS (TTM)	9.06
ABR	3.08	P/E (F1)	29.68

Growth Estimates	WAT	IND	S&P
Current Qtr (03/2021)	35.65	224.63	7.20
Next Qtr (06/2021)	-2.38	44.81	120.51
Current Year (12/2021)	5.19	-7.00	10.94
Next Year (12/2022)	11.76	10.10	14.74
Past 5 Years	8.50	6.80	8.00
Next 5 Years	8.80	11.40	NA
PE	29.68	27.90	22.71
PEG Ratio	3.36	2.45	NA

Learn More About Estimate Research

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Premium Research for WAT

Zacks Rank	Hold 3
Zacks Industry Rank	Top 20% (50 out of 253)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Style Scores	C Value | A Growth | C Momentum | B VGM
Earnings ESP	0.00%
Research Reports for WAT	Analyst | Snapshot

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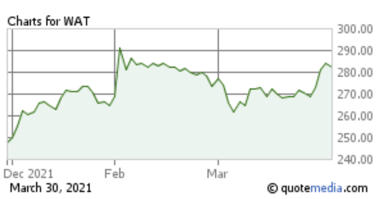
Research for WAT

Chart for WAT



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	522.24M	592.46M	2.56B	2.69B
# of Estimates	6	6	6	5
High Estimate	539.36M	628.34M	2.57B	2.72B
Low Estimate	500.50M	564.00M	2.55B	2.64B
Year ago Sales	464.94M	519.98M	2.37B	2.56B
Year over Year Growth Est.	12.32%	13.94%	8.18%	5.00%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.56	2.05	9.52	10.64
# of Estimates	8	6	8	6
Most Recent Consensus	1.51	1.98	9.50	10.25
High Estimate	1.60	2.24	9.70	11.15
Low Estimate	1.50	1.90	9.43	10.25
Year ago EPS	1.15	2.10	9.05	9.52
Year over Year Growth Est.	35.65%	-2.38%	5.19%	11.81%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	1	0	6	3
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	2	3	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.56	2.05	9.52	10.64
7 Days Ago	1.56	2.05	9.52	10.64
30 Days Ago	1.56	2.05	9.52	10.64
60 Days Ago	1.65	2.27	9.26	10.18
90 Days Ago	1.60	2.11	9.09	9.92

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.56	2.05	9.52	10.64
Zacks Consensus Estimate	1.56	2.05	9.52	10.64
Earnings ESP	0.00%	0.00%	0.00%	0.00%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	3.65	2.16	2.10	1.15	NA
Estimate	2.87	1.91	1.53	1.42	NA
Difference	0.78	0.25	0.57	-0.27	0.33
Surprise	27.18%	13.09%	37.25%	-19.01%	14.63%

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West Pharmaceutical Services, Inc. (WST)
(Delayed Data from NYSE)

$278.34 USD

-2.17 (-0.77%)

Updated Mar 30, 2021 04:04 PM ET

Add to portfolio Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
C Value | A Growth | C Momentum | B VGM

Industry Rank:

Top 34% (85 out of 253)

Industry: Medical - Dental Supplies

West Pharmaceutical Services, Inc. (WST) Quote Overview » Estimates » West Pharmaceutical Services, Inc. (WST) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	4/22/21	Earnings ESP	0.00%
Current Quarter	1.42	Current Year	6.17
EPS Last Quarter	1.34	Next Year	6.82
Last EPS Surprise	18.58%	EPS (TTM)	4.75
ABR	1.80	P/E (F1)	45.14

Growth Estimates	WST	IND	S&P
Current Qtr (03/2021)	40.59	27.98	7.20
Next Qtr (06/2021)	25.60	87.95	120.51
Current Year (12/2021)	29.62	19.40	10.94
Next Year (12/2022)	10.53	15.20	14.74
Past 5 Years	19.50	10.40	8.00
Next 5 Years	22.60	11.70	NA
PE	45.14	47.50	22.71
PEG Ratio	2.00	4.06	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for WST

Zacks Rank	Hold 3
Zacks Industry Rank	Top 34% (85 out of 253)
Zacks Sector Rank	Bottom 0% (16 out of 16)
Style Scores	C Value | A Growth | C Momentum | B VGM
Earnings ESP	0.00%
Research Report for WST	Snapshot

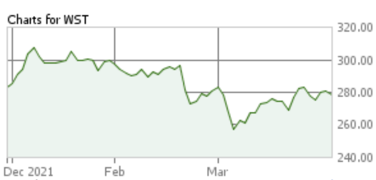
(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

More Premium Research » »

Research for WST

Chart for WST



Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	614.77M	641.40M	2.55B	2.73B
# of Estimates	3	3	3	3
High Estimate	617.60M	654.50M	2.60B	2.84B
Low Estimate	612.72M	633.00M	2.52B	2.63B
Year ago Sales	491.50M	527.20M	2.15B	2.55B
Year over Year Growth Est.	25.08%	21.66%	18.70%	6.94%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.42	1.57	6.17	6.82
# of Estimates	4	3	5	5
Most Recent Consensus	1.47	1.59	6.29	7.17
High Estimate	1.47	1.61	6.30	7.17
Low Estimate	1.36	1.52	6.05	6.20
Year ago EPS	1.01	1.25	4.76	6.17
Year over Year Growth Est.	40.59%	25.60%	29.62%	10.53%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	0
Up Last 60 Days	2	2	5	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	0	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	1.42	1.57	6.17	6.82
7 Days Ago	1.42	1.57	6.17	6.82
30 Days Ago	1.42	1.57	5.95	6.83
60 Days Ago	1.23	1.31	5.19	6.14
90 Days Ago	1.23	1.31	5.19	6.14

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	1.42	1.57	6.10	6.76
Zacks Consensus Estimate	1.42	1.57	6.17	6.82
Earnings ESP	0.00%	0.00%	-1.07%	-0.82%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	1.34	1.15	1.25	1.01	NA
Estimate	1.13	1.01	0.91	0.82	NA
Difference	0.21	0.14	0.34	0.19	0.22
Surprise	18.58%	13.86%	37.36%	23.17%	23.24%

Quarterly Estimates By Analyst

Zacks Premium Subscription Required Learn more

Annual Estimates By Analyst

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At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

Visit Performance Disclosure for information about the performance numbers displayed above.

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* indicates the important links in the menu

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Data Feed

The Western Union Company (WU)
(Delayed Data from NYSE)

$24.84 USD

+0.05 (0.05%)

Updated Mar 30, 2021 04:04 PM ET

Add to portfolio

Trades from $1

Zacks Rank:
3-Hold 3

Style Scores:
A Value | C Growth | D Momentum | B VGM

Industry Rank:

Bottom 11% (225 out of 253)

Industry: Financial Transaction Services

The Western Union Company (WU) Quote Overview » Estimates » The Western Union Company (WU) Detailed Estimates

View All Zacks #1 Ranked Stocks

Detailed Estimates

Enter Symbol

Estimates

Next Report Date	5/4/21	Earnings ESP	-10.38%
Current Quarter	0.46	Current Year	2.06
EPS Last Quarter	0.45	Next Year	2.27
Last EPS Surprise	7.14%	EPS (TTM)	1.87
ABR	2.72	P/E (F1)	12.08

Growth Estimates	WU	IND	S&P
Current Qtr (03/2021)	4.55	22.03	7.20
Next Qtr (06/2021)	19.51	82.97	120.51
Current Year (12/2021)	10.16	8.30	10.94
Next Year (12/2022)	10.19	23.90	14.74
Past 5 Years	2.30	6.20	8.00
Next 5 Years	NA	13.30	NA
PE	12.08	49.40	22.71
PEG Ratio	NA	3.71	NA

Learn More About Estimate Research

See Brokerage Recommendations

See Earnings Report Transcript

Premium Research for WU

Zacks Rank	Hold 3
Zacks Industry Rank	Bottom 11% (225 out of 253)
Zacks Sector Rank	Bottom 13% (14 out of 16)
Style Scores	A Value | C Growth | D Momentum | B VGM
Earnings ESP	-10.38%
Research Reports for WU	Analyst | Snapshot

(= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

More Premium Research » »

Research for WU

Chart for WU

Interactive Chart | Fundamental Charts

Sales Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	1.21B	1.25B	5.11B	5.28B
# of Estimates	5	5	6	6
High Estimate	1.23B	1.27B	5.18B	5.41B
Low Estimate	1.18B	1.19B	5.05B	5.15B
Year ago Sales	1.19B	1.11B	4.84B	5.11B
Year over Year Growth Est.	1.67%	11.84%	5.65%	3.36%

Earnings Estimates

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Zacks Consensus Estimate	0.46	0.49	2.06	2.27
# of Estimates	8	7	8	8
Most Recent Consensus	0.48	0.48	2.06	2.30
High Estimate	0.49	0.51	2.08	2.35
Low Estimate	0.41	0.47	2.05	2.19
Year ago EPS	0.44	0.41	1.87	2.06
Year over Year Growth Est.	4.55%	19.51%	10.16%	10.56%

Agreement - Estimate Revisions

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	4	6	3
Down Last 7 Days	1	0	0	0
Down Last 30 Days	1	0	0	0
Down Last 60 Days	4	0	1	1

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Current	0.46	0.49	2.06	2.27
7 Days Ago	0.46	0.49	2.06	2.26
30 Days Ago	0.46	0.49	2.06	2.26
60 Days Ago	0.48	0.47	2.02	2.23
90 Days Ago	0.48	0.47	2.01	2.23

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2021)	Next Qtr (6/2021)	Current Year (12/2021)	Next Year (12/2022)
Most Accurate Estimate	0.41	0.49	2.06	2.35
Zacks Consensus Estimate	0.46	0.49	2.06	2.27
Earnings ESP	-10.38%	0.00%	0.00%	3.35%

Surprise - Reported Earnings History

	Quarter Ending (12/2020)	Quarter Ending (9/2020)	Quarter Ending (6/2020)	Quarter Ending (3/2020)	Average Surprise
Reported	0.45	0.57	0.41	0.44	NA
Estimate	0.42	0.47	0.36	0.41	NA
Difference	0.03	0.10	0.05	0.03	0.05
Surprise	7.14%	21.28%	13.89%	7.32%	12.41%

At the center of everything we do is a strong commitment to independent research and sharing its profitable discoveries with investors. This dedication to giving investors a trading advantage led to the creation of our proven Zacks Rank stock-rating system. Since 1988 it has more than doubled the S&P 500 with an average gain of +25.41% per year. These returns cover a period from January 1, 1988 through March 1, 2021. Zacks Rank stock-rating system returns are computed monthly based on the beginning of the month and end of the month Zacks Rank stock prices plus any dividends received during that particular month. A simple, equally-weighted average return of all Zacks Rank stocks is calculated to determine the monthly return. The monthly returns are then compounded to arrive at the annual return. Only Zacks Rank stocks included in Zacks hypothetical portfolios at the beginning of each month are included in the return calculations. Zacks Ranks stocks can, and often do, change throughout the month. Certain Zacks Rank stocks for which no month-end price was available, pricing information was not collected, or for certain other reasons have been excluded from these return calculations.

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U.S. markets close in 5 hours 6 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,983.57	33,073.08	13,277.00	2,217.05	60.85	1,698.70
+25.02 (+0.63%)	+6.12 (+0.02%)	+231.61 (+1.78%)	+21.25 (+0.97%)	+0.30 (+0.50%)	+12.70 (+0.75%)

Atmos Energy Corporation (ATO)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist · Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

98.04 -0.85 (-0.86%)

As of 10:54AM EDT. Market open.

Summary · Company Outlook · Chart · Conversations · Statistics · Historical Data · Profile · Financials · **Analysis** · Options · Holders · Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	11	11
Avg. Estimate	2.02	0.81	5.05	5.4
Low Estimate	1.89	0.7	5	5.34
High Estimate	2.18	0.93	5.1	5.45
Year Ago EPS	1.95	0.79	4.72	5.05

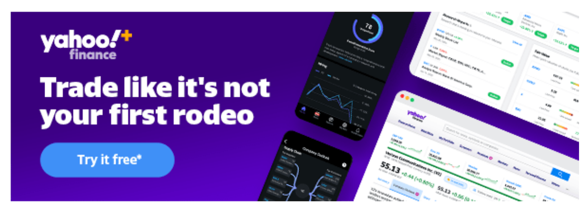
Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	8	8
Avg. Estimate	1.08B	589.6M	3.25B	3.54B
Low Estimate	1.04B	534M	2.99B	3.21B
High Estimate	1.15B	657.01M	3.43B	3.77B
Year Ago Sales	977.66M	N/A	2.82B	3.25B
Sales Growth (year/est)	10.70%	N/A	15.10%	8.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.92	0.76	0.51	1.58
EPS Actual	1.95	0.79	0.53	1.71
Difference	0.03	0.03	0.02	0.13
Surprise %	1.60%	3.90%	3.90%	8.20%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	2.02	0.81	5.05	5.4
7 Days Ago	2.02	0.81	5.05	5.4
30 Days Ago	2.02	0.82	5.04	5.37
60 Days Ago	2.04	0.85	5.04	5.39
90 Days Ago	2.05	0.85	5.03	5.4

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

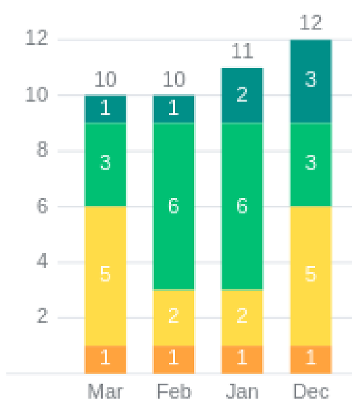
Growth Estimates	ATO	Industry	Sector(s)	S&P 500
Current Qtr.	3.60%	N/A	N/A	N/A
Next Qtr.	2.50%	N/A	N/A	N/A
Current Year	7.00%	N/A	N/A	N/A
Next Year	6.90%	N/A	N/A	N/A
Next 5 Years (per annum)	7.00%	N/A	N/A	N/A
Past 5 Years (per annum)	8.41%	N/A	N/A	N/A



People Also Watch

Symbol	Last Price	Change	% Change
BKH Black Hills Corporation	66.95	+0.17	+0.25%
LNT Alliant Energy Corporation	54.16	0.00	0.00%
UGI UGI Corporation	41.27	-0.28	-0.67%
NJR NewJersey Resources Corporation	40.27	-0.23	-0.57%
NWN Northwest Natural Holding Compa	54.07	+0.38	+0.71%

Recommendation Trends >



Recommendation Rating >

2.3

1 Strong Buy · 2 Buy · 3 Hold · 4 Under-perform · 5 Sell

Analyst Price Targets (9) >

Average 103.11

Low 93.00 · Current 98.04 · High 111.00

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Overweight	3/19/2021
Downgrade	B of A Securities: Buy to Neutral	3/9/2021
Upgrade	Mizuho: Neutral to Buy	3/4/2021
Maintains	Morgan Stanley: to Overweight	2/18/2021
Maintains	Morgan Stanley: to Overweight	1/20/2021
Upgrade	Morgan Stanley: Equal-Weight to Overweight	12/15/2020

More Upgrades & Downgrades

New Jersey Resources Corporation (NJR)

NYSE - Nasdaq Real Time Price. Currency in USD

40.28 -0.22 (-0.54%)

As of 10:58AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	7	8
Avg. Estimate	1.13	-0.04	1.87	2.26
Low Estimate	0.95	-0.23	1.58	2.2
High Estimate	1.3	0.04	2.32	2.42
Year Ago EPS	1.12	-0.06	2.07	1.87

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	1	1	4	4
Avg. Estimate	646M	341M	2.26B	2.47B
Low Estimate	646M	341M	1.99B	2.09B
High Estimate	646M	341M	2.64B	2.83B
Year Ago Sales	639.61M	N/A	1.95B	2.26B
Sales Growth (year/est)	1.00%	N/A	15.50%	9.70%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.48	0.1	0.57	0.49
EPS Actual	1.12	-0.06	0.57	0.46
Difference	-0.36	-0.16	0	-0.03
Surprise %	-24.30%	-160.00%	0.00%	-6.10%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.13	-0.04	1.87	2.26
7 Days Ago	1.13	-0.04	1.83	2.26
30 Days Ago	0.96	-0.04	1.6	2.23
60 Days Ago	0.92	-0.01	1.61	2.1
90 Days Ago	0.92	-0.01	1.61	2.1

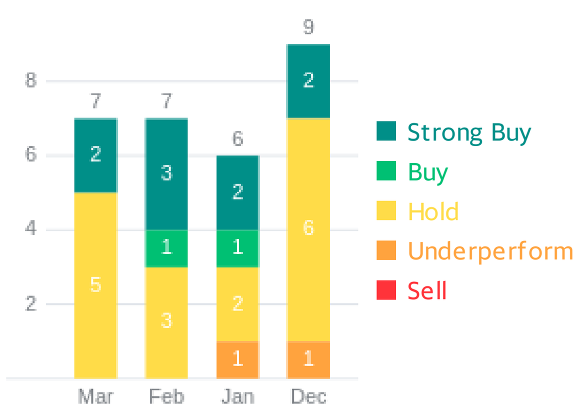
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	N/A
Up Last 30 Days	3	N/A	4	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

Growth Estimates	NJR	Industry	Sector(s)	S&P 500
Current Qtr.	0.90%	N/A	N/A	N/A
Next Qtr.	33.30%	N/A	N/A	N/A
Current Year	-9.70%	N/A	N/A	N/A
Next Year	20.90%	N/A	N/A	N/A
Next 5 Years (per annum)	6.00%	N/A	N/A	N/A
Past 5 Years (per annum)	50.73%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SJI South Jersey Industries, Inc.	22.77	-0.17	-0.74%
NWN Northwest Natural Holding Compa	54.06	+0.38	+0.70%
SWX Southwest Gas Holdings, Inc.	69.02	-0.08	-0.12%
NFG National Fuel Gas Company	50.03	-0.19	-0.38%
CPK Chesapeake Utilities Corporatio	114.84	-1.25	-1.08%

Recommendation Trends >



Recommendation Rating >

2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (6) >

Average 41.50

Low 37.00 | Current 40.28 | High 45.00

Upgrades & Downgrades >

Maintains	B of A Securities: to Underperform	8/10/2020
Initiated	Mizuho: to Buy	7/24/2020
Maintains	B of A Securities: to Underperform	7/21/2020
Maintains	Wells Fargo: to Equal-Weight	5/11/2020
Upgrade	Guggenheim: Sell to Neutral	3/31/2020
Downgrade	Guggenheim: Neutral to Sell	1/8/2020

More Upgrades & Downgrades

U.S. markets close in 5 hours 2 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,983.17	33,074.42	13,269.16	2,220.51	61.04	1,702.30
+24.62 (+0.62%)	+7.46 (+0.02%)	+223.77 (+1.72%)	+24.72 (+1.13%)	+0.49 (+0.81%)	+16.30 (+0.97%)

Northwest Natural Holding Company (NWN)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

Advertisement

54.06 +0.38 (+0.70%)

As of 10:57AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	6	8	7
Avg. Estimate	1.84	-0.11	2.51	2.61
Low Estimate	1.62	-0.19	2.45	2.55
High Estimate	2.06	0	2.57	2.68
Year Ago EPS	1.58	-0.17	2.51	2.51

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	7	5
Avg. Estimate	315.02M	137.9M	837.28M	878.53M
Low Estimate	285.4M	117M	806.2M	833.2M
High Estimate	342.79M	147.16M	918.59M	952.79M
Year Ago Sales	285.16M	134.97M	773.68M	837.28M
Sales Growth (year/est)	10.50%	2.20%	8.20%	4.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.57	-0.03	-0.69	1.49
EPS Actual	1.58	-0.17	-0.59	1.7
Difference	0.01	-0.14	0.1	0.21
Surprise %	0.60%	-466.70%	14.50%	14.10%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.84	-0.11	2.51	2.61
7 Days Ago	1.84	-0.13	2.51	2.61
30 Days Ago	1.86	-0.1	2.54	2.62
60 Days Ago	1.78	-0.08	2.55	2.63
90 Days Ago	1.74	-0.07	2.55	2.62

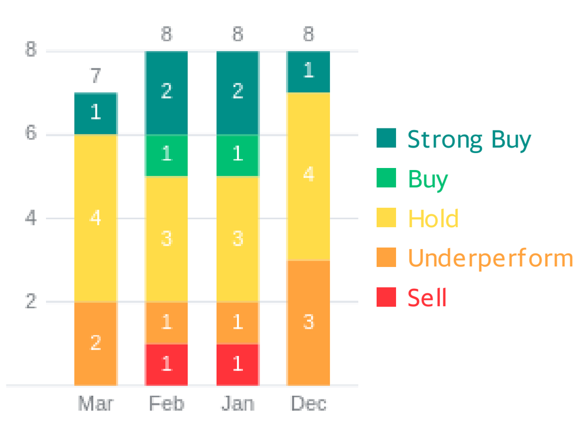
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	1	1	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	NWN	Industry	Sector(s)	S&P 500
Current Qtr.	16.50%	N/A	N/A	N/A
Next Qtr.	35.30%	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	4.00%	N/A	N/A	N/A
Next 5 Years (per annum)	3.10%	N/A	N/A	N/A
Past 5 Years (per annum)	-5.39%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
NJR NewJersey Resources Corporation	40.28	-0.22	-0.54%
AWR American States Water Company	75.11	-0.12	-0.17%
LANC Lancaster Colony Corporation	178.63	-1.14	-0.63%
NFG National Fuel Gas Company	50.03	-0.19	-0.38%
SJW SJW Group	62.37	-0.13	-0.21%

Recommendation Trends >



Recommendation Rating >

2.7

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (8) >

Average 53.88

Low 38.00 | Current 54.07 | High 74.00

Upgrades & Downgrades >

Initiated	Stifel: to Buy	12/17/2020
Upgrade	Wells Fargo: Underweight to Equal-Weight	11/25/2020
Maintains	B of A Securities: to Underperform	11/25/2020
Upgrade	UBS: Sell to Neutral	11/25/2020
Maintains	B of A Securities: to Underperform	11/25/2020
Maintains	Wells Fargo: to Underweight	11/25/2020

More Upgrades & Downgrades

U.S. markets close in 5 hours 2 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,982.73	33,069.16	13,267.44	2,220.61	61.03	1,702.80
+24.18 (+0.61%)	+2.20 (+0.01%)	+222.05 (+1.70%)	+24.81 (+1.13%)	+0.48 (+0.79%)	+16.80 (+1.00%)

ONE Gas, Inc. (OGS)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

75.96 -0.10 (-0.13%)

As of 10:53AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	8	8
Avg. Estimate	1.82	0.51	3.82	4.13
Low Estimate	1.77	0.49	3.8	4.04
High Estimate	1.87	0.53	3.87	4.19
Year Ago EPS	1.72	0.48	3.68	3.82

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	7	6
Avg. Estimate	581.33M	280.74M	1.65B	1.7B
Low Estimate	460.5M	237.89M	1.32B	1.33B
High Estimate	703.8M	309.5M	1.83B	1.9B
Year Ago Sales	528.17M	274.48M	1.53B	1.65B
Sales Growth (year/est)	10.10%	2.30%	7.90%	3.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.78	0.46	0.35	1.06
EPS Actual	1.72	0.48	0.39	1.09
Difference	-0.06	0.02	0.04	0.03
Surprise %	-3.40%	4.30%	11.40%	2.80%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.82	0.51	3.82	4.13
7 Days Ago	1.82	0.51	3.82	4.13
30 Days Ago	1.8	0.48	3.82	4.13
60 Days Ago	1.81	0.48	3.83	4.13
90 Days Ago	1.81	0.55	3.84	4.15

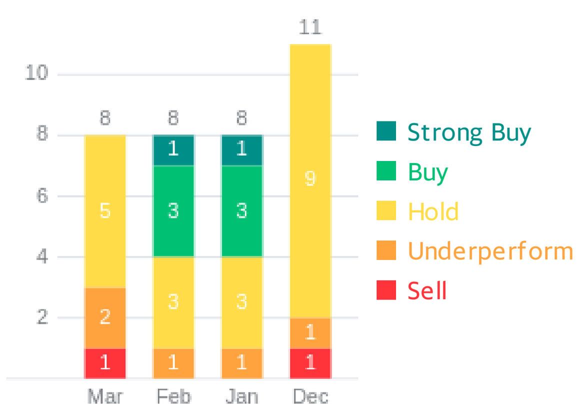
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	2	3	1	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	N/A

Growth Estimates	OGS	Industry	Sector(s)	S&P 500
Current Qtr.	5.80%	N/A	N/A	N/A
Next Qtr.	6.30%	N/A	N/A	N/A
Current Year	3.80%	N/A	N/A	N/A
Next Year	8.10%	N/A	N/A	N/A
Next 5 Years (per annum)	5.00%	N/A	N/A	N/A
Past 5 Years (per annum)	15.32%	N/A	N/A	N/A

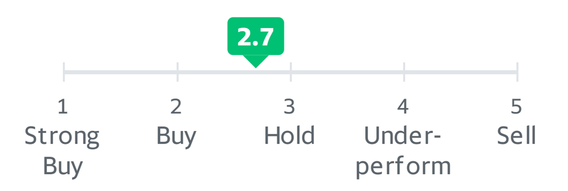
People Also Watch

Symbol	Last Price	Change	% Change
NWE NorthWestern Corporation	65.15	+0.07	+0.12%
SWX Southwest Gas Holdings, Inc.	69.02	-0.08	-0.12%
OKE ONEOK, Inc.	50.39	+0.13	+0.26%
NJR NewJersey Resources Corporation	40.30	-0.20	-0.49%
OGE OGE Energy Corp	32.41	-0.04	-0.12%

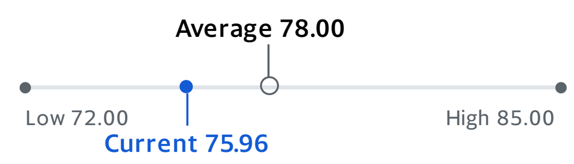
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (8) >



Upgrades & Downgrades >

Maintains	Wells Fargo: to Overweight	3/29/2021
Downgrade	UBS: Buy to Neutral	3/22/2021
Maintains	Morgan Stanley: to Underweight	3/19/2021
Initiated	Edward Jones: to Hold	3/11/2021
Downgrade	B of A Securities: Neutral to Underperform	3/9/2021
Maintains	Morgan Stanley: to Underweight	2/18/2021

More Upgrades & Downgrades

South Jersey Industries, Inc. (SJI)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

22.74 -0.20 (-0.87%)

As of 10:59AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	10	10
Avg. Estimate	1.21	0.01	1.68	1.71
Low Estimate	1.1	-0.06	1.61	1.48
High Estimate	1.38	0.11	1.72	1.79
Year Ago EPS	1.15	-0.01	1.68	1.68

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	6	6	7	7
Avg. Estimate	530.46M	255.48M	1.48B	1.59B
Low Estimate	446M	183M	1.16B	1.18B
High Estimate	587.3M	314.66M	1.79B	2.14B
Year Ago Sales	534.11M	N/A	1.54B	1.48B
Sales Growth (year/est)	-0.70%	N/A	-4.00%	7.30%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.11	-0.04	-0.22	0.54
EPS Actual	1.15	-0.01	-0.06	0.62
Difference	0.04	0.03	0.16	0.08
Surprise %	3.60%	75.00%	72.70%	14.80%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.21	0.01	1.68	1.71
7 Days Ago	1.22	0.01	1.7	1.72
30 Days Ago	1.23	0.04	1.7	1.73
60 Days Ago	1.23	0.04	1.69	1.71
90 Days Ago	1.24	0.05	1.68	1.71

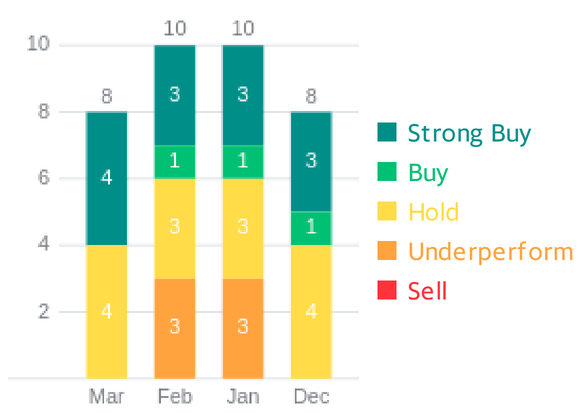
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	1	1	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	4

Growth Estimates	SJI	Industry	Sector(s)	S&P 500
Current Qtr.	5.20%	N/A	N/A	N/A
Next Qtr.	200.00%	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	1.80%	N/A	N/A	N/A
Next 5 Years (per annum)	4.40%	N/A	N/A	N/A
Past 5 Years (per annum)	13.27%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
NJR NewJersey Resources Corporation	40.25	-0.25	-0.62%
SWX Southwest Gas Holdings, Inc.	69.02	-0.08	-0.12%
NWN Northwest Natural Holding Compa	54.06	+0.38	+0.70%
CPK Chesapeake Utilities Corporatio	114.84	-1.25	-1.08%
UGI UGI Corporation	41.31	-0.24	-0.59%

Recommendation Trends >



Recommendation Rating >

2.5

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (9) >

Average 28.00

Current 22.74 | Low 23.00 | High 36.00

Southwest Gas Holdings, Inc. (SWX)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Advertisement

Quote Lookup

69.02 -0.08 (-0.12%)

As of 10:58AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	4	6	5
Avg. Estimate	1.94	0.46	4.13	4.31
Low Estimate	1.72	0.44	4.07	4.15
High Estimate	2.2	0.47	4.27	4.45
Year Ago EPS	1.31	0.68	4.14	4.13

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	2	2	3	1
Avg. Estimate	939.31M	779.61M	3.44B	3.54B
Low Estimate	866M	772.23M	3.42B	3.54B
High Estimate	1.01B	787M	3.46B	3.54B
Year Ago Sales	502.83M	N/A	3.3B	3.44B
Sales Growth (year/est)	86.80%	N/A	4.40%	2.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.57	0.43	0.24	1.61
EPS Actual	1.31	0.68	0.32	1.82
Difference	-0.26	0.25	0.08	0.21
Surprise %	-16.60%	58.10%	33.30%	13.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.94	0.46	4.13	4.31
7 Days Ago	1.93	0.45	4.14	4.3
30 Days Ago	2	0.49	4.18	4.32
60 Days Ago	2	0.49	4.21	4.47
90 Days Ago	1.95	0.51	4.22	4.45

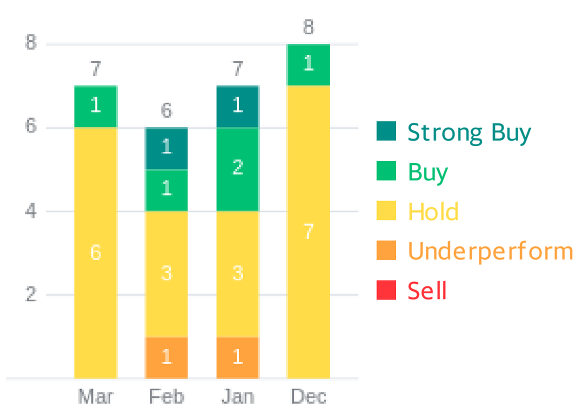
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	N/A	1	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	N/A

Growth Estimates	SWX	Industry	Sector(s)	S&P 500
Current Qtr.	48.10%	N/A	N/A	N/A
Next Qtr.	-32.40%	N/A	N/A	N/A
Current Year	-0.20%	N/A	N/A	N/A
Next Year	4.40%	N/A	N/A	N/A
Next 5 Years (per annum)	4.00%	N/A	N/A	N/A
Past 5 Years (per annum)	6.39%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SJI South Jersey Industries, Inc.	22.77	-0.17	-0.74%
NJR NewJersey Resources Corporation	40.28	-0.22	-0.54%
NWN Northwest Natural Holding Compa	54.06	+0.38	+0.70%
CPK Chesapeake Utilities Corporatio	114.84	-1.25	-1.08%
NWE NorthWestern Corporation	65.15	+0.07	+0.12%

Recommendation Trends >



Recommendation Rating >

2.7

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (5) >

Average 71.20

Low 60.00 | Current 69.02 | High 90.00

Upgrades & Downgrades >

Downgrade	JP Morgan: Overweight to Neutral	1/29/2021
Maintains	B of A Securities: to Neutral	9/23/2020
Upgrade	Wells Fargo: Underweight to Equal-Weight	8/19/2020
Maintains	Jefferies: to Hold	7/24/2020
Maintains	Wells Fargo: to Underweight	5/11/2020
Maintains	Citigroup: to Neutral	4/28/2020

More Upgrades & Downgrades

U.S. markets close in 5 hours 1 minute

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,982.84	33,074.00	13,268.27	2,219.63	61.00	1,702.80
+24.29 (+0.61%)	+7.04 (+0.02%)	+222.87 (+1.71%)	+23.83 (+1.09%)	+0.45 (+0.74%)	+16.80 (+1.00%)

Spire Inc. (SR)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

Advertisement

73.76 -0.12 (-0.16%)

As of 10:55AM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	9	10
Avg. Estimate	3.03	0.14	4.14	4.38
Low Estimate	2.93	0.06	4.09	4.3
High Estimate	3.21	0.32	4.36	4.55
Year Ago EPS	2.75	0.07	3.76	4.14

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	10	10
Avg. Estimate	775.8M	338.41M	1.93B	2.04B
Low Estimate	721M	300.3M	1.77B	1.78B
High Estimate	828.3M	403M	2.17B	2.27B
Year Ago Sales	715.5M	N/A	1.89B	1.93B
Sales Growth (year/est)	8.40%	N/A	2.30%	5.50%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	2.94	0.09	-0.41	1.31
EPS Actual	2.75	0.07	-0.37	1.42
Difference	-0.19	-0.02	0.04	0.11
Surprise %	-6.50%	-22.20%	9.80%	8.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	3.03	0.14	4.14	4.38
7 Days Ago	3.04	0.13	4.12	4.37
30 Days Ago	3.03	0.13	4.11	4.37
60 Days Ago	3.03	0.28	4.08	4.33
90 Days Ago	3.03	0.28	4.08	4.32

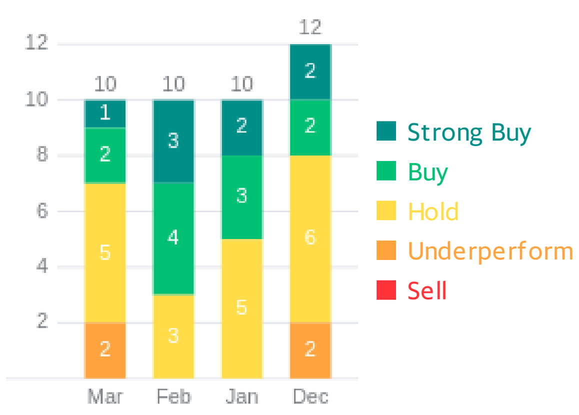
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	1	1	1
Up Last 30 Days	1	1	3	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	N/A	N/A	N/A

Growth Estimates	SR	Industry	Sector(s)	S&P 500
Current Qtr.	10.20%	N/A	N/A	N/A
Next Qtr.	100.00%	N/A	N/A	N/A
Current Year	10.10%	N/A	N/A	N/A
Next Year	5.80%	N/A	N/A	N/A
Next 5 Years (per annum)	5.70%	N/A	N/A	N/A
Past 5 Years (per annum)	-3.96%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SWX Southwest Gas Holdings, Inc.	69.02	-0.08	-0.12%
SJI South Jersey Industries, Inc.	22.75	-0.19	-0.83%
NWE NorthWestern Corporation	65.15	+0.07	+0.12%
OGS ONE Gas, Inc.	76.04	-0.02	-0.03%
NJR NewJersey Resources Corporation	40.25	-0.25	-0.62%

Recommendation Trends >



Recommendation Rating >

2.1

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (9) >

Average 72.33

Low 67.00 | Current 73.76 | High 82.00

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Equal-Weight	3/19/2021
Downgrade	Wells Fargo: Overweight to Equal-Weight	3/4/2021
Maintains	Morgan Stanley: to Equal-Weight	2/18/2021
Maintains	Credit Suisse: to Outperform	2/2/2021
Maintains	Morgan Stanley: to Equal-Weight	2/2/2021
Upgrade	JP Morgan: Neutral to Overweight	1/29/2021

More Upgrades & Downgrades

U.S. markets close in 3 hours 55 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.27	33,093.04	13,283.50	2,215.76	60.79	1,708.40
+28.72 (+0.73%)	+26.08 (+0.08%)	+238.10 (+1.83%)	+19.96 (+0.91%)	+0.24 (+0.40%)	+22.40 (+1.33%)

Apple Inc. (AAPL)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

Advertisement

123.30 +3.40 (+2.84%)

As of 12:05PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	30	28	40	39
Avg. Estimate	0.98	0.82	4.45	4.69
Low Estimate	0.85	0.7	4.1	3.64
High Estimate	1.09	0.98	4.89	5.5
Year Ago EPS	0.64	0.64	3.28	4.45

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	27	25	36	35
Avg. Estimate	76.92B	68.83B	333.48B	347.92B
Low Estimate	70.79B	61.71B	316.27B	291.56B
High Estimate	83.19B	77.04B	343.55B	386.5B
Year Ago Sales	58.31B	59.69B	274.51B	333.48B
Sales Growth (year/est)	31.90%	15.30%	21.50%	4.30%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.56	0.51	0.7	1.41
EPS Actual	0.64	0.64	0.73	1.68
Difference	0.08	0.13	0.03	0.27
Surprise %	14.30%	25.50%	4.30%	19.10%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.98	0.82	4.45	4.69
7 Days Ago	0.98	0.82	4.45	4.68
30 Days Ago	0.98	0.82	4.45	4.68
60 Days Ago	0.97	0.82	4.35	4.6
90 Days Ago	0.88	0.77	3.98	4.35

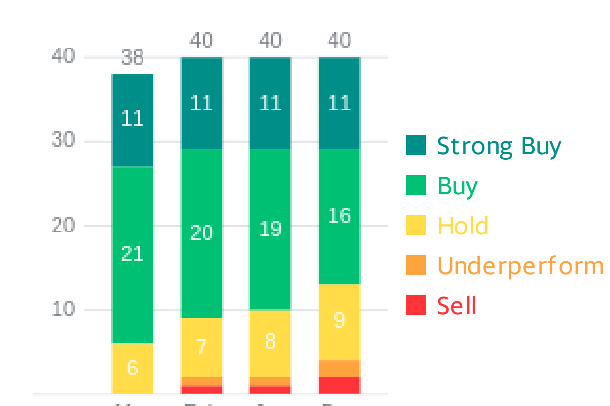
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AAPL	Industry	Sector(s)	S&P 500
Current Qtr.	53.10%	N/A	N/A	N/A
Next Qtr.	28.10%	N/A	N/A	N/A
Current Year	35.70%	N/A	N/A	N/A
Next Year	5.40%	N/A	N/A	N/A
Next 5 Years (per annum)	14.69%	N/A	N/A	N/A
Past 5 Years (per annum)	8.42%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
AMZN Amazon.com, Inc.	3,116.26	+60.97	+2.00%
TSLA Tesla, Inc.	658.37	+22.75	+3.58%
FB Facebook, Inc.	295.20	+7.20	+2.50%
GOOG Alphabet Inc.	2,087.63	+32.09	+1.56%
NFLX Netflix, Inc.	525.85	+12.46	+2.43%

Recommendation Trends >



Recommendation Rating >

2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (39) >

Average 152.01

Low 83.00 | Current 123.31 | High 175.00

Upgrades & Downgrades >

Upgrade	UBS: Neutral to Buy	3/31/2021
Maintains	Evercore ISI Group: to Outperform	3/16/2021
Maintains	Wedbush: to Outperform	3/10/2021
Maintains	DA Davidson: to Buy	1/28/2021
Maintains	Deutsche Bank: to Buy	1/28/2021
Maintains	Wells Fargo: to Overweight	1/28/2021

More Upgrades & Downgrades

U.S. markets close in 3 hours 55 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.36	33,092.37	13,283.45	2,215.77	60.78	1,706.90
+28.81 (+0.73%)	+25.41 (+0.08%)	+238.05 (+1.82%)	+19.97 (+0.91%)	+0.23 (+0.38%)	+23.00 (+1.37%)

Abbott Laboratories (ABT)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

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121.20 +1.45 (+1.21%)

As of 12:05PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	18	18	22	22
Avg. Estimate	1.27	1.27	5.05	5.35
Low Estimate	1.11	1.19	4.81	4.55
High Estimate	1.43	1.38	5.26	5.63
Year Ago EPS	0.65	0.57	3.65	5.05

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	16	16	21	21
Avg. Estimate	10.73B	10.65B	42.25B	42.04B
Low Estimate	10.41B	9.85B	39.71B	40.09B
High Estimate	10.98B	11.11B	43.66B	45.06B
Year Ago Sales	7.73B	6.81B	34.61B	42.25B
Sales Growth (year/est)	38.80%	56.50%	22.10%	-0.50%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.58	0.42	0.91	1.35
EPS Actual	0.65	0.57	0.98	1.45
Difference	0.07	0.15	0.07	0.1
Surprise %	12.10%	35.70%	7.70%	7.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.27	1.27	5.05	5.35
7 Days Ago	1.27	1.27	5.05	5.35
30 Days Ago	1.27	1.27	5.06	5.39
60 Days Ago	1.25	1.25	4.97	5.29
90 Days Ago	1.04	1.06	4.4	4.64

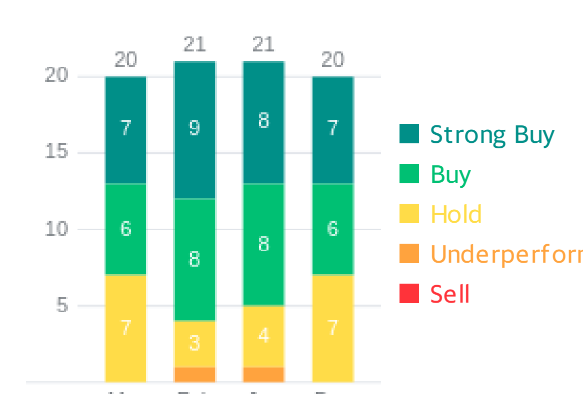
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	1	N/A	N/A
Up Last 30 Days	N/A	1	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	N/A	1	1

Growth Estimates	ABT	Industry	Sector(s)	S&P 500
Current Qtr.	95.40%	N/A	N/A	N/A
Next Qtr.	122.80%	N/A	N/A	N/A
Current Year	38.40%	N/A	N/A	N/A
Next Year	5.90%	N/A	N/A	N/A
Next 5 Years (per annum)	15.58%	N/A	N/A	N/A
Past 5 Years (per annum)	8.15%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
ABBV AbbVie Inc.	108.26	+1.47	+1.38%
BMY Bristol-Myers Squibb Company	63.60	+0.78	+1.24%
LLY Eli Lilly and Company	186.72	+1.22	+0.66%
JNJ Johnson & Johnson	165.06	+0.05	+0.03%
MDT Medtronic plc.	118.99	+0.16	+0.13%

Recommendation Trends >



Recommendation Rating >

1.8

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (18) >

Average 135.67

Low 111.00 | Current 121.20 | High 158.00

Upgrades & Downgrades >

Maintains	Raymond James: to Outperform	3/11/2021
Maintains	Cowen & Co.: to Outperform	1/28/2021
Maintains	Credit Suisse: to Outperform	1/28/2021
Maintains	Morgan Stanley: to Overweight	1/28/2021
Upgrade	BTIG: Neutral to Buy	1/28/2021
Maintains	Raymond James: to Outperform	1/28/2021

More Upgrades & Downgrades

U.S. markets close in 3 hours 55 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.25	33,092.26	13,283.64	2,215.67	60.78	1,708.40
+28.70 (+0.73%)	+25.30 (+0.08%)	+238.25 (+1.83%)	+19.87 (+0.90%)	+0.23 (+0.38%)	+22.40 (+1.33%)

Assurant, Inc. (AIZ)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

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143.59 -1.12 (-0.77%)

As of 12:03PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	4	5	5
Avg. Estimate	2.02	2.38	9.69	11.86
Low Estimate	1.88	2.12	9.35	11.5
High Estimate	2.35	2.64	10.5	12.49
Year Ago EPS	2.64	2.75	8.63	9.69

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	4	4
Avg. Estimate	2.47B	2.44B	10.08B	10.77B
Low Estimate	2.43B	2.32B	9.72B	10.39B
High Estimate	2.53B	2.53B	10.36B	11.04B
Year Ago Sales	2.57B	N/A	10.09B	10.08B
Sales Growth (year/est)	-3.80%	N/A	-0.20%	6.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	2.42	2.09	1	2.08
EPS Actual	2.64	2.75	1.41	1.82
Difference	0.22	0.66	0.41	-0.26
Surprise %	9.10%	31.60%	41.00%	-12.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	2.02	2.38	9.69	11.86
7 Days Ago	2.02	2.38	9.69	11.86
30 Days Ago	2.62	2.66	10.46	11.82
60 Days Ago	2.72	2.7	10.71	12.37
90 Days Ago	2.7	2.66	10.73	12.3

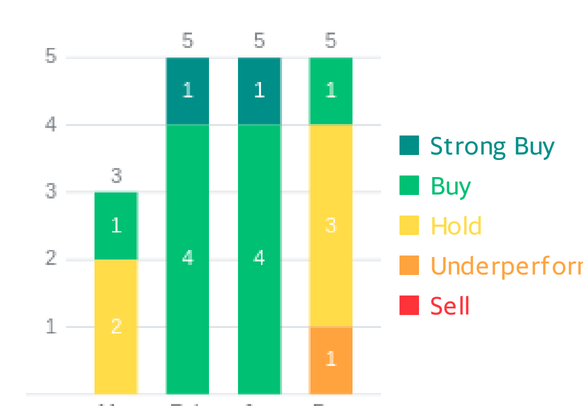
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AIZ	Industry	Sector(s)	S&P 500
Current Qtr.	-23.50%	N/A	N/A	N/A
Next Qtr.	-13.50%	N/A	N/A	N/A
Current Year	12.30%	N/A	N/A	N/A
Next Year	22.40%	N/A	N/A	N/A
Next 5 Years (per annum)	19.40%	N/A	N/A	N/A
Past 5 Years (per annum)	8.78%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
AON Aon plc	231.00	-1.09	-0.47%
AMP Ameriprise Financial, Inc.	232.21	-0.59	-0.25%
AIV Apartment Investment and Manage	6.18	-0.05	-0.72%
AVY Avery Dennison Corporation	185.01	-0.16	-0.09%
RE Everest Re Group, Ltd.	250.77	-3.52	-1.38%

Recommendation Trends >



Recommendation Rating >

1.8

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (4) >

Average 163.75

Low 153.00 | High 172.00

Current 143.59

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Overweight	1/12/2021
Maintains	Morgan Stanley: to Overweight	11/24/2020
Maintains	Morgan Stanley: to Overweight	8/19/2020
Maintains	Morgan Stanley: to Overweight	8/10/2020
Maintains	Morgan Stanley: to Overweight	6/11/2020
Maintains	Morgan Stanley: to Overweight	5/18/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 54 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.34	33,094.76	13,281.75	2,215.79	60.75	1,708.80
+28.79 (+0.73%)	+27.80 (+0.08%)	+236.35 (+1.81%)	+19.99 (+0.91%)	+0.20 (+0.33%)	+22.80 (+1.35%)

ANSYS, Inc. (ANSS)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑ | Quote Lookup

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340.96 +9.07 (+2.73%)

As of 12:05PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	13	13	15	15
Avg. Estimate	0.84	1.56	6.75	7.66
Low Estimate	0.78	1.25	6.51	7.2
High Estimate	0.9	1.8	7	8.25
Year Ago EPS	0.83	1.55	6.7	6.75

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	11	14	14
Avg. Estimate	349.68M	428.45M	1.85B	2.04B
Low Estimate	341M	415.5M	1.82B	1.95B
High Estimate	369.1M	448.54M	1.92B	2.2B
Year Ago Sales	308.9M	N/A	1.7B	1.85B
Sales Growth (year/est)	13.20%	N/A	8.90%	10.40%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.8	1.16	1.26	2.54
EPS Actual	0.83	1.55	1.36	2.96
Difference	0.03	0.39	0.1	0.42
Surprise %	3.70%	33.60%	7.90%	16.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.84	1.56	6.75	7.66
7 Days Ago	0.84	1.56	6.75	7.66
30 Days Ago	0.95	1.63	6.95	7.82
60 Days Ago	1.09	1.69	7.06	7.88
90 Days Ago	1.09	1.69	7.05	7.9

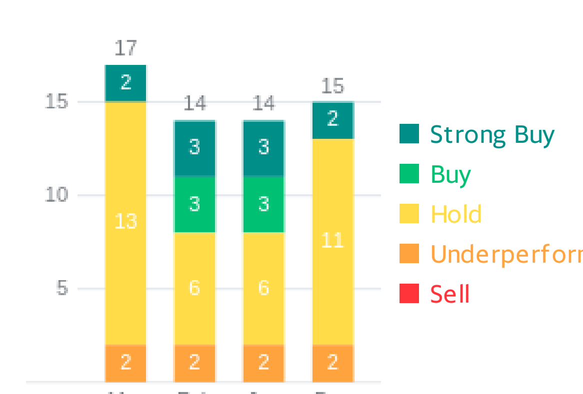
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	ANSS	Industry	Sector(s)	S&P 500
Current Qtr.	1.20%	N/A	N/A	N/A
Next Qtr.	0.60%	N/A	N/A	N/A
Current Year	0.70%	N/A	N/A	N/A
Next Year	13.50%	N/A	N/A	N/A
Next 5 Years (per annum)	8.00%	N/A	N/A	N/A
Past 5 Years (per annum)	15.00%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
CDNS Cadence Design Systems, Inc.	136.66	+5.79	+4.42%
VRSK Verisk Analytics, Inc.	177.30	+1.35	+0.77%
SNPS Synopsys, Inc.	246.76	+7.16	+2.99%
ADSK Autodesk, Inc.	278.46	+10.03	+3.74%
APH Amphenol Corporation	66.22	+0.63	+0.96%

Recommendation Trends >



Recommendation Rating >

2.5

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (12) >

Average 368.17

Low 270.00 | Current 340.96 | High 415.00

Upgrades & Downgrades >

Maintains	RBC Capital: to Sector Perform	2/26/2021
Maintains	Credit Suisse: to Outperform	2/26/2021
Maintains	Barclays: to Underweight	7/20/2020
Maintains	RBC Capital: to Sector Perform	5/8/2020
Maintains	Wedbush: to Outperform	4/24/2020
Maintains	Wedbush: to Outperform	3/13/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 55 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.39	33,091.55	13,283.17	2,215.73	60.77	1,709.30
+28.84 (+0.73%)	+24.59 (+0.07%)	+237.78 (+1.82%)	+19.94 (+0.91%)	+0.22 (+0.36%)	+23.30 (+1.38%)

Booz Allen Hamilton Holding Corporation (BAH)

NYSE - Nasdaq Real Time Price. Currency in USD

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80.86 +0.10 (+0.12%)

As of 12:05PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	10	12	12
Avg. Estimate	0.83	1	3.84	4.08
Low Estimate	0.79	0.94	3.8	3.97
High Estimate	0.89	1.07	3.91	4.31
Year Ago EPS	0.73	0.93	3.18	3.84

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	7	11	11
Avg. Estimate	2.01B	2.04B	7.88B	8.35B
Low Estimate	1.95B	2.01B	7.83B	8.24B
High Estimate	2.12B	2.08B	7.91B	8.45B
Year Ago Sales	1.97B	1.97B	7.46B	7.88B
Sales Growth (year/est)	2.00%	3.50%	5.50%	6.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.71	0.86	0.92	0.93
EPS Actual	0.73	0.93	1.03	1.04
Difference	0.02	0.07	0.11	0.11
Surprise %	2.80%	8.10%	12.00%	11.80%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.83	1	3.84	4.08
7 Days Ago	0.83	1	3.84	4.08
30 Days Ago	0.83	1	3.84	4.08
60 Days Ago	0.88	1.07	3.77	4.2
90 Days Ago	0.87	1.06	3.76	4.18

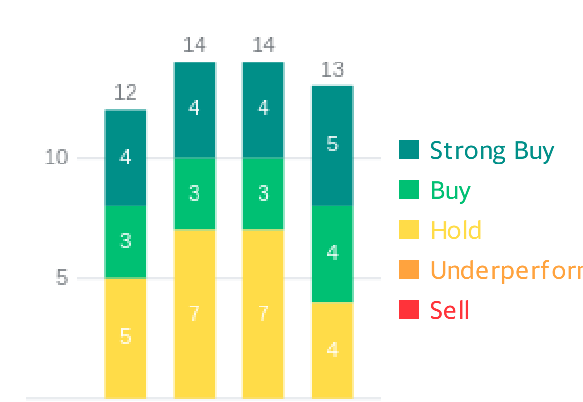
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BAH	Industry	Sector(s)	S&P 500
Current Qtr.	13.70%	N/A	N/A	N/A
Next Qtr.	7.50%	N/A	N/A	N/A
Current Year	20.80%	N/A	N/A	N/A
Next Year	6.30%	N/A	N/A	N/A
Next 5 Years (per annum)	10.99%	N/A	N/A	N/A
Past 5 Years (per annum)	17.34%	N/A	N/A	N/A

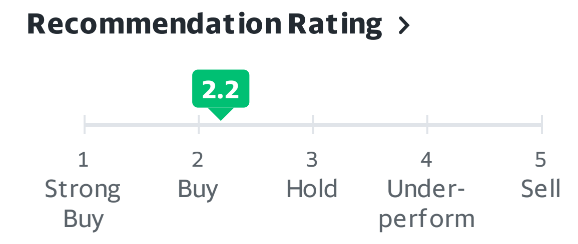
People Also Watch

Symbol	Last Price	Change	% Change
LDOS Leidos Holdings, Inc.	96.45	-0.22	-0.22%
CACI CACI International, Inc.	244.88	-1.37	-0.55%
SAIC SCIENCE APPLICATIONS INTERNATIO	83.39	-0.10	-0.12%
CDW CDW Corporation	165.49	+0.67	+0.41%
MANT ManTech International Corporati	87.48	+0.81	+0.93%

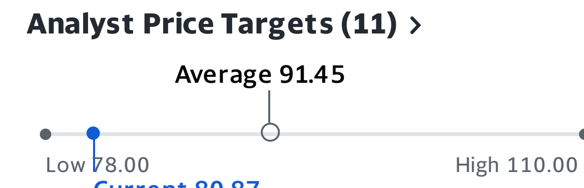
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (11) >



Upgrades & Downgrades >

Maintains	Morgan Stanley: to Overweight	2/22/2021
Maintains	Morgan Stanley: to Overweight	2/19/2021
Maintains	Morgan Stanley: to Overweight	12/4/2020
Maintains	Credit Suisse: to Outperform	11/2/2020
Maintains	Morgan Stanley: to Overweight	8/3/2020
Downgrade	Raymond James: Outperform to Market Perform	7/8/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 54 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.33	33,095.55	13,282.14	2,215.78	60.75	1,708.70
+28.78 (+0.73%)	+28.59 (+0.09%)	+236.75 (+1.81%)	+19.99 (+0.91%)	+0.20 (+0.33%)	+22.70 (+1.35%)

Becton, Dickinson and Company (BDX)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

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245.54 +0.35 (+0.14%)

As of 12:04PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	16	16	16	16
Avg. Estimate	3.04	2.57	12.84	13.39
Low Estimate	2.88	2.35	12.68	13
High Estimate	3.17	2.77	13.07	13.84
Year Ago EPS	2.55	2.2	10.2	12.84

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	16	14
Avg. Estimate	4.88B	4.58B	19.55B	19.6B
Low Estimate	4.78B	4.41B	19.36B	19.13B
High Estimate	5.03B	4.93B	20.3B	20.4B
Year Ago Sales	4.25B	N/A	17.12B	19.55B
Sales Growth (year/est)	14.80%	N/A	14.20%	0.20%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	2.32	2.04	2.52	3.11
EPS Actual	2.55	2.2	2.79	4.55
Difference	0.23	0.16	0.27	1.44
Surprise %	9.90%	7.80%	10.70%	46.30%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	3.04	2.57	12.84	13.39
7 Days Ago	3.04	2.57	12.84	13.39
30 Days Ago	3.05	2.57	12.84	13.42
60 Days Ago	3.24	3.07	12.55	13.4
90 Days Ago	3.24	3.08	12.53	13.39

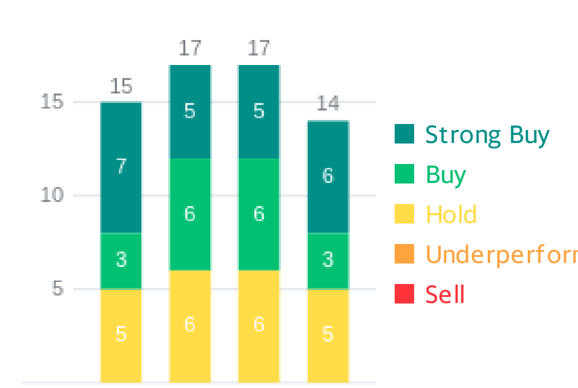
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BDX	Industry	Sector(s)	S&P 500
Current Qtr.	19.20%	N/A	N/A	N/A
Next Qtr.	16.80%	N/A	N/A	N/A
Current Year	25.90%	N/A	N/A	N/A
Next Year	4.30%	N/A	N/A	N/A
Next 5 Years (per annum)	12.00%	N/A	N/A	N/A
Past 5 Years (per annum)	13.57%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
BAX Baxter International Inc.	85.42	-0.16	-0.19%
APD Air Products and Chemicals, Inc	283.01	+1.90	+0.68%
CAH Cardinal Health, Inc.	61.25	-0.54	-0.88%
ADP Automatic Data Processing, Inc.	188.43	+0.54	+0.29%
CB Chubb Limited	158.48	-3.03	-1.88%

Recommendation Trends >



Recommendation Rating >

2.1

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (14) >

Average 281.57

Low 260.00 | High 300.00

Current 245.54

Upgrades & Downgrades >

Maintains	Citigroup: to Neutral	2/5/2021
Maintains	Raymond James: to Outperform	1/29/2021
Upgrade	Morgan Stanley: Equal-Weight to Overweight	12/15/2020
Downgrade	Wells Fargo: Overweight to Equal-Weight	12/15/2020
Maintains	Morgan Stanley: to Equal-Weight	11/6/2020
Maintains	Raymond James: to Outperform	10/12/2020

More Upgrades & Downgrades

Brown-Forman Corporation (BF-B)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑ | Quote Lookup

68.84 -1.16 (-1.66%)

As of 1:25PM EDT. Market open.

Currency in USD

Earnings Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	11	11	15
Avg. Estimate	0.32	0.42	1.7	1.89
Low Estimate	0.22	0.38	1.66	1.78
High Estimate	0.46	0.45	1.81	2.04
Year Ago EPS	0.27	0.4	1.72	1.7

Revenue Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	6	14	13
Avg. Estimate	770.96M	815.61M	3.42B	3.67B
Low Estimate	716.09M	798.2M	3.37B	3.56B
High Estimate	817.5M	843M	3.47B	3.77B
Year Ago Sales	709M	N/A	3.36B	3.42B
Sales Growth (year/est)	8.70%	N/A	1.60%	7.40%

Earnings History	4/29/2020	7/30/2020	10/30/2020	1/30/2021
EPS Est.	0.28	0.31	0.51	0.43
EPS Actual	0.27	0.4	0.5	0.45
Difference	-0.01	0.09	-0.01	0.02
Surprise %	-3.60%	29.00%	-2.00%	4.70%

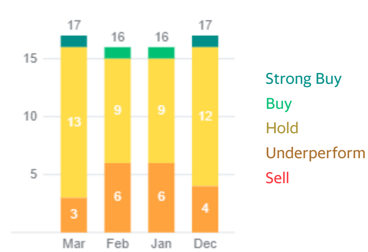
EPS Trend	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.32	0.42	1.7	1.89
7 Days Ago	0.32	0.42	1.7	1.89
30 Days Ago	0.33	0.41	1.88	1.89
60 Days Ago	0.33	0.4	1.88	1.89
90 Days Ago	0.32	0.4	1.88	1.89

EPS Revisions	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	1

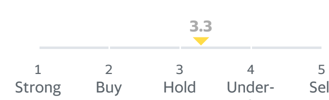
People Also Watch

Symbol	Last Price	Change	% Change
CINF Cincinnati Financial Corporatio	104.18	-0.90	-0.86%
CTAS Cintas Corporation	341.52	+4.21	+1.25%
DOV Dover Corporation	137.74	-0.64	-0.46%
MKC McCormick & Company, Incorporat	89.37	-0.53	-0.59%
BF-A Brown Forman Inc	63.96	-1.05	-1.62%

Recommendation Trends >



Recommendation Rating >



Up Last 30 Days	5	5	5	7
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	N/A

Growth Estimates	BF-B	Industry	Sector(s)	S&P 500
Current Qtr.	18.50%	N/A	N/A	N/A
Next Qtr.	5.00%	N/A	N/A	N/A
Current Year	-1.20%	N/A	N/A	N/A
Next Year	11.20%	N/A	N/A	N/A
Next 5 Years (per annum)	7.53%	N/A	N/A	N/A
Past 5 Years (per annum)	5.47%	N/A	N/A	N/A

Low 62.00 High 100.00
Current 68.84

Upgrades & Downgrades ›

Downgrade	Redburn: Neutral to Sell	10/13/2020
Maintains	Morgan Stanley: to Underweight	9/3/2020
Maintains	B of A Securities: to Underperform	8/27/2020
Maintains	Morgan Stanley: to Underweight	6/10/2020
Maintains	Deutsche Bank: to Hold	6/10/2020
Maintains	Morgan Stanley: to Underweight	6/8/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.94	33,096.60	13,284.38	2,215.93	60.69	1,708.80
+29.39 (+0.74%)	+29.64 (+0.09%)	+238.98 (+1.83%)	+20.13 (+0.92%)	+0.14 (+0.23%)	+22.80 (+1.35%)

Broadridge Financial Solutions, Inc. (BR)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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153.82 +0.84 (+0.55%)

As of 12:06PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	8	8	9	9
Avg. Estimate	1.67	2.14	5.53	6.08
Low Estimate	1.62	2.03	5.46	5.89
High Estimate	1.7	2.21	5.66	6.27
Year Ago EPS	1.67	2.15	5.03	5.53

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	8	8	9	9
Avg. Estimate	1.28B	1.38B	4.74B	5.05B
Low Estimate	1.26B	1.36B	4.71B	4.89B
High Estimate	1.31B	1.41B	4.8B	5.27B
Year Ago Sales	1.25B	1.36B	4.53B	4.74B
Sales Growth (year/est)	2.40%	1.50%	4.70%	6.40%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.72	2.09	0.63	0.7
EPS Actual	1.67	2.15	0.98	0.73
Difference	-0.05	0.06	0.35	0.03
Surprise %	-2.90%	2.90%	55.60%	4.30%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.67	2.14	5.53	6.08
7 Days Ago	1.67	2.14	5.54	6.03
30 Days Ago	1.67	2.14	5.54	6.03
60 Days Ago	1.7	2.1	5.51	6.02
90 Days Ago	1.71	2.11	5.51	6.03

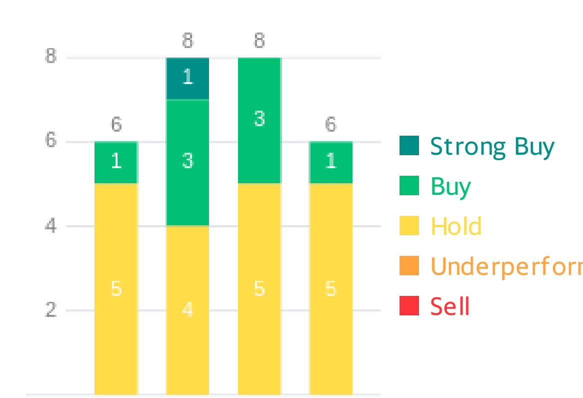
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	2
Up Last 30 Days	N/A	N/A	N/A	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	1	N/A

Growth Estimates	BR	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	-0.50%	N/A	N/A	N/A
Current Year	9.90%	N/A	N/A	N/A
Next Year	9.90%	N/A	N/A	N/A
Next 5 Years (per annum)	10.00%	N/A	N/A	N/A
Past 5 Years (per annum)	24.69%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
ADP Automatic Data Processing, Inc.	188.56	+0.67	+0.36%
CDK CDK Global, Inc.	54.35	+0.64	+1.19%
JKHY Jack Henry & Associates, Inc.	153.32	-0.08	-0.05%
AVY Avery Dennison Corporation	184.99	-0.19	-0.10%
APH Amphenol Corporation	66.20	+0.61	+0.93%

Recommendation Trends >



Recommendation Rating >

2.3

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (7) >

Average 165.00

Low 152.00 Current 153.82 High 176.00

Upgrades & Downgrades >

Maintains	Raymond James: to Outperform	2/3/2021
Upgrade	BTIG: Neutral to Buy	2/3/2021
Initiated	Truist Securities: to Buy	12/18/2020
Maintains	Rosenblatt: to Neutral	8/12/2020
Downgrade	BTIG: Buy to Neutral	8/12/2020
Downgrade	DA Davidson: Buy to Neutral	8/5/2020

More Upgrades & Downgrades

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U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.64	33,098.16	13,282.51	2,216.08	60.74	1,706.90
+29.09 (+0.73%)	+31.20 (+0.09%)	+237.12 (+1.82%)	+20.28 (+0.92%)	+0.19 (+0.31%)	+23.00 (+1.37%)

Brady Corporation (BRC)

NYSE - Nasdaq Real Time Price. Currency in USD

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53.73 -0.31 (-0.57%)

As of 12:09PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	4	4	4	4
Avg. Estimate	0.65	0.67	2.55	2.86
Low Estimate	0.63	0.66	2.52	2.65
High Estimate	0.69	0.69	2.61	3.05
Year Ago EPS	0.46	0.53	2.32	2.55

Revenue Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	3	4
Avg. Estimate	278.13M	282.68M	1.1B	1.16B
Low Estimate	273.42M	278.68M	1.1B	1.13B
High Estimate	285M	287.8M	1.12B	1.18B
Year Ago Sales	251.25M	251.74M	1.08B	1.1B
Sales Growth (year/est)	10.70%	12.30%	2.10%	4.70%

Earnings History	4/29/2020	7/30/2020	10/30/2020	1/30/2021
EPS Est.	0.48	0.52	0.57	0.61
EPS Actual	0.46	0.53	0.64	0.59
Difference	-0.02	0.01	0.07	-0.02
Surprise %	-4.20%	1.90%	12.30%	-3.30%

EPS Trend	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.65	0.67	2.55	2.86
7 Days Ago	0.65	0.67	2.55	2.86
30 Days Ago	0.65	0.67	2.55	2.85
60 Days Ago	0.64	0.65	2.54	2.83
90 Days Ago	0.64	0.65	2.54	2.83

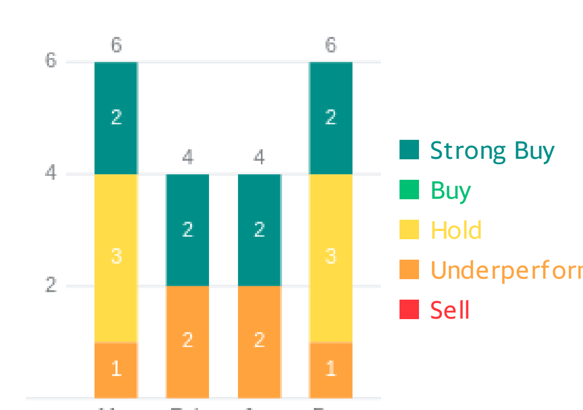
EPS Revisions	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BRC	Industry	Sector(s)	S&P 500
Current Qtr.	41.30%	N/A	N/A	N/A
Next Qtr.	26.40%	N/A	N/A	N/A
Current Year	9.90%	N/A	N/A	N/A
Next Year	12.20%	N/A	N/A	N/A
Next 5 Years (per annum)	7.00%	N/A	N/A	N/A
Past 5 Years (per annum)	15.17%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
ABM ABM Industries Incorporated	50.84	-0.14	-0.27%
FUL H. B. Fuller Company	62.92	-0.88	-1.38%
TNC Tennant Company	80.06	-1.13	-1.39%
BMI Badger Meter, Inc.	94.75	+0.53	+0.56%
CTBI Community Trust Bancorp, Inc.	43.84	-0.85	-1.90%

Recommendation Trends >



Recommendation Rating >

2.5

1 Strong Buy · 2 Buy · 3 Hold · 4 Under-perform · 5 Sell

Analyst Price Targets (4) >

Average 57.25

Low 45.00 · Current 53.73 · High 67.00

Upgrades & Downgrades >

Maintains	Sidoti & Co.: to Buy	9/11/2020
Maintains	B of A Securities: to Underperform	6/4/2020
Maintains	Wells Fargo: to Underweight	5/22/2020
Maintains	Wells Fargo: to Underweight	3/16/2020
Downgrade	Wells Fargo: Equal-Weight to Underweight	1/14/2020
Maintains	Wells Fargo: to Market Perform	11/22/2019

More Upgrades & Downgrades

U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.93	33,095.22	13,284.24	2,215.97	60.70	1,709.30
+29.38 (+0.74%)	+28.26 (+0.09%)	+238.84 (+1.83%)	+20.17 (+0.92%)	+0.15 (+0.25%)	+23.30 (+1.38%)

CACI International Inc (CACI)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

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244.88 -1.37 (-0.55%)

As of 12:06PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	13	13
Avg. Estimate	3.69	3.71	15.27	16.41
Low Estimate	3.38	3.34	14.94	15.66
High Estimate	4	3.96	15.8	18.17
Year Ago EPS	3.16	3.68	12.61	15.27

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	11	13	12
Avg. Estimate	1.58B	1.63B	6.14B	6.47B
Low Estimate	1.55B	1.57B	6.05B	6.3B
High Estimate	1.59B	1.66B	6.17B	6.64B
Year Ago Sales	1.47B	1.5B	5.72B	6.14B
Sales Growth (year/est)	7.50%	9.30%	7.30%	5.40%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	3.15	3.44	3.11	3.6
EPS Actual	3.16	3.68	3.67	4.18
Difference	0.01	0.24	0.56	0.58
Surprise %	0.30%	7.00%	18.00%	16.10%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	3.69	3.71	15.27	16.41
7 Days Ago	3.69	3.71	15.27	16.41
30 Days Ago	3.69	3.72	15.23	16.27
60 Days Ago	3.74	3.94	15.05	16.22
90 Days Ago	3.77	3.98	15.01	16.13

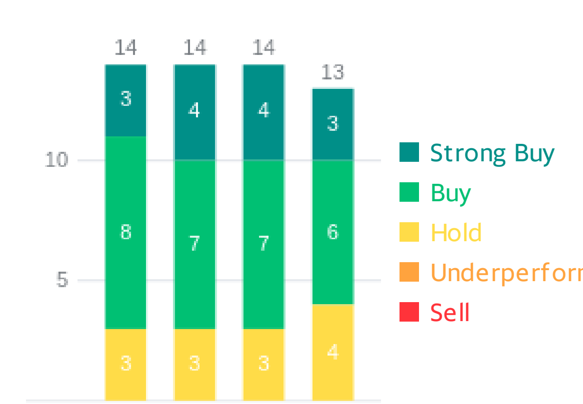
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	2	3	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CACI	Industry	Sector(s)	S&P 500
Current Qtr.	16.80%	N/A	N/A	N/A
Next Qtr.	0.80%	N/A	N/A	N/A
Current Year	21.10%	N/A	N/A	N/A
Next Year	7.50%	N/A	N/A	N/A
Next 5 Years (per annum)	12.91%	N/A	N/A	N/A
Past 5 Years (per annum)	18.13%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
MANT ManTech International Corporati	87.65	+0.98	+1.13%
SAIC SCIENCE APPLICATIONS INTERNATIO	83.33	-0.16	-0.19%
BAH Booz Allen Hamilton Holding Cor	80.80	+0.03	+0.04%
LDOS Leidos Holdings, Inc.	96.45	-0.22	-0.22%
CHE Chemed Corp	459.08	-0.32	-0.07%

Recommendation Trends >



Recommendation Rating >

1.9

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (12) >

Average 290.75

Low 250.00 | High 332.00

Current 244.89

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Equal-Weight	2/22/2021
Maintains	Morgan Stanley: to Equal-Weight	2/19/2021
Maintains	Truist Securities: to Buy	1/29/2021
Maintains	Credit Suisse: to Outperform	1/29/2021
Upgrade	JP Morgan: Neutral to Overweight	9/22/2020
Maintains	Morgan Stanley: to Equal-Weight	8/24/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.61	33,096.69	13,283.26	2,216.03	60.73	1,708.90
+29.06 (+0.73%)	+29.73 (+0.09%)	+237.87 (+1.82%)	+20.24 (+0.92%)	+0.18 (+0.30%)	+22.90 (+1.36%)

Casey's General Stores, Inc. (CASY)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

217.62 +0.39 (+0.18%)

As of 12:06PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	8	12	12
Avg. Estimate	0.78	2.83	8.05	8.18
Low Estimate	0.6	2.34	7.87	7.25
High Estimate	1.2	3.5	8.47	9.4
Year Ago EPS	1.67	3.24	7.1	8.05

Revenue Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	6	12	12
Avg. Estimate	2.17B	2.72B	8.5B	10.17B
Low Estimate	1.99B	2.6B	8.32B	9.09B
High Estimate	2.37B	2.81B	8.7B	10.9B
Year Ago Sales	1.81B	N/A	9.18B	8.5B
Sales Growth (year/est)	19.50%	N/A	-7.40%	19.60%

Earnings History	4/29/2020	7/30/2020	10/30/2020	1/30/2021
EPS Est.	1.79	2.12	2.8	0.97
EPS Actual	1.67	3.24	3	1.04
Difference	-0.12	1.12	0.2	0.07
Surprise %	-6.70%	52.80%	7.10%	7.20%

EPS Trend	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.78	2.83	8.05	8.18
7 Days Ago	0.79	2.85	8.05	8.15
30 Days Ago	0.89	2.94	8.07	7.99
60 Days Ago	0.91	2.93	8.09	8
90 Days Ago	0.91	2.93	8.11	7.97

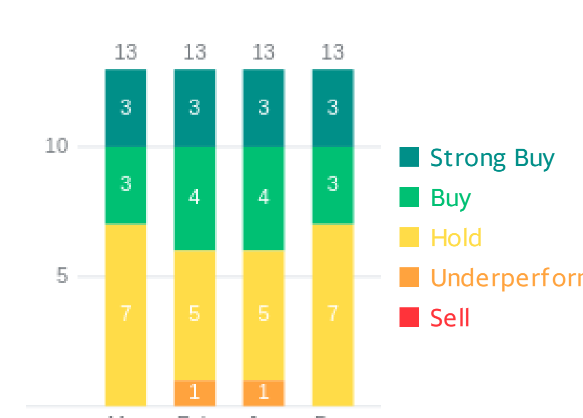
EPS Revisions	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	1	N/A	1	1
Up Last 30 Days	4	2	6	7
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CASY	Industry	Sector(s)	S&P 500
Current Qtr.	-53.30%	N/A	N/A	N/A
Next Qtr.	-12.70%	N/A	N/A	N/A
Current Year	13.40%	N/A	N/A	N/A
Next Year	1.60%	N/A	N/A	N/A
Next 5 Years (per annum)	7.85%	N/A	N/A	N/A
Past 5 Years (per annum)	-2.46%	N/A	N/A	N/A

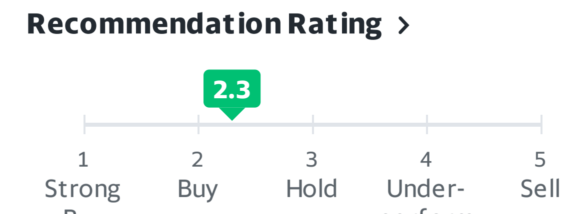
People Also Watch

Symbol	Last Price	Change	% Change
CBRL Cracker Barrel Old Country Stor	173.08	+1.01	+0.59%
CRI Carter's, Inc.	89.02	-1.25	-1.38%
CBSH Commerce Bancshares, Inc.	76.98	-0.72	-0.93%
BCPC Balchem Corporation	125.18	-1.40	-1.10%
CGNX Cognex Corporation	83.31	+1.54	+1.88%

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (11) >

Upgrades & Downgrades >

Maintains	Raymond James: to Outperform	3/10/2021
Maintains	Raymond James: to Outperform	12/3/2020
Maintains	Sidoti & Co.: to Buy	10/15/2020
Downgrade	JP Morgan: Neutral to Underweight	9/14/2020
Maintains	Deutsche Bank: to Buy	9/10/2020
Maintains	BMO Capital: to Market Perform	9/10/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.67	33,098.15	13,282.49	2,216.03	60.74	1,709.00
+29.12 (+0.74%)	+31.19 (+0.09%)	+237.09 (+1.82%)	+20.24 (+0.92%)	+0.19 (+0.31%)	+23.00 (+1.36%)

Cadence Design Systems, Inc. (CDNS)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

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136.69 +5.82 (+4.45%)

As of 12:09PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	15	14
Avg. Estimate	0.75	0.76	3.01	3.33
Low Estimate	0.73	0.71	2.97	3.1
High Estimate	0.84	0.8	3.05	3.58
Year Ago EPS	0.6	0.66	2.8	3.01

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	16	15
Avg. Estimate	717.95M	721.58M	2.9B	3.13B
Low Estimate	690M	706.7M	2.87B	2.97B
High Estimate	729.59M	738M	2.95B	3.23B
Year Ago Sales	617.96M	638.42M	2.68B	2.9B
Sales Growth (year/est)	16.20%	13.00%	8.00%	8.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.54	0.52	0.61	0.74
EPS Actual	0.6	0.66	0.7	0.83
Difference	0.06	0.14	0.09	0.09
Surprise %	11.10%	26.90%	14.80%	12.20%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.75	0.76	3.01	3.33
7 Days Ago	0.75	0.76	3.01	3.33
30 Days Ago	0.74	0.75	2.98	3.33
60 Days Ago	0.71	0.72	2.86	3.14
90 Days Ago	0.71	0.72	2.87	3.14

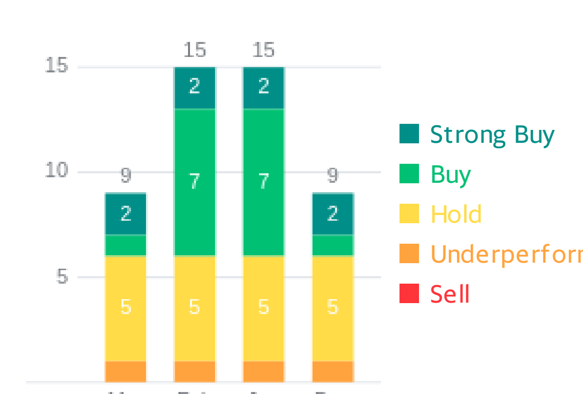
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	2	3	3	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CDNS	Industry	Sector(s)	S&P 500
Current Qtr.	25.00%	N/A	N/A	N/A
Next Qtr.	15.20%	N/A	N/A	N/A
Current Year	7.50%	N/A	N/A	N/A
Next Year	10.60%	N/A	N/A	N/A
Next 5 Years (per annum)	11.10%	N/A	N/A	N/A
Past 5 Years (per annum)	18.88%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SNPS Synopsys, Inc.	246.62	+7.02	+2.93%
ANSS ANSYS, Inc.	341.25	+9.36	+2.82%
ADSK Autodesk, Inc.	278.36	+9.93	+3.70%
QRVO Qorvo, Inc.	182.80	+5.17	+2.91%
TER Teradyne, Inc.	120.14	+4.18	+3.60%

Recommendation Trends >



Recommendation Rating >

2.2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (15) >

Average 150.45

Low 122.70 | Current 136.69 | High 160.00

Upgrades & Downgrades >

Maintains	RBC Capital: to Outperform	2/23/2021
Maintains	Credit Suisse: to Neutral	2/23/2021
Maintains	Needham: to Buy	2/23/2021
Maintains	Credit Suisse: to Neutral	2/22/2021
Maintains	KeyBanc: to Overweight	2/16/2021
Maintains	Wells Fargo: to Overweight	2/10/2021

More Upgrades & Downgrades

U.S. markets close in 3 hours 51 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.78	33,098.93	13,283.26	2,216.10	60.72	1,709.00
+29.23 (+0.74%)	+31.97 (+0.10%)	+237.87 (+1.82%)	+20.30 (+0.92%)	+0.17 (+0.28%)	+23.00 (+1.36%)

Cerner Corporation (CERN)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

72.15 +0.51 (+0.71%)

As of 12:09PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	18	18	19	18
Avg. Estimate	0.74	0.76	3.16	3.55
Low Estimate	0.72	0.7	3.13	3.45
High Estimate	0.75	0.8	3.2	3.67
Year Ago EPS	0.71	0.63	2.84	3.16

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	19	19
Avg. Estimate	1.4B	1.44B	5.82B	6.12B
Low Estimate	1.39B	1.39B	5.72B	5.98B
High Estimate	1.42B	1.5B	5.89B	6.25B
Year Ago Sales	1.41B	1.33B	5.51B	5.82B
Sales Growth (year/est)	-0.70%	8.20%	5.70%	5.20%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.7	0.61	0.71	0.78
EPS Actual	0.71	0.63	0.72	0.78
Difference	0.01	0.02	0.01	0
Surprise %	1.40%	3.30%	1.40%	0.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.74	0.76	3.16	3.55
7 Days Ago	0.74	0.76	3.16	3.55
30 Days Ago	0.74	0.76	3.16	3.55
60 Days Ago	0.76	0.77	3.21	3.57
90 Days Ago	0.76	0.77	3.22	3.58

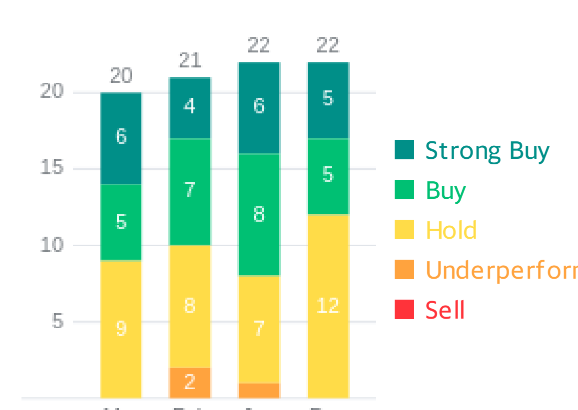
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CERN	Industry	Sector(s)	S&P 500
Current Qtr.	4.20%	N/A	N/A	N/A
Next Qtr.	20.60%	N/A	N/A	N/A
Current Year	11.30%	N/A	N/A	N/A
Next Year	12.30%	N/A	N/A	N/A
Next 5 Years (per annum)	11.51%	N/A	N/A	N/A
Past 5 Years (per annum)	6.87%	N/A	N/A	N/A

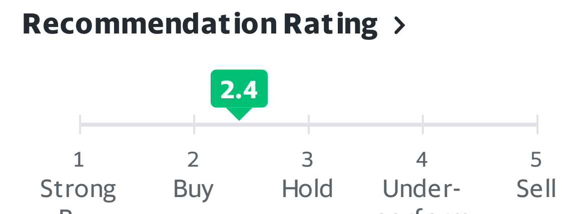
People Also Watch

Symbol	Last Price	Change	% Change
CTSH Cognizant Technology Solutions	78.82	+0.25	+0.32%
HSIC Henry Schein, Inc.	68.86	-0.11	-0.17%
ALXN Alexion Pharmaceuticals, Inc.	153.74	+0.29	+0.19%
FAST Fastenal Company	50.60	-0.02	-0.04%
CHRW C.H. Robinson Worldwide, Inc.	96.24	-1.57	-1.61%

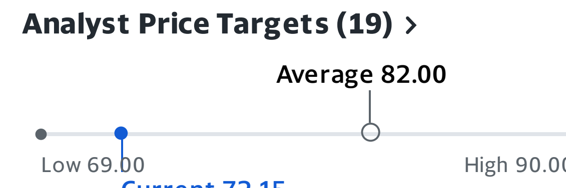
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (19) >



Upgrades & Downgrades >

Maintains	Piper Sandler: to Overweight	2/16/2021
Maintains	Morgan Stanley: to Underweight	2/11/2021
Downgrade	UBS: Buy to Neutral	2/11/2021
Maintains	KeyBanc: to Overweight	2/11/2021
Downgrade	B of A Securities: Buy to Underperform	1/19/2021
Maintains	Deutsche Bank: to Buy	10/29/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 47 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.43	33,096.84	13,284.63	2,214.29	60.70	1,708.90
+28.88 (+0.73%)	+29.88 (+0.09%)	+239.23 (+1.83%)	+18.49 (+0.84%)	+0.15 (+0.25%)	+22.90 (+1.36%)

CSW Industrials, Inc. (CSWI)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

133.96 -1.10 (-0.81%)

As of 12:11PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	2	1	1	2
Avg. Estimate	0.97	1.45	3.04	4.98
Low Estimate	0.96	1.45	3.04	4.95
High Estimate	0.99	1.45	3.04	5.02
Year Ago EPS	0.83	0.81	3.2	3.04

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	2	1	2	2
Avg. Estimate	115.69M	136.6M	399.15M	526.05M
Low Estimate	114.1M	136.6M	398.3M	525M
High Estimate	117.28M	136.6M	400M	527.1M
Year Ago Sales	98.5M	81.23M	385.87M	399.15M
Sales Growth (year/est)	17.50%	68.20%	3.40%	31.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.74	0.58	0.95	0.34
EPS Actual	0.83	0.81	1.1	0.16
Difference	0.09	0.23	0.15	-0.18
Surprise %	12.20%	39.70%	15.80%	-52.90%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.97	1.45	3.04	4.98
7 Days Ago	0.97	1.45	3.04	4.98
30 Days Ago	0.97	1.45	3.04	4.98
60 Days Ago	0.99	1.45	3.25	4.86
90 Days Ago	0.99	1.45	3.25	4.85

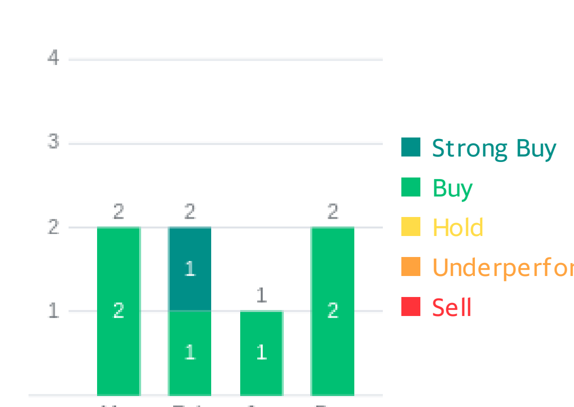
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CSWI	Industry	Sector(s)	S&P 500
Current Qtr.	16.90%	N/A	N/A	N/A
Next Qtr.	79.00%	N/A	N/A	N/A
Current Year	-5.00%	N/A	N/A	N/A
Next Year	63.80%	N/A	N/A	N/A
Next 5 Years (per annum)	12.00%	N/A	N/A	N/A
Past 5 Years (per annum)	31.68%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
EQBK Equity Bancshares, Inc.	28.06	-0.04	-0.14%
CNXN PC Connection, Inc.	46.38	-0.41	-0.88%
FRPH FRP Holdings, Inc.	48.95	+0.27	+0.55%
CVLY Codorus Valley Bancorp, Inc	18.30	-0.10	-0.54%
QADA QAD Inc.	65.31	+0.56	+0.86%

Recommendation Trends >



Recommendation Rating >

1.5

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (2) >

Average 140.00

Low 130.00 Current 133.96 High 150.00

Upgrades & Downgrades >

Initiated	Barrington Research: to Outperform	1/19/2021
Maintains	Sidoti & Co.: to Neutral	5/14/2020
Maintains	Sidoti & Co.: to Neutral	1/28/2020
Maintains	B. Riley FBR: Buy to Buy	8/2/2018
Initiated	Wunderlich: to Buy	6/16/2016

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.47	33,096.60	13,282.92	2,214.17	60.69	1,708.80
+28.92 (+0.73%)	+29.64 (+0.09%)	+237.52 (+1.82%)	+18.38 (+0.84%)	+0.14 (+0.23%)	+22.80 (+1.35%)

Quest Diagnostics Incorporated (DGX)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

129.10 +0.61 (+0.48%)

As of 12:12PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	18	18
Avg. Estimate	3.72	2.96	11.09	8.02
Low Estimate	3.41	2.62	9.78	7.5
High Estimate	4.09	3.39	12.25	8.68
Year Ago EPS	0.94	1.42	11.18	11.09

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	12	12	15	15
Avg. Estimate	2.66B	2.44B	9.49B	8.49B
Low Estimate	2.56B	2.29B	8.9B	7.97B
High Estimate	2.84B	2.54B	9.82B	9.08B
Year Ago Sales	1.82B	1.83B	9.44B	9.49B
Sales Growth (year/est)	46.20%	33.20%	0.50%	-10.60%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.89	1.41	3.73	4.24
EPS Actual	0.94	1.42	4.31	4.48
Difference	0.05	0.01	0.58	0.24
Surprise %	5.60%	0.70%	15.50%	5.70%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	3.72	2.96	11.09	8.02
7 Days Ago	3.72	2.96	11.08	8.01
30 Days Ago	3.78	2.89	11.11	7.86
60 Days Ago	3.5	2.7	10.62	8.05
90 Days Ago	3.28	2.66	10.3	8.01

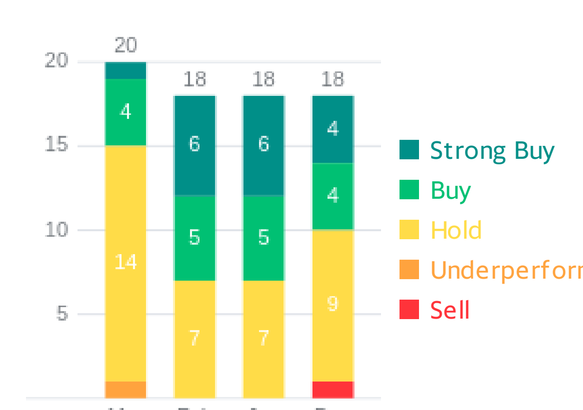
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	5	9	8	9
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	N/A	N/A

Growth Estimates	DGX	Industry	Sector(s)	S&P 500
Current Qtr.	295.70%	N/A	N/A	N/A
Next Qtr.	108.50%	N/A	N/A	N/A
Current Year	-0.80%	N/A	N/A	N/A
Next Year	-27.70%	N/A	N/A	N/A
Next 5 Years (per annum)	9.22%	N/A	N/A	N/A
Past 5 Years (per annum)	9.20%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
LH Laboratory Corporation of Ameri	256.88	+3.34	+1.32%
ABC AmerisourceBergen Corporation	119.25	+0.19	+0.16%
DVA DaVita Inc.	107.98	-1.50	-1.37%
BDX Becton, Dickinson and Company	245.22	+0.03	+0.01%
CAH Cardinal Health, Inc.	61.14	-0.65	-1.06%

Recommendation Trends



Recommendation Rating

2.2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (15)

Average 140.07

Low 125.00 | Current 129.11 | High 158.00

Upgrades & Downgrades

Maintains	Morgan Stanley: to Equal-Weight	3/12/2021
Downgrade	Baird: Outperform to Neutral	3/12/2021
Upgrade	Argus Research: Hold to Buy	10/21/2020
Upgrade	KeyBanc: Sector Weight to Overweight	7/29/2020
Maintains	Credit Suisse: to Neutral	7/14/2020
Upgrade	B of A Securities: Neutral to Buy	7/14/2020

More Upgrades & Downgrades

U.S. markets close in 3 hours 48 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.43	33,095.88	13,283.41	2,214.28	60.70	1,708.30
+28.88 (+0.73%)	+28.92 (+0.09%)	+238.01 (+1.82%)	+18.48 (+0.84%)	+0.15 (+0.25%)	+22.30 (+1.32%)

The Estée Lauder Companies Inc. (EL)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist Quote Lookup

292.83 -2.30 (-0.78%)

As of 12:12PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	20	20	22	22
Avg. Estimate	1.28	0.61	5.96	6.97
Low Estimate	1.1	0.33	5.56	6.4
High Estimate	1.6	0.81	6.31	8.17
Year Ago EPS	0.85	-0.53	4.16	5.96

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	18	18
Avg. Estimate	3.9B	3.58B	15.91B	17.95B
Low Estimate	3.68B	3.15B	15.39B	16.69B
High Estimate	4.19B	4.01B	16.55B	19.4B
Year Ago Sales	3.35B	2.43B	14.29B	15.91B
Sales Growth (year/est)	16.70%	47.10%	11.30%	12.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.73	-0.19	0.9	1.69
EPS Actual	0.85	-0.53	1.44	2.61
Difference	0.12	-0.34	0.54	0.92
Surprise %	16.40%	-178.90%	60.00%	54.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.28	0.61	5.96	6.97
7 Days Ago	1.28	0.61	5.96	6.96
30 Days Ago	1.28	0.61	5.96	6.96
60 Days Ago	1.47	0.65	5.24	6.42
90 Days Ago	1.46	0.64	5.2	6.34

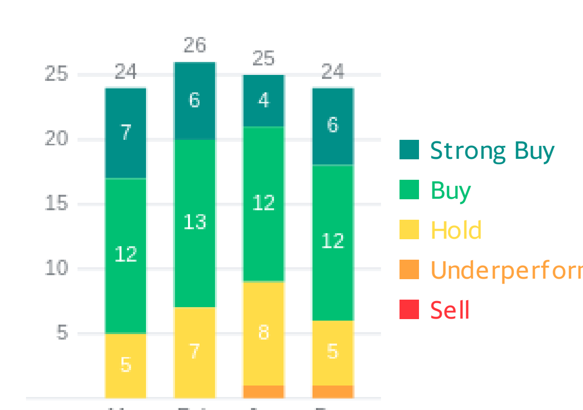
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	1	N/A	1	N/A
Up Last 30 Days	1	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

Growth Estimates	EL	Industry	Sector(s)	S&P 500
Current Qtr.	50.60%	N/A	N/A	N/A
Next Qtr.	215.10%	N/A	N/A	N/A
Current Year	43.30%	N/A	N/A	N/A
Next Year	16.90%	N/A	N/A	N/A
Next 5 Years (per annum)	21.10%	N/A	N/A	N/A
Past 5 Years (per annum)	15.08%	N/A	N/A	N/A

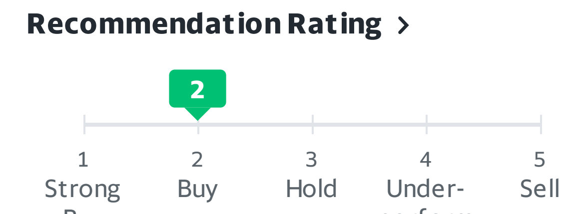
People Also Watch

Symbol	Last Price	Change	% Change
ECL Ecolab Inc.	215.19	+0.19	+0.09%
ULTA Ulta Beauty, Inc.	308.07	+0.07	+0.02%
RL Ralph Lauren Corporation	122.99	+2.75	+2.29%
CHD Church & Dwight Company, Inc.	88.29	+0.37	+0.42%
MKC McCormick & Company, Incorporat	89.34	-0.56	-0.62%

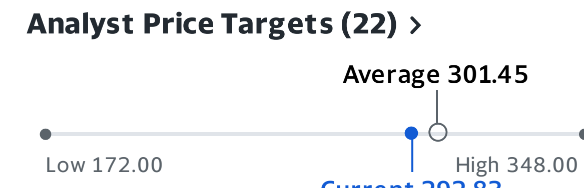
Recommendation Trends



Recommendation Rating



Analyst Price Targets (22)



Upgrades & Downgrades

Upgrade	Wells Fargo: Equal-Weight to Overweight	3/24/2021
Maintains	Deutsche Bank: to Buy	2/24/2021
Maintains	DA Davidson: to Buy	2/24/2021
Maintains	Morgan Stanley: to Overweight	2/22/2021
Maintains	RBC Capital: to Outperform	2/9/2021
Maintains	Deutsche Bank: to Buy	2/8/2021

More Upgrades & Downgrades

U.S. markets close in 3 hours 48 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.50	33,097.33	13,283.30	2,214.32	60.69	1,708.20
+28.95 (+0.73%)	+30.37 (+0.09%)	+237.91 (+1.82%)	+18.52 (+0.84%)	+0.14 (+0.23%)	+22.20 (+1.32%)

Exponent, Inc. (EXPO)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

97.03 +0.79 (+0.82%)

As of 12:10PM EDT. Market open.

Advertisement

Quote Lookup

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	4	4	4	4
Avg. Estimate	0.42	0.4	1.65	1.87
Low Estimate	0.4	0.39	1.61	1.77
High Estimate	0.45	0.41	1.71	1.95
Year Ago EPS	0.49	0.31	1.55	1.65

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	3	5
Avg. Estimate	102.54M	101.14M	425.94M	463.74M
Low Estimate	101.1M	100.6M	405.07M	437.54M
High Estimate	104M	101.56M	437.6M	485M
Year Ago Sales	105.95M	88.34M	399.9M	425.94M
Sales Growth (year/est)	-3.20%	14.50%	6.50%	8.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.42	0.25	0.31	0.28
EPS Actual	0.49	0.31	0.34	0.41
Difference	0.07	0.06	0.03	0.13
Surprise %	16.70%	24.00%	9.70%	46.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.42	0.4	1.65	1.87
7 Days Ago	0.43	0.4	1.65	1.84
30 Days Ago	0.43	0.4	1.65	1.84
60 Days Ago	0.41	0.41	1.65	1.88
90 Days Ago	0.41	0.41	1.65	1.88

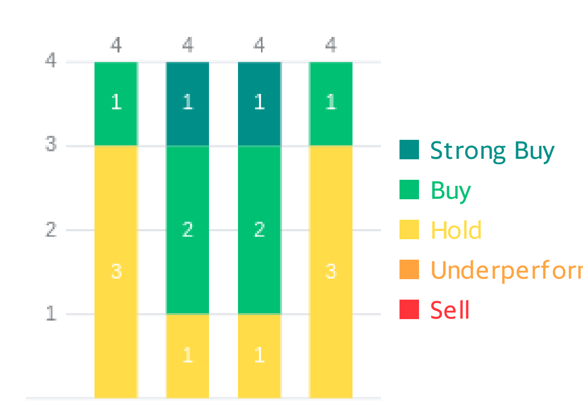
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	1	1	1

Growth Estimates	EXPO	Industry	Sector(s)	S&P 500
Current Qtr.	-14.30%	N/A	N/A	N/A
Next Qtr.	29.00%	N/A	N/A	N/A
Current Year	6.50%	N/A	N/A	N/A
Next Year	13.30%	N/A	N/A	N/A
Next 5 Years (per annum)	15.00%	N/A	N/A	N/A
Past 5 Years (per annum)	17.85%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
EXLS ExlService Holdings, Inc.	90.77	-0.10	-0.11%
AAON AAON, Inc.	70.25	-0.52	-0.73%
FORR Forrester Research, Inc.	42.86	+0.49	+1.16%
NEOG Neogen Corporation	88.00	+1.08	+1.24%
ROLL RBC Bearings Incorporated	192.30	-0.04	-0.02%

Recommendation Trends >



Recommendation Rating >

2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (3) >

Average 109.67

Current 97.03 | Low 105.00 | High 112.00

Upgrades & Downgrades >

Maintains	Sidoti & Co.: to Buy	6/2/2020
Upgrade	Sidoti & Co.: Neutral to Buy	5/13/2020
Maintains	Sidoti & Co.: to Neutral	5/1/2020
Upgrade	Sidoti & Co.: Neutral to Buy	3/19/2020
Maintains	Sidoti & Co.: to Neutral	2/7/2020
Maintains	Sidoti & Co.: to Neutral	10/3/2019

More Upgrades & Downgrades

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,987.48	33,097.24	13,283.30	2,214.32	60.69	1,708.60
+28.93 (+0.73%)	+30.28 (+0.09%)	+237.91 (+1.82%)	+18.52 (+0.84%)	+0.14 (+0.23%)	+22.60 (+1.34%)

Fastenal Company (FAST)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

50.56 -0.06 (-0.12%)

As of 12:12PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	12	12	18	17
Avg. Estimate	0.37	0.41	1.56	1.72
Low Estimate	0.35	0.37	1.46	1.63
High Estimate	0.39	0.43	1.6	1.8
Year Ago EPS	0.35	0.42	1.49	1.56

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	11	16	16
Avg. Estimate	1.43B	1.5B	5.9B	6.4B
Low Estimate	1.4B	1.42B	5.62B	6.14B
High Estimate	1.48B	1.56B	6.09B	6.71B
Year Ago Sales	1.37B	N/A	5.65B	5.9B
Sales Growth (year/est)	4.80%	N/A	4.40%	8.60%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.34	0.36	0.37	0.33
EPS Actual	0.35	0.42	0.38	0.34
Difference	0.01	0.06	0.01	0.01
Surprise %	2.90%	16.70%	2.70%	3.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.37	0.41	1.56	1.72
7 Days Ago	0.37	0.41	1.56	1.72
30 Days Ago	0.37	0.41	1.57	1.73
60 Days Ago	0.37	0.41	1.57	1.72
90 Days Ago	0.36	0.41	1.54	1.68

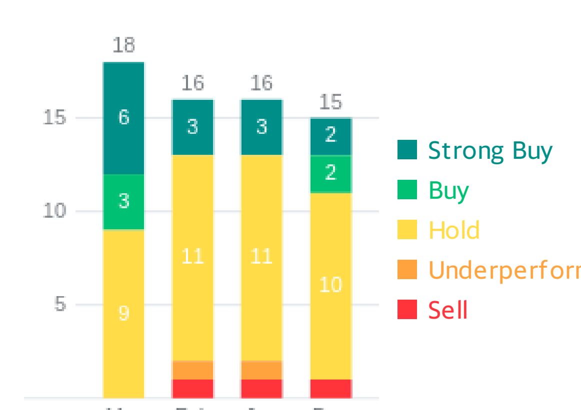
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	FAST	Industry	Sector(s)	S&P 500
Current Qtr.	5.70%	N/A	N/A	N/A
Next Qtr.	-2.40%	N/A	N/A	N/A
Current Year	4.70%	N/A	N/A	N/A
Next Year	10.30%	N/A	N/A	N/A
Next 5 Years (per annum)	8.04%	N/A	N/A	N/A
Past 5 Years (per annum)	11.86%	N/A	N/A	N/A

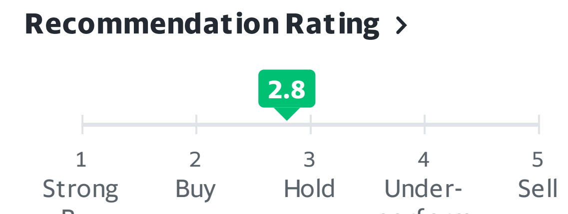
People Also Watch

Symbol	Last Price	Change	% Change
EXPD Expeditors International of Was	108.02	+0.78	+0.73%
CHRW C.H. Robinson Worldwide, Inc.	96.33	-1.48	-1.51%
GWW W.W. Grainger, Inc.	399.06	+0.39	+0.10%
CTAS Cintas Corporation	342.02	+4.71	+1.40%
FISV Fiserv, Inc.	118.83	-1.93	-1.60%

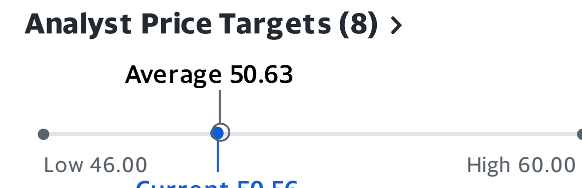
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (8) >



Upgrades & Downgrades >

Maintains	Morgan Stanley: to Equal-Weight	1/21/2021
Maintains	Morgan Stanley: to Equal-Weight	10/14/2020
Initiated	UBS: to Neutral	9/16/2020
Downgrade	Raymond James: Market Perform to Underperform	9/8/2020
Downgrade	Wells Fargo: Overweight to Equal-Weight	9/3/2020
Maintains	Deutsche Bank: to Buy	7/27/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 46 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.78	33,128.80	13,301.65	2,217.55	60.74	1,713.40
+35.23 (+0.89%)	+61.84 (+0.19%)	+256.26 (+1.96%)	+21.75 (+0.99%)	+0.19 (+0.31%)	+27.40 (+1.63%)

Gentex Corporation (GNTX)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

35.58 -0.31 (-0.86%)

As of 1:14PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	8	8	10	10
Avg. Estimate	0.49	0.5	2.04	2.27
Low Estimate	0.45	0.47	1.95	2.05
High Estimate	0.52	0.52	2.15	2.45
Year Ago EPS	0.36	0.02	1.43	2.04

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	10	9
Avg. Estimate	497.48M	496.49M	2.01B	2.16B
Low Estimate	486.24M	472.69M	1.98B	2.12B
High Estimate	512.6M	513.67M	2.03B	2.23B
Year Ago Sales	453.76M	229.93M	1.69B	2.01B
Sales Growth (year/est)	9.60%	115.90%	19.00%	7.70%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.34	0.12	0.41	0.5
EPS Actual	0.36	0.02	0.48	0.58
Difference	0.02	-0.1	0.07	0.08
Surprise %	5.90%	-83.30%	17.10%	16.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.49	0.5	2.04	2.27
7 Days Ago	0.49	0.5	2.04	2.27
30 Days Ago	0.49	0.5	2.04	2.25
60 Days Ago	0.48	0.48	1.96	2.26
90 Days Ago	0.48	0.47	1.93	2.22

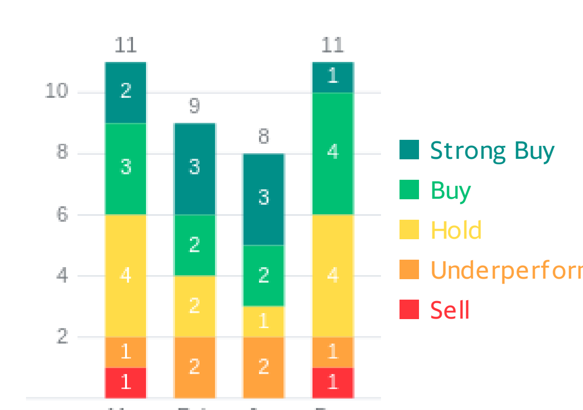
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	2	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	GNTX	Industry	Sector(s)	S&P 500
Current Qtr.	36.10%	N/A	N/A	N/A
Next Qtr.	2,400.00%	N/A	N/A	N/A
Current Year	42.70%	N/A	N/A	N/A
Next Year	11.30%	N/A	N/A	N/A
Next 5 Years (per annum)	15.80%	N/A	N/A	N/A
Past 5 Years (per annum)	12.90%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
BWA BorgWarner Inc.	46.33	-0.20	-0.43%
LEA Lear Corporation	181.24	+3.59	+2.02%
ALV Autoliv, Inc.	93.14	-0.18	-0.19%
FAST Fastenal Company	50.68	+0.06	+0.12%
LKQ LKQ Corporation	42.58	-0.28	-0.65%

Recommendation Trends >



Recommendation Rating >

2.3

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (7) >

Average 38.43

Low 31.00 | Current 35.58 | High 43.00

Upgrades & Downgrades >

Initiated	Seaport Global: to Neutral	1/28/2021
Maintains	KeyBanc: to Overweight	1/25/2021
Maintains	KeyBanc: to Overweight	11/19/2020
Maintains	B of A Securities: to Underperform	11/17/2020
Maintains	KeyBanc: to Overweight	10/26/2020
Maintains	Jefferies: to Buy	10/9/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 46 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.60	33,127.86	13,300.83	2,217.55	60.74	1,713.40
+35.05 (+0.89%)	+60.90 (+0.18%)	+255.44 (+1.96%)	+21.75 (+0.99%)	+0.19 (+0.31%)	+27.40 (+1.63%)

International Flavors & Fragrances Inc. (IFF)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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140.44 +0.69 (+0.49%)

As of 1:14PM EDT. Market open.

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	12	12	16	16
Avg. Estimate	1.54	1.54	5.89	6.57
Low Estimate	1.48	1.33	5.56	5.92
High Estimate	1.58	1.64	6.19	7.34
Year Ago EPS	1.62	1.36	5.7	5.89

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	11	16	16
Avg. Estimate	2.44B	2.91B	11.09B	12.07B
Low Estimate	2.38B	2.81B	10.9B	11.86B
High Estimate	2.5B	3B	11.31B	12.53B
Year Ago Sales	1.35B	N/A	5.08B	11.09B
Sales Growth (year/est)	81.20%	N/A	118.10%	8.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.59	1.31	1.46	1.19
EPS Actual	1.62	1.36	1.4	1.32
Difference	0.03	0.05	-0.06	0.13
Surprise %	1.90%	3.80%	-4.10%	10.90%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.54	1.54	5.89	6.57
7 Days Ago	1.54	1.54	5.89	6.55
30 Days Ago	1.51	1.54	5.87	6.51
60 Days Ago	1.66	1.48	6.08	6.45
90 Days Ago	1.66	1.52	6.1	6.42

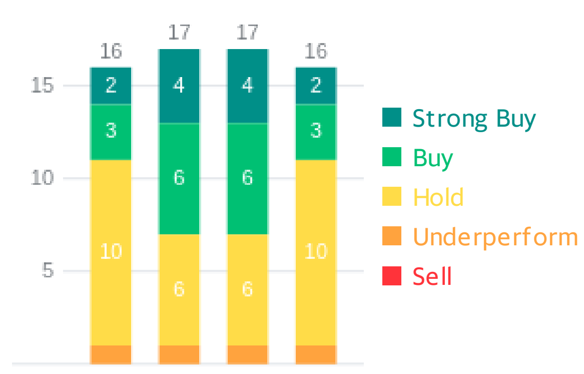
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	1	1	1	1
Up Last 30 Days	2	1	4	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	1	N/A

Growth Estimates	IFF	Industry	Sector(s)	S&P 500
Current Qtr.	-4.90%	N/A	N/A	N/A
Next Qtr.	13.20%	N/A	N/A	N/A
Current Year	3.30%	N/A	N/A	N/A
Next Year	11.50%	N/A	N/A	N/A
Next 5 Years (per annum)	10.00%	N/A	N/A	N/A
Past 5 Years (per annum)	4.94%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
IPG Interpublic Group of Companies,	29.18	-0.12	-0.43%
EMN Eastman Chemical Company	110.91	-0.60	-0.54%
GWW W.W. Grainger, Inc.	399.75	+1.08	+0.27%
SEE Sealed Air Corporation	46.27	-0.30	-0.64%
MKC McCormick & Company, Incorporat	89.33	-0.57	-0.63%

Recommendation Trends >



Recommendation Rating >

2.1

1 Strong Buy
2 Buy
3 Hold
4 Under-perform
5 Sell

Analyst Price Targets (16) >

Average 148.56

Low 118.00
Current 140.44
High 170.00

U.S. markets close in 2 hours 46 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.74	33,128.67	13,301.72	2,217.73	60.73	1,713.50
+35.19 (+0.89%)	+61.71 (+0.19%)	+256.32 (+1.96%)	+21.94 (+1.00%)	+0.18 (+0.30%)	+27.50 (+1.63%)

Ingredion Incorporated (INGR)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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90.79 -0.76 (-0.83%)

As of 1:13PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	6	6
Avg. Estimate	1.61	1.45	6.62	7.12
Low Estimate	1.53	1.28	6.41	6.75
High Estimate	1.67	1.62	6.98	8.15
Year Ago EPS	1.59	1.12	6.23	6.62

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	6	6
Avg. Estimate	1.58B	1.54B	6.34B	6.52B
Low Estimate	1.57B	1.49B	6.17B	6.26B
High Estimate	1.6B	1.61B	6.49B	6.66B
Year Ago Sales	1.54B	1.35B	5.99B	6.34B
Sales Growth (year/est)	2.50%	14.30%	6.00%	2.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.52	1.35	1.45	1.46
EPS Actual	1.59	1.12	1.77	1.75
Difference	0.07	-0.23	0.32	0.29
Surprise %	4.60%	-17.00%	22.10%	19.90%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.61	1.45	6.62	7.12
7 Days Ago	1.61	1.45	6.62	7.12
30 Days Ago	1.61	1.44	6.6	7.12
60 Days Ago	1.55	1.52	6.42	7.01
90 Days Ago	1.55	1.52	6.43	7.02

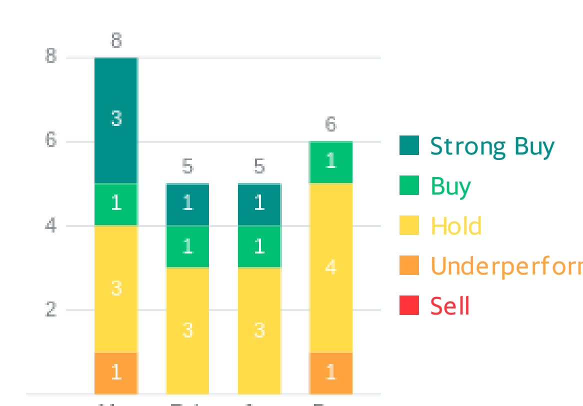
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	1	1	N/A
Up Last 30 Days	N/A	1	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	INGR	Industry	Sector(s)	S&P 500
Current Qtr.	1.30%	N/A	N/A	N/A
Next Qtr.	29.50%	N/A	N/A	N/A
Current Year	6.30%	N/A	N/A	N/A
Next Year	7.60%	N/A	N/A	N/A
Next 5 Years (per annum)	1.90%	N/A	N/A	N/A
Past 5 Years (per annum)	3.70%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
POST Post Holdings, Inc.	106.13	-0.56	-0.52%
FLO Flowers Foods, Inc.	24.14	-0.10	-0.41%
THS Treehouse Foods, Inc.	52.66	-0.49	-0.92%
JJSF J & J Snack Foods Corp.	156.91	0.00	0.00%
LANC Lancaster Colony Corporation	177.45	-2.32	-1.29%

Recommendation Trends



Recommendation Rating

2.4

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (5)

Average 89.60

Low 82.00 | Current 90.79 | High 98.00

Upgrades & Downgrades

Maintains	Credit Suisse: to Neutral	2/4/2021
Maintains	BMO Capital: to Market Perform	5/6/2020
Maintains	Credit Suisse: to Neutral	5/6/2020
Upgrade	Goldman Sachs: Sell to Neutral	3/26/2020
Maintains	BMO Capital: to Market Perform	2/12/2020
Maintains	Credit Suisse: to Neutral	2/12/2020

More Upgrades & Downgrades

Iron Mountain Incorporated (IRM)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

37.34 +0.18 (+0.48%)

As of 1:14PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	6	5
Avg. Estimate	0.25	0.3	1.25	1.43
Low Estimate	0.1	0.18	0.72	1.25
High Estimate	0.35	0.36	1.4	1.53
Year Ago EPS	0.27	0.22	1.19	1.25

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	8	7
Avg. Estimate	1.07B	1.07B	4.36B	4.54B
Low Estimate	1.04B	1.03B	4.16B	4.45B
High Estimate	1.08B	1.09B	4.41B	4.59B
Year Ago Sales	1.07B	933.06M	4.15B	4.36B
Sales Growth (year/est)	-0.20%	14.90%	5.10%	4.10%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.18	0.13	0.25	0.31
EPS Actual	0.27	0.22	0.31	0.29
Difference	0.09	0.09	0.06	-0.02
Surprise %	50.00%	69.20%	24.00%	-6.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.25	0.3	1.25	1.43
7 Days Ago	0.25	0.3	1.25	1.43
30 Days Ago	0.27	0.31	1.29	1.49
60 Days Ago	0.31	0.33	1.38	1.54
90 Days Ago	0.31	0.33	1.38	1.54

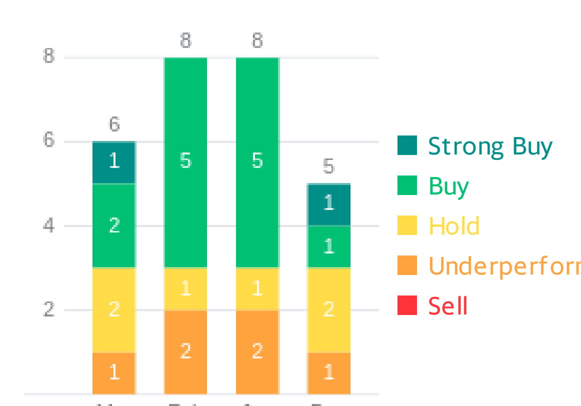
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	N/A	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	IRM	Industry	Sector(s)	S&P 500
Current Qtr.	-7.40%	N/A	N/A	N/A
Next Qtr.	36.40%	N/A	N/A	N/A
Current Year	5.00%	N/A	N/A	N/A
Next Year	14.40%	N/A	N/A	N/A
Next 5 Years (per annum)	1.70%	N/A	N/A	N/A
Past 5 Years (per annum)	-4.51%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
WPC W. P. Carey Inc. REIT	71.94	+1.25	+1.77%
VTR Ventas, Inc.	54.06	-0.21	-0.39%
O Realty Income Corporation	64.12	+0.24	+0.37%
DLR Digital Realty Trust, Inc.	142.24	+1.00	+0.71%
KIM Kimco Realty Corporation	19.05	-0.15	-0.78%

Recommendation Trends >



Recommendation Rating >

2.6

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (7) >

Average 32.86

Low 18.00 | Current 37.34 | High 42.00

Upgrades & Downgrades >

Maintains	Credit Suisse: to Underperform	2/25/2021
Maintains	Credit Suisse: to Underperform	11/26/2019
Upgrade	Baird: Underperform to Neutral	8/2/2019
Downgrade	Bank of America: Neutral to Underperform	7/11/2019
Initiated	Wells Fargo: to Outperform	7/10/2019
Initiated	Bank of America: to Neutral	11/20/2018

More Upgrades & Downgrades

J.B. Hunt Transport Services, Inc. (JBHT)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

168.47 -0.87 (-0.51%)

As of 1:13PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	22	22	24	23
Avg. Estimate	1.23	1.46	6.16	7.21
Low Estimate	1.13	1.38	5.78	6.41
High Estimate	1.39	1.57	6.5	7.75
Year Ago EPS	0.98	1.14	4.74	6.16

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	17	16	21	19
Avg. Estimate	2.49B	2.56B	10.81B	11.72B
Low Estimate	2.36B	2.41B	10.3B	10.95B
High Estimate	2.68B	2.86B	11.64B	13.14B
Year Ago Sales	2.28B	2.15B	9.64B	10.81B
Sales Growth (year/est)	9.20%	19.40%	12.20%	8.50%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.98	0.83	1.28	1.29
EPS Actual	0.98	1.14	1.18	1.44
Difference	0	0.31	-0.1	0.15
Surprise %	0.00%	37.30%	-7.80%	11.60%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.23	1.46	6.16	7.21
7 Days Ago	1.24	1.46	6.16	7.2
30 Days Ago	1.25	1.46	6.17	7.18
60 Days Ago	1.25	1.46	6.17	7.18
90 Days Ago	1.25	1.44	6.02	6.96

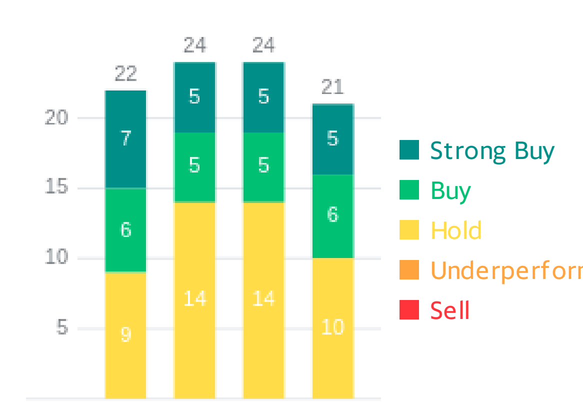
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	N/A	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	JBHT	Industry	Sector(s)	S&P 500
Current Qtr.	25.50%	N/A	N/A	N/A
Next Qtr.	28.10%	N/A	N/A	N/A
Current Year	30.00%	N/A	N/A	N/A
Next Year	17.00%	N/A	N/A	N/A
Next 5 Years (per annum)	20.73%	N/A	N/A	N/A
Past 5 Years (per annum)	10.72%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
LSTR Landstar System, Inc.	165.71	-3.27	-1.94%
CHRW C.H. Robinson Worldwide, Inc.	96.40	-1.41	-1.44%
ODFL Old Dominion Freight Line, Inc.	241.59	+0.98	+0.41%
WERN Werner Enterprises, Inc.	47.18	-0.86	-1.79%
KNX Knight-Swift Transportation Hol	48.41	-0.66	-1.35%

Recommendation Trends >



Recommendation Rating >

2.2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (21) >

Average 157.57

Low 115.00 | Current 168.47 | High 190.00

Upgrades & Downgrades >

Maintains	KeyBanc: to Overweight	3/26/2021
Upgrade	B of A Securities: Neutral to Buy	3/4/2021
Downgrade	Susquehanna: Positive to Neutral	1/26/2021
Upgrade	Credit Suisse: Neutral to Outperform	1/19/2021
Maintains	Raymond James: to Outperform	1/15/2021
Maintains	Morgan Stanley: to Equal-Weight	1/6/2021

More Upgrades & Downgrades

U.S. markets close in 2 hours 47 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.68	33,127.53	13,301.38	2,217.45	60.74	1,713.40
+35.13 (+0.89%)	+60.57 (+0.18%)	+255.98 (+1.96%)	+21.65 (+0.99%)	+0.19 (+0.31%)	+27.40 (+1.63%)

J & J Snack Foods Corp. (JJSF)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

156.91 0.00 (0.00%)

As of 1:11PM EDT. Market open.

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	4	4	4	4
Avg. Estimate	0.12	0.77	2.15	4.08
Low Estimate	0.05	0.69	1.86	3.64
High Estimate	0.2	0.9	2.35	4.58
Year Ago EPS	0.44	-0.4	1.37	2.15

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	4	4	4	4
Avg. Estimate	241.02M	266M	1.03B	1.09B
Low Estimate	237.5M	253.1M	1.02B	1.05B
High Estimate	247M	282.2M	1.06B	1.15B
Year Ago Sales	272.04M	N/A	1.02B	1.03B
Sales Growth (year/est)	-11.40%	N/A	1.00%	5.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.9	-0.11	0.05	0.09
EPS Actual	0.44	-0.4	0.4	0.09
Difference	-0.46	-0.29	0.35	0
Surprise %	-51.10%	-263.60%	700.00%	0.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.12	0.77	2.15	4.08
7 Days Ago	0.12	0.77	2.12	3.93
30 Days Ago	0.12	0.77	2.12	3.93
60 Days Ago	0.06	0.95	2.15	3.91
90 Days Ago	0.27	1.08	2.82	4.1

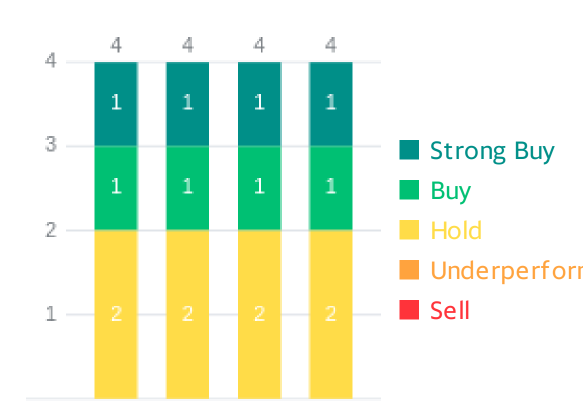
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	N/A	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	JJSF	Industry	Sector(s)	S&P 500
Current Qtr.	-72.70%	N/A	N/A	N/A
Next Qtr.	292.50%	N/A	N/A	N/A
Current Year	56.90%	N/A	N/A	N/A
Next Year	89.80%	N/A	N/A	N/A
Next 5 Years (per annum)	6.00%	N/A	N/A	N/A
Past 5 Years (per annum)	8.32%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
LANC Lancaster Colony Corporation	177.35	-2.42	-1.35%
JBSS John B. Sanfilippo & Son, Inc.	90.83	-0.70	-0.76%
IPAR Inter Parfums, Inc.	71.38	-0.72	-1.00%
CVGW Calavo Growers, Inc.	78.37	+0.83	+1.07%
MNRO Monro, Inc.	66.45	+0.47	+0.71%

Recommendation Trends >



Recommendation Rating >

2.2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (3) >

Average 162.33

Low 150.00 | Current 156.91 | High 180.00

Upgrades & Downgrades >

Upgrade	CL King: Neutral to Buy	5/12/2020
Upgrade	Consumer Edge: Equal-Weight to Overweight	8/9/2019
Initiated	KeyBanc: to Sector Weight	3/28/2018
Initiated	CL King: to Buy	12/19/2017
Downgrade	DA Davidson: Buy to Neutral	1/4/2017
Initiated	DA Davidson: to Buy	10/5/2016

More Upgrades & Downgrades

U.S. markets close in 2 hours 46 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.57	33,129.14	13,300.89	2,218.01	60.74	1,713.50
+35.02 (+0.88%)	+62.18 (+0.19%)	+255.50 (+1.96%)	+22.21 (+1.01%)	+0.19 (+0.31%)	+27.50 (+1.63%)

Jack Henry & Associates, Inc. (JKHY)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

153.20 -0.20 (-0.13%)

As of 1:13PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	12	13	14
Avg. Estimate	0.86	0.9	3.9	4.44
Low Estimate	0.84	0.88	3.87	4.2
High Estimate	0.9	0.94	3.97	4.6
Year Ago EPS	0.96	0.8	3.86	3.9

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	11	11
Avg. Estimate	438.28M	444.62M	1.76B	1.88B
Low Estimate	427M	430M	1.73B	1.84B
High Estimate	444.1M	451M	1.77B	1.91B
Year Ago Sales	429.41M	410.54M	1.7B	1.76B
Sales Growth (year/est)	2.10%	8.30%	3.60%	7.20%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.8	0.78	1.05	0.87
EPS Actual	0.96	0.8	1.19	0.94
Difference	0.16	0.02	0.14	0.07
Surprise %	20.00%	2.60%	13.30%	8.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.86	0.9	3.9	4.44
7 Days Ago	0.86	0.9	3.9	4.44
30 Days Ago	0.86	0.9	3.9	4.43
60 Days Ago	0.87	0.88	3.8	4.44
90 Days Ago	0.86	0.88	3.8	4.44

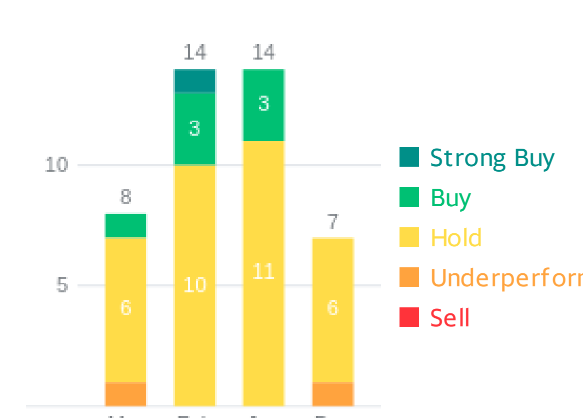
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	N/A
Up Last 30 Days	N/A	1	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	JKHY	Industry	Sector(s)	S&P 500
Current Qtr.	-10.40%	N/A	N/A	N/A
Next Qtr.	12.50%	N/A	N/A	N/A
Current Year	1.00%	N/A	N/A	N/A
Next Year	13.80%	N/A	N/A	N/A
Next 5 Years (per annum)	10.02%	N/A	N/A	N/A
Past 5 Years (per annum)	8.58%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
ANSS ANSYS, Inc.	341.49	+9.60	+2.89%
IT Gartner, Inc.	182.58	+0.85	+0.47%
ROL Rollins, Inc.	34.90	+0.98	+2.89%
FDS FactSet Research Systems Inc.	313.17	+1.83	+0.59%
FISV Fiserv, Inc.	119.22	-1.54	-1.27%

Recommendation Trends >



Recommendation Rating >

2.6

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (11) >

Average 169.27

Low 155.00 | High 182.00

Current 153.20

Upgrades & Downgrades >

Maintains	Credit Suisse: to Neutral	2/10/2021
Upgrade	Evercore ISI Group: Underperform to In-Line	1/11/2021
Initiated	Credit Suisse: to Neutral	12/7/2020
Initiated	Compass Point: to Neutral	9/17/2020
Maintains	Baird: to Neutral	6/3/2020
Maintains	Baird: to Neutral	5/6/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.88	33,130.42	13,304.19	2,218.86	60.69	1,713.70
+35.33 (+0.89%)	+63.46 (+0.19%)	+258.80 (+1.98%)	+23.07 (+1.05%)	+0.14 (+0.23%)	+27.70 (+1.64%)

ManTech International Corporation (MANT)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

87.68 +1.01 (+1.17%)

As of 1:14PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	6	6	7	6
Avg. Estimate	0.84	0.88	3.54	3.77
Low Estimate	0.78	0.84	3.5	3.67
High Estimate	0.87	0.92	3.58	3.93
Year Ago EPS	0.81	0.84	2.91	3.54

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	8	7
Avg. Estimate	649.8M	673.08M	2.69B	2.84B
Low Estimate	641.46M	666.99M	2.66B	2.78B
High Estimate	659.77M	681.28M	2.72B	2.91B
Year Ago Sales	610.91M	N/A	2.52B	2.69B
Sales Growth (year/est)	6.40%	N/A	6.90%	5.30%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.69	0.65	0.76	0.79
EPS Actual	0.81	0.84	0.83	0.89
Difference	0.12	0.19	0.07	0.1
Surprise %	17.40%	29.20%	9.20%	12.70%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.84	0.88	3.54	3.77
7 Days Ago	0.84	0.88	3.54	3.77
30 Days Ago	0.84	0.88	3.54	3.77
60 Days Ago	0.85	0.88	3.49	3.63
90 Days Ago	0.85	0.88	3.49	3.63

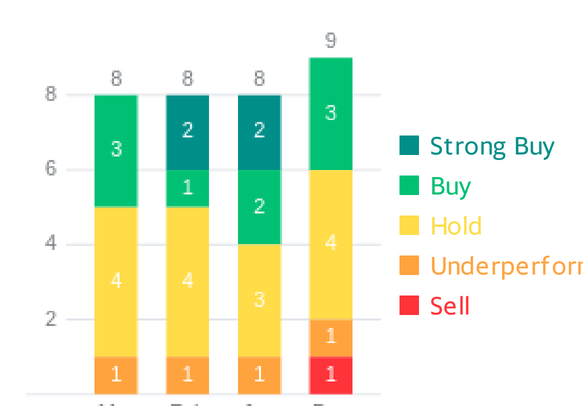
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	MANT	Industry	Sector(s)	S&P 500
Current Qtr.	3.70%	N/A	N/A	N/A
Next Qtr.	4.80%	N/A	N/A	N/A
Current Year	21.60%	N/A	N/A	N/A
Next Year	6.50%	N/A	N/A	N/A
Next 5 Years (per annum)	4.53%	N/A	N/A	N/A
Past 5 Years (per annum)	12.47%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
CACI CACI International, Inc.	246.06	-0.19	-0.08%
SAIC SCIENCE APPLICATIONS INTERNATIO	83.92	+0.43	+0.52%
MRCY Mercury Systems Inc	70.25	+1.40	+2.04%
BLKB Blackbaud, Inc.	71.18	+0.99	+1.42%
MATW Matthews International Corporat	39.50	-0.12	-0.30%

Recommendation Trends >



Recommendation Rating >

2.5

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (7) >

Average 87.29

Low 62.00 | Current 87.68 | High 100.00

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Equal-Weight	2/22/2021
Maintains	Morgan Stanley: to Equal-Weight	2/19/2021
Downgrade	Alliance Global Partners: Buy to Neutral	2/9/2021
Maintains	Morgan Stanley: to Equal-Weight	12/11/2020
Maintains	Morgan Stanley: to Equal-Weight	8/4/2020
Maintains	SunTrust Robinson Humphrey: to Hold	7/30/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.73	33,129.93	13,304.95	2,218.89	60.71	1,713.50
+35.18 (+0.89%)	+62.97 (+0.19%)	+259.56 (+1.99%)	+23.10 (+1.05%)	+0.16 (+0.26%)	+27.50 (+1.63%)

McCormick & Company, Incorporated (MKC)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

89.40 -0.50 (-0.56%)

As of 1:16PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (May 2021)	Next Qtr. (Aug 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	12	12
Avg. Estimate	0.65	0.77	2.97	3.14
Low Estimate	0.61	0.72	2.93	3.02
High Estimate	0.68	0.81	3.02	3.3
Year Ago EPS	0.73	0.76	2.83	2.97

Revenue Estimate	Current Qtr. (May 2021)	Next Qtr. (Aug 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	10	10
Avg. Estimate	1.47B	1.5B	6.09B	6.22B
Low Estimate	1.37B	1.44B	6.04B	6.02B
High Estimate	1.56B	1.53B	6.16B	6.41B
Year Ago Sales	1.37B	1.43B	5.6B	6.09B
Sales Growth (year/est)	7.20%	4.70%	8.70%	2.20%

Earnings History	5/30/2020	8/30/2020	11/29/2020	2/27/2021
EPS Est.	0.58	0.76	0.81	0.58
EPS Actual	0.73	0.76	0.79	0.72
Difference	0.15	0	-0.02	0.14
Surprise %	25.90%	0.00%	-2.50%	24.10%

EPS Trend	Current Qtr. (May 2021)	Next Qtr. (Aug 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.65	0.77	2.97	3.14
7 Days Ago	0.66	0.78	2.95	3.13
30 Days Ago	0.66	0.78	2.95	3.12
60 Days Ago	0.71	0.77	2.97	3.08
90 Days Ago	0.78	0.84	2.93	3.06

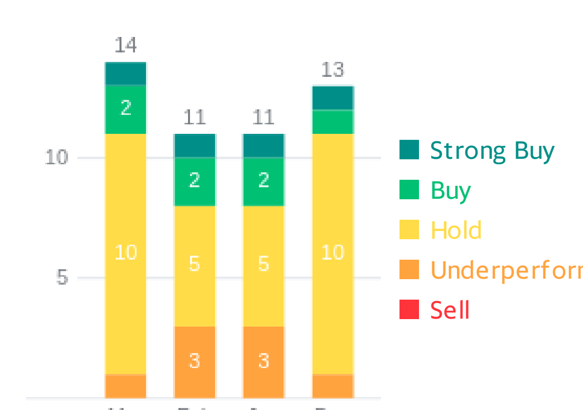
EPS Revisions	Current Qtr. (May 2021)	Next Qtr. (Aug 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	3	4
Up Last 30 Days	N/A	N/A	3	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	4	4	N/A	N/A

Growth Estimates	MKC	Industry	Sector(s)	S&P 500
Current Qtr.	-11.00%	N/A	N/A	N/A
Next Qtr.	1.30%	N/A	N/A	N/A
Current Year	4.90%	N/A	N/A	N/A
Next Year	5.70%	N/A	N/A	N/A
Next 5 Years (per annum)	5.50%	N/A	N/A	N/A
Past 5 Years (per annum)	10.39%	N/A	N/A	N/A

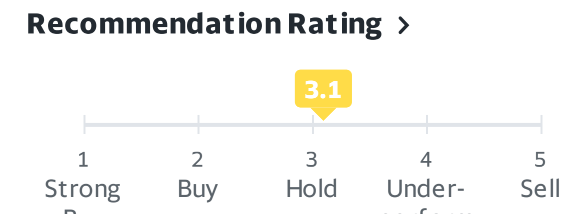
People Also Watch

Symbol	Last Price	Change	% Change
HRL Hormel Foods Corporation	48.03	-0.13	-0.27%
GWW W.W. Grainger, Inc.	399.63	+0.96	+0.24%
CLX Clorox Company (The)	194.17	+0.33	+0.17%
SJM J.M. Smucker Company (The) New	127.26	-1.29	-1.00%
ITW Illinois Tool Works Inc.	221.98	-2.78	-1.24%

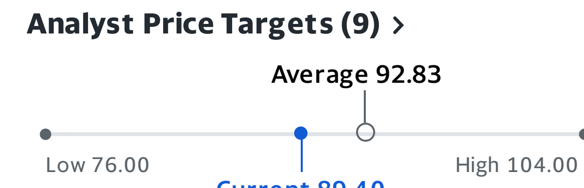
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (9) >



Upgrades & Downgrades >

Downgrade	Argus Research: Buy to Hold	3/17/2021
Upgrade	Jefferies: Underperform to Hold	6/22/2020
Maintains	Deutsche Bank: to Hold	6/1/2020
Upgrade	Credit Suisse: Neutral to Outperform	5/14/2020
Maintains	JP Morgan: to Underweight	4/17/2020
Maintains	Credit Suisse: to Neutral	4/2/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 43 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.54	33,126.87	13,305.40	2,218.80	60.72	1,713.60
+34.99 (+0.88%)	+59.91 (+0.18%)	+260.00 (+1.99%)	+23.00 (+1.05%)	+0.17 (+0.28%)	+27.60 (+1.64%)

Altria Group, Inc. (MO)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

51.28 +0.02 (+0.04%)

As of 1:16PM EDT. Market open.

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	12	15	16
Avg. Estimate	1.04	1.17	4.57	4.87
Low Estimate	1	1.14	4.52	4.66
High Estimate	1.11	1.21	4.62	5.12
Year Ago EPS	1.09	1.09	4.36	4.57

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	14	14
Avg. Estimate	4.96B	5.37B	21.26B	21.68B
Low Estimate	4.69B	5.11B	20.68B	21.11B
High Estimate	5.09B	5.63B	21.78B	23.07B
Year Ago Sales	5.05B	5.04B	20.84B	21.26B
Sales Growth (year/est)	-1.60%	6.60%	2.00%	2.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.98	1.06	1.16	1.02
EPS Actual	1.09	1.09	1.19	0.99
Difference	0.11	0.03	0.03	-0.03
Surprise %	11.20%	2.80%	2.60%	-2.90%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.04	1.17	4.57	4.87
7 Days Ago	1.04	1.18	4.58	4.88
30 Days Ago	1.03	1.18	4.58	4.88
60 Days Ago	1.06	1.17	4.62	4.9
90 Days Ago	1.07	1.17	4.6	4.82

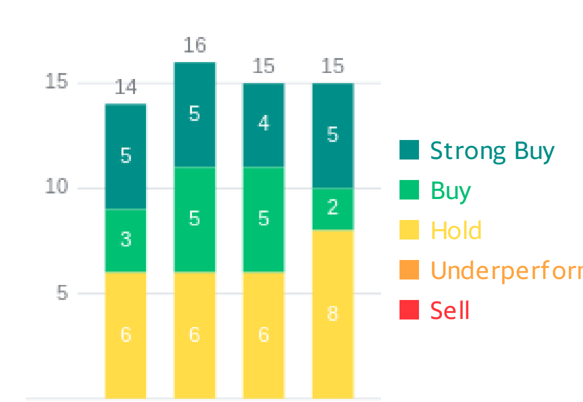
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	1

Growth Estimates	MO	Industry	Sector(s)	S&P 500
Current Qtr.	-4.60%	N/A	N/A	N/A
Next Qtr.	7.30%	N/A	N/A	N/A
Current Year	4.80%	N/A	N/A	N/A
Next Year	6.60%	N/A	N/A	N/A
Next 5 Years (per annum)	4.42%	N/A	N/A	N/A
Past 5 Years (per annum)	11.39%	N/A	N/A	N/A

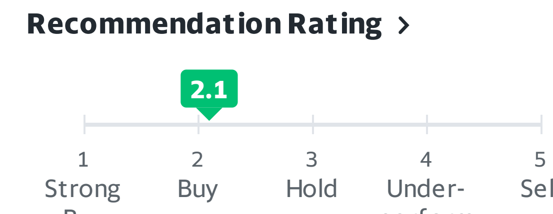
People Also Watch

Symbol	Last Price	Change	% Change
PM Philip Morris International Inc	88.76	-0.59	-0.66%
PG Procter & Gamble Company (The)	135.88	+0.43	+0.32%
JNJ Johnson & Johnson	165.27	+0.26	+0.16%
MRK Merck & Company, Inc.	77.64	+0.68	+0.89%
XOM Exxon Mobil Corporation	56.15	-0.53	-0.94%

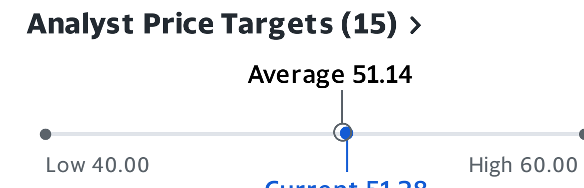
Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (15) >



Upgrades & Downgrades >

Upgrade	Jefferies: Hold to Buy	3/26/2021
Downgrade	Citigroup: Buy to Neutral	3/16/2021
Maintains	Deutsche Bank: to Buy	1/22/2021
Initiated	Bernstein: to Outperform	1/20/2021
Maintains	Citigroup: to Buy	7/30/2020
Maintains	Deutsche Bank: to Buy	7/22/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.94	33,131.23	13,303.96	2,218.81	60.72	1,713.80
+35.39 (+0.89%)	+64.27 (+0.19%)	+258.57 (+1.98%)	+23.01 (+1.05%)	+0.17 (+0.28%)	+27.80 (+1.65%)

MSA Safety Incorporated (MSA)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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149.47 -0.58 (-0.39%)

As of 1:13PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	5	5
Avg. Estimate	0.97	1.13	4.78	5.5
Low Estimate	0.88	1.04	4.62	5.35
High Estimate	1.1	1.22	5	5.8
Year Ago EPS	1.18	1.11	4.5	4.78

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	5	5
Avg. Estimate	313.58M	331.22M	1.4B	1.49B
Low Estimate	300.4M	317.7M	1.38B	1.46B
High Estimate	335.3M	348.1M	1.44B	1.54B
Year Ago Sales	341.14M	N/A	1.35B	1.4B
Sales Growth (year/est)	-8.10%	N/A	3.70%	6.30%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.98	0.95	1.07	1.05
EPS Actual	1.18	1.11	0.94	1.27
Difference	0.2	0.16	-0.13	0.22
Surprise %	20.40%	16.80%	-12.10%	21.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.97	1.13	4.78	5.5
7 Days Ago	1.11	1.2	4.95	5.6
30 Days Ago	1.11	1.2	4.95	5.6
60 Days Ago	1.11	1.17	4.78	5.39
90 Days Ago	1.11	1.17	4.78	5.39

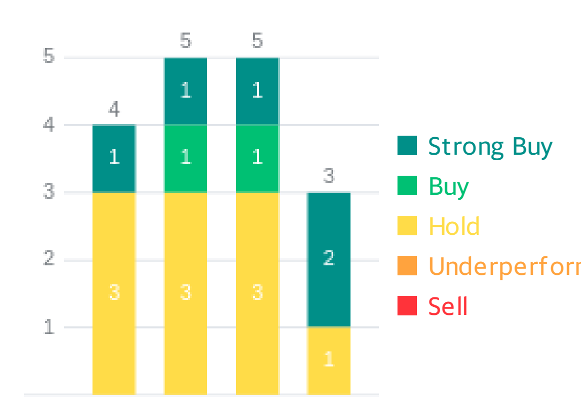
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	2	2	2	2

Growth Estimates	MSA	Industry	Sector(s)	S&P 500
Current Qtr.	-17.80%	N/A	N/A	N/A
Next Qtr.	1.80%	N/A	N/A	N/A
Current Year	6.20%	N/A	N/A	N/A
Next Year	15.10%	N/A	N/A	N/A
Next 5 Years (per annum)	18.00%	N/A	N/A	N/A
Past 5 Years (per annum)	18.25%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
NDSN Nordson Corporation	200.66	-3.37	-1.65%
MPX Marine Products Corporation	16.54	-0.02	-0.12%
LANC Lancaster Colony Corporation	176.97	-2.80	-1.56%
TNC Tennant Company	80.18	-1.01	-1.24%
BRC Brady Corporation	53.89	-0.15	-0.28%

Recommendation Trends >



Recommendation Rating >

2.4

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (4) >

Average 170.50

Low 154.00 High 178.00

Current 149.47

Upgrades & Downgrades >

Maintains	Stifel Nicolaus: to Buy	2/21/2020
Maintains	Sidoti & Co.: to Neutral	1/29/2020
Initiated	William Blair: to Market Perform	1/10/2019
Downgrade	Baird: Outperform to Neutral	12/21/2018
Maintains	Stifel Nicolaus: Buy to Buy	7/27/2018
Maintains	Baird: Outperform to Outperform	4/25/2018

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,994.02	33,131.49	13,304.37	2,218.83	60.71	1,713.80
+35.47 (+0.90%)	+64.53 (+0.20%)	+258.97 (+1.99%)	+23.03 (+1.05%)	+0.16 (+0.26%)	+27.80 (+1.65%)

MSCI Inc. (MSCI)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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424.72 +7.21 (+1.73%)

As of 1:15PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	11	11
Avg. Estimate	2.24	2.27	9.29	10.51
Low Estimate	2.13	2.14	8.89	9.99
High Estimate	2.44	2.34	9.54	11.03
Year Ago EPS	1.9	1.77	7.83	9.29

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	11	11
Avg. Estimate	469.49M	479M	1.94B	2.13B
Low Estimate	463.2M	469M	1.89B	2.06B
High Estimate	477M	489M	1.96B	2.19B
Year Ago Sales	416.78M	409.62M	1.7B	1.94B
Sales Growth (year/est)	12.60%	16.90%	14.10%	10.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.68	1.68	1.81	1.95
EPS Actual	1.9	1.77	2.2	1.96
Difference	0.22	0.09	0.39	0.01
Surprise %	13.10%	5.40%	21.50%	0.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	2.24	2.27	9.29	10.51
7 Days Ago	2.22	2.25	9.25	10.48
30 Days Ago	2.21	2.24	9.18	10.4
60 Days Ago	2.08	2.15	8.82	10.08
90 Days Ago	2.01	2.07	8.49	9.78

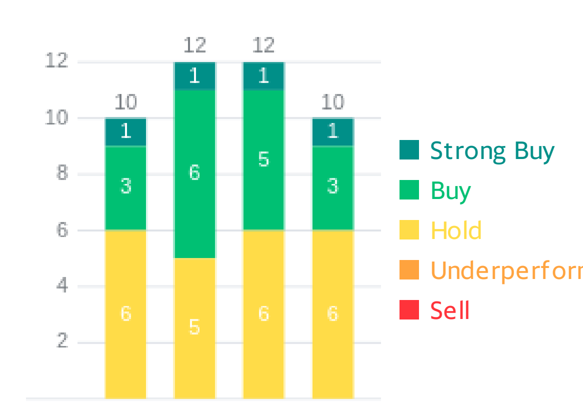
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	MSCI	Industry	Sector(s)	S&P 500
Current Qtr.	17.90%	N/A	N/A	N/A
Next Qtr.	28.20%	N/A	N/A	N/A
Current Year	18.60%	N/A	N/A	N/A
Next Year	13.10%	N/A	N/A	N/A
Next 5 Years (per annum)	14.37%	N/A	N/A	N/A
Past 5 Years (per annum)	29.79%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SPGI S&P Global Inc.	355.44	+2.66	+0.75%
MKTX MarketAxess Holdings, Inc.	506.71	+10.96	+2.21%
VRSK Verisk Analytics, Inc.	177.95	+2.00	+1.14%
INFO IHS Markit Ltd.	97.48	+0.57	+0.59%
GPN Global Payments Inc.	203.34	-1.05	-0.51%

Recommendation Trends



Recommendation Rating

2.3

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (8)

Average 468.75

Low 440.00 | High 490.00

Current 424.72

Upgrades & Downgrades

Initiated	Deutsche Bank: to Buy	3/12/2021
Upgrade	UBS: Neutral to Buy	2/1/2021
Maintains	Morgan Stanley: to Equal-Weight	1/29/2021
Maintains	Morgan Stanley: to Equal-Weight	1/6/2021
Maintains	Morgan Stanley: to Equal-Weight	10/28/2020
Maintains	Morgan Stanley: to Equal-Weight	10/20/2020

More Upgrades & Downgrades

Motorola Solutions, Inc. (MSI)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

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188.07 +1.46 (+0.79%)

As of 1:10PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	13	13
Avg. Estimate	1.62	1.74	8.62	9.55
Low Estimate	1.61	1.56	8.55	9.26
High Estimate	1.67	1.91	8.77	10
Year Ago EPS	1.49	1.39	7.69	8.62

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	11	11
Avg. Estimate	1.75B	1.82B	8B	8.49B
Low Estimate	1.75B	1.73B	7.97B	8.37B
High Estimate	1.76B	1.93B	8.09B	8.59B
Year Ago Sales	1.66B	1.62B	7.41B	8B
Sales Growth (year/est)	5.80%	12.60%	7.90%	6.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.28	1.21	1.78	2.74
EPS Actual	1.49	1.39	1.95	2.86
Difference	0.21	0.18	0.17	0.12
Surprise %	16.40%	14.90%	9.60%	4.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.62	1.74	8.62	9.55
7 Days Ago	1.62	1.74	8.62	9.55
30 Days Ago	1.62	1.74	8.61	9.57
60 Days Ago	1.52	1.75	8.59	9.42
90 Days Ago	1.52	1.75	8.59	9.42

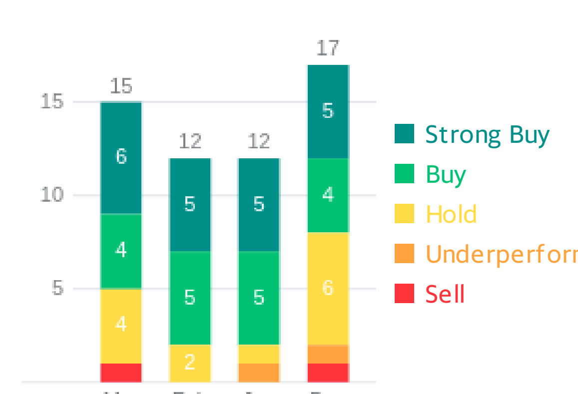
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	1	N/A	N/A	N/A
Up Last 30 Days	2	N/A	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	MSI	Industry	Sector(s)	S&P 500
Current Qtr.	8.70%	N/A	N/A	N/A
Next Qtr.	25.20%	N/A	N/A	N/A
Current Year	12.10%	N/A	N/A	N/A
Next Year	10.80%	N/A	N/A	N/A
Next 5 Years (per annum)	5.88%	N/A	N/A	N/A
Past 5 Years (per annum)	25.25%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
MMI Marcus & Millichap, Inc.	33.95	+0.41	+1.22%
TEL TE Connectivity Ltd. New Switze	129.18	+1.70	+1.33%
FIS Fidelity National Information S	141.61	-0.90	-0.63%
APH Amphenol Corporation	66.50	+0.91	+1.39%
MCHP Microchip Technology Incorporat	154.85	+4.74	+3.16%

Recommendation Trends >



Recommendation Rating >

1.7

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (9) >

Average 206.44

Current 188.08 | Low 198.00 | High 216.00

Upgrades & Downgrades >

Maintains	Cowen & Co.: to Outperform	2/5/2021
Maintains	Citigroup: to Buy	2/5/2021
Maintains	Credit Suisse: to Outperform	2/5/2021
Maintains	Raymond James: to Outperform	2/5/2021
Upgrade	JP Morgan: Underweight to Neutral	1/29/2021
Initiated	William Blair: to Outperform	12/10/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.68	33,129.46	13,304.86	2,218.84	60.71	1,713.40
+35.13 (+0.89%)	+62.50 (+0.19%)	+259.47 (+1.99%)	+23.04 (+1.05%)	+0.16 (+0.26%)	+27.40 (+1.63%)

Vail Resorts, Inc. (MTN)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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292.63 +2.47 (+0.85%)

As of 1:15PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	12	12	13	13
Avg. Estimate	5.62	-3.21	2.31	7.63
Low Estimate	4.58	-3.63	1.72	6.36
High Estimate	6.22	-2.76	2.79	10.9
Year Ago EPS	3.74	-3.82	2.42	2.31

Revenue Estimate	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	12	12	13	13
Avg. Estimate	816.57M	181.61M	1.81B	2.51B
Low Estimate	720.06M	130.49M	1.74B	2.32B
High Estimate	882.53M	204.81M	1.87B	2.73B
Year Ago Sales	678.3M	77.21M	1.96B	1.81B
Sales Growth (year/est)	20.40%	135.20%	-7.80%	38.60%

Earnings History	4/29/2020	7/30/2020	10/30/2020	1/30/2021
EPS Est.	3.28	-3.43	-3.54	2.26
EPS Actual	3.74	-3.82	-3.82	3.62
Difference	0.46	-0.39	-0.28	1.36
Surprise %	14.00%	-11.40%	-7.90%	60.20%

EPS Trend	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	5.62	-3.21	2.31	7.63
7 Days Ago	5.61	-3.2	2.31	7.66
30 Days Ago	3.72	-3.04	-0.95	6.93
60 Days Ago	3.7	-3.04	-0.98	6.94
90 Days Ago	3.94	-3.03	-0.62	6.96

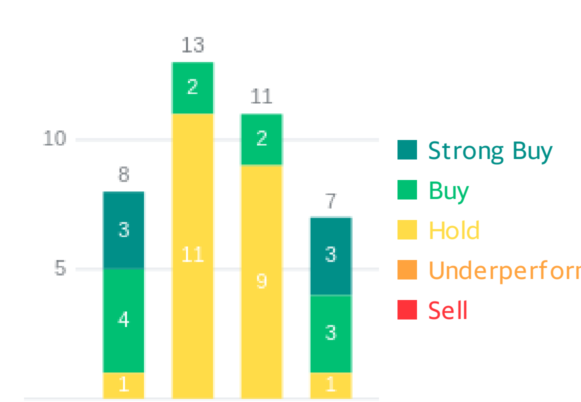
EPS Revisions	Current Qtr. (Apr 2021)	Next Qtr. (Jul 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	1	N/A	N/A	N/A
Up Last 30 Days	12	2	12	9
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	1	2

Growth Estimates	MTN	Industry	Sector(s)	S&P 500
Current Qtr.	50.30%	N/A	N/A	N/A
Next Qtr.	16.00%	N/A	N/A	N/A
Current Year	-4.50%	N/A	N/A	N/A
Next Year	230.30%	N/A	N/A	N/A
Next 5 Years (per annum)	69.80%	N/A	N/A	N/A
Past 5 Years (per annum)	52.04%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
H Hyatt Hotels Corporation	82.92	-0.36	-0.43%
FICO Fair Isaac Corporation	492.60	+8.60	+1.78%
MASI Masimo Corporation	230.71	+4.58	+2.03%
TXRH Texas Roadhouse, Inc.	96.50	+0.07	+0.07%
TDG Transdigm Group Incorporated Tr	592.84	+8.21	+1.41%

Recommendation Trends >



Recommendation Rating >

2.7

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (10) >

Average 324.10

Low 277.00 | High 415.00

Current 292.63

Upgrades & Downgrades >

Upgrade	B of A Securities: Neutral to Buy	3/25/2021
Maintains	Truist Securities: to Hold	3/12/2021
Maintains	Deutsche Bank: to Hold	3/12/2021
Initiated	JP Morgan: to Neutral	1/29/2021
Downgrade	Berenberg: Buy to Hold	12/16/2020
Maintains	Credit Suisse: to Outperform	12/11/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.74	33,128.81	13,304.79	2,218.88	60.70	1,713.50
+35.19 (+0.89%)	+61.85 (+0.19%)	+259.39 (+1.99%)	+23.09 (+1.05%)	+0.15 (+0.25%)	+27.50 (+1.63%)

Maxim Integrated Products, Inc. (MXIM)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

92.24 +2.32 (+2.58%)

As of 1:16PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	17	17	15	17
Avg. Estimate	0.74	0.78	2.98	3.21
Low Estimate	0.69	0.74	2.89	2.97
High Estimate	0.77	0.82	3.04	3.38
Year Ago EPS	0.61	0.58	2.26	2.98

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	16	16	17	17
Avg. Estimate	637.66M	655.16M	2.54B	2.69B
Low Estimate	615.5M	622.1M	2.47B	2.59B
High Estimate	650M	682M	2.57B	2.77B
Year Ago Sales	561.92M	545.37M	2.19B	2.54B
Sales Growth (year/est)	13.50%	20.10%	15.90%	6.10%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.58	0.57	0.58	0.68
EPS Actual	0.61	0.58	0.72	0.73
Difference	0.03	0.01	0.14	0.05
Surprise %	5.20%	1.80%	24.10%	7.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.74	0.78	2.98	3.21
7 Days Ago	0.74	0.78	2.98	3.21
30 Days Ago	0.74	0.78	2.98	3.21
60 Days Ago	0.73	0.77	2.92	3.21
90 Days Ago	0.69	0.74	2.81	3.03

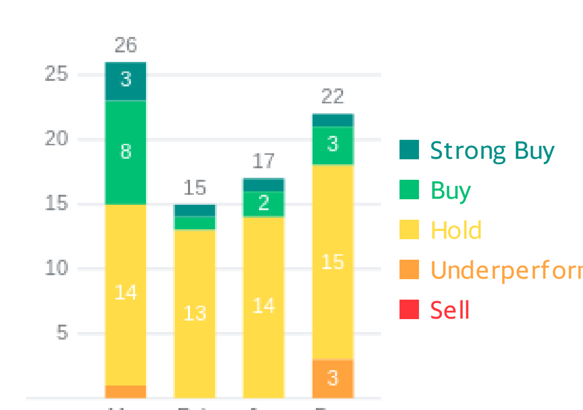
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	MXIM	Industry	Sector(s)	S&P 500
Current Qtr.	21.30%	N/A	N/A	N/A
Next Qtr.	34.50%	N/A	N/A	N/A
Current Year	31.90%	N/A	N/A	N/A
Next Year	7.70%	N/A	N/A	N/A
Next 5 Years (per annum)	18.44%	N/A	N/A	N/A
Past 5 Years (per annum)	13.28%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
ADI Analog Devices, Inc.	155.96	+3.35	+2.20%
MCHP Microchip Technology Incorporat	154.90	+4.79	+3.19%
KLAC KLA Corporation	330.37	+13.30	+4.20%
XLNX Xilinx, Inc.	124.89	+4.58	+3.81%
ALTR Altair Engineering Inc.	62.47	+1.50	+2.46%

Recommendation Trends >



Recommendation Rating >

2.8

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (13) >

Average 91.92

Low 55.00 | Current 92.24 | High 111.00

Upgrades & Downgrades >

Maintains	Deutsche Bank: to Buy	1/25/2021
Maintains	Stifel: to Hold	10/28/2020
Maintains	Stifel: to Hold	7/29/2020
Maintains	Credit Suisse: to Neutral	7/14/2020
Downgrade	Susquehanna: Positive to Neutral	7/13/2020
Maintains	Morgan Stanley: to Equal-Weight	6/16/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 44 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,993.84	33,130.93	13,304.25	2,218.88	60.69	1,713.60
+35.29 (+0.89%)	+63.97 (+0.19%)	+258.85 (+1.98%)	+23.08 (+1.05%)	+0.14 (+0.23%)	+27.60 (+1.64%)

Northrop Grumman Corporation (NOC)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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322.67 -0.01 (-0.00%)

As of 1:16PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	17	17	20	20
Avg. Estimate	5.47	5.78	23.62	25.33
Low Estimate	5.19	5.55	23.25	23.1
High Estimate	5.71	6.05	24.09	27.93
Year Ago EPS	5.15	6.01	23.65	23.62

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	17	17
Avg. Estimate	8.49B	8.68B	35.48B	37.13B
Low Estimate	8.23B	8.51B	35.22B	36.25B
High Estimate	8.74B	8.88B	36.15B	37.96B
Year Ago Sales	8.62B	8.88B	36.8B	35.48B
Sales Growth (year/est)	-1.50%	-2.20%	-3.60%	4.70%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	5.51	5.32	5.62	5.76
EPS Actual	5.15	6.01	5.89	6.59
Difference	-0.36	0.69	0.27	0.83
Surprise %	-6.50%	13.00%	4.80%	14.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	5.47	5.78	23.62	25.33
7 Days Ago	5.47	5.78	23.62	25.33
30 Days Ago	5.46	5.78	23.59	25.28
60 Days Ago	5.68	5.91	24.02	26.01
90 Days Ago	5.71	5.96	24.21	26.48

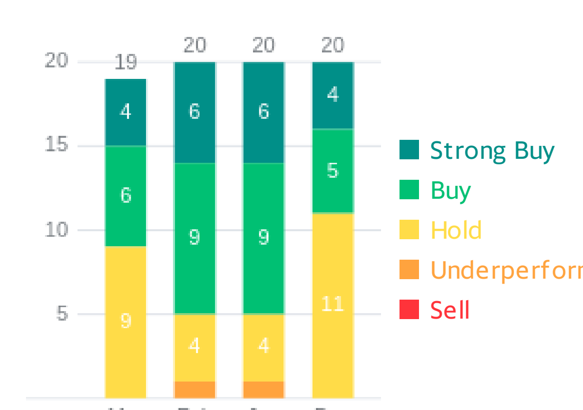
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	1	1	N/A
Up Last 30 Days	N/A	1	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	NOC	Industry	Sector(s)	S&P 500
Current Qtr.	6.20%	N/A	N/A	N/A
Next Qtr.	-3.80%	N/A	N/A	N/A
Current Year	-0.10%	N/A	N/A	N/A
Next Year	7.20%	N/A	N/A	N/A
Next 5 Years (per annum)	5.44%	N/A	N/A	N/A
Past 5 Years (per annum)	20.00%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
LMT Lockheed Martin Corporation	369.20	-1.34	-0.36%
GD General Dynamics Corporation	181.42	-0.68	-0.37%
HON Honeywell International Inc.	217.41	-0.68	-0.31%
HII Huntington Ingalls Industries,	206.12	+0.46	+0.22%
RTX Raytheon Technologies Corporati	77.51	-0.31	-0.40%

Recommendation Trends >



Recommendation Rating >

2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (18) >

Average 367.83

Low 291.00 | Current 322.67 | High 455.00

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Overweight	2/8/2021
Maintains	Susquehanna: to Positive	1/29/2021
Maintains	Credit Suisse: to Outperform	1/29/2021
Maintains	Morgan Stanley: to Overweight	1/7/2021
Downgrade	Baird: Outperform to Neutral	1/7/2021
Upgrade	RBC Capital: Sector Perform to Outperform	10/6/2020

More Upgrades & Downgrades

Old Dominion Freight Line, Inc. (ODFL)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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241.86 +1.25 (+0.52%)

As of 1:15PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	19	19
Avg. Estimate	1.58	1.88	7.19	8.22
Low Estimate	1.53	1.76	6.9	7.78
High Estimate	1.63	2.02	7.6	9
Year Ago EPS	1.11	1.25	5.68	7.19

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	13	13
Avg. Estimate	1.11B	1.16B	4.65B	5.09B
Low Estimate	1.09B	1.08B	4.5B	4.88B
High Estimate	1.15B	1.21B	4.79B	5.3B
Year Ago Sales	987.36M	896.21M	4.02B	4.65B
Sales Growth (year/est)	12.10%	29.90%	15.90%	9.50%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.12	1.07	1.53	1.57
EPS Actual	1.11	1.25	1.71	1.61
Difference	-0.01	0.18	0.18	0.04
Surprise %	-0.90%	16.80%	11.80%	2.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.58	1.88	7.19	8.22
7 Days Ago	1.58	1.87	7.19	8.22
30 Days Ago	1.59	1.87	7.18	8.19
60 Days Ago	1.47	1.8	6.9	7.96
90 Days Ago	1.45	1.76	6.82	7.78

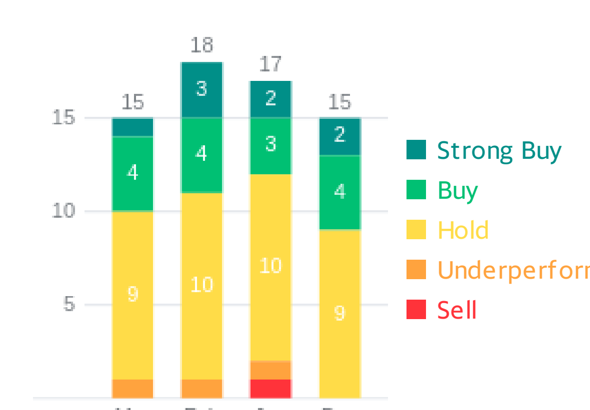
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	2	2	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	ODFL	Industry	Sector(s)	S&P 500
Current Qtr.	42.30%	N/A	N/A	N/A
Next Qtr.	50.40%	N/A	N/A	N/A
Current Year	26.60%	N/A	N/A	N/A
Next Year	14.30%	N/A	N/A	N/A
Next 5 Years (per annum)	15.89%	N/A	N/A	N/A
Past 5 Years (per annum)	23.61%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
JBHT J.B. Hunt Transport Services, I	168.47	-0.87	-0.51%
SAIA Saia, Inc.	229.97	-2.19	-0.94%
LSTR Landstar System, Inc.	165.71	-3.27	-1.94%
KNX Knight-Swift Transportation Hol	48.38	-0.69	-1.41%
WERN Werner Enterprises, Inc.	47.17	-0.87	-1.80%

Recommendation Trends >



Recommendation Rating >

2.4

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (15) >

Average 228.47

Low 200.00 | Current 241.86 | High 250.00

Upgrades & Downgrades >

Maintains	Deutsche Bank: to Hold	3/22/2021
Upgrade	Goldman Sachs: Neutral to Buy	3/10/2021
Maintains	Credit Suisse: to Neutral	3/3/2021
Maintains	Morgan Stanley: to Overweight	2/17/2021
Maintains	Credit Suisse: to Neutral	2/5/2021
Initiated	UBS: to Buy	1/19/2021

More Upgrades & Downgrades

U.S. markets close in 2 hours 41 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.76	33,117.96	13,304.42	2,218.00	60.62	1,714.40
+34.21 (+0.86%)	+51.00 (+0.15%)	+259.03 (+1.99%)	+22.21 (+1.01%)	+0.07 (+0.12%)	+28.40 (+1.68%)

PerkinElmer, Inc. (PKI)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

129.02 +1.29 (+1.01%)

As of 1:18PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	16	16
Avg. Estimate	3	2.38	8.95	6.21
Low Estimate	2.22	2.09	8.02	5.02
High Estimate	3.39	3.13	10.64	7.29
Year Ago EPS	0.67	1.57	8.3	8.95

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	13	13	13	13
Avg. Estimate	1.18B	1.07B	4.19B	3.59B
Low Estimate	1.05B	979.7M	4.04B	3.35B
High Estimate	1.23B	1.23B	4.76B	4.05B
Year Ago Sales	652.4M	811.91M	3.78B	4.19B
Sales Growth (year/est)	81.50%	31.90%	10.60%	-14.20%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.54	0.88	1.5	3
EPS Actual	0.67	1.57	2.09	3.96
Difference	0.13	0.69	0.59	0.96
Surprise %	24.10%	78.40%	39.30%	32.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	3	2.38	8.95	6.21
7 Days Ago	3	2.4	8.97	6.21
30 Days Ago	2.98	2.4	9.04	6.27
60 Days Ago	2.4	2.24	8.88	6.76
90 Days Ago	2.24	2.14	8.52	6.49

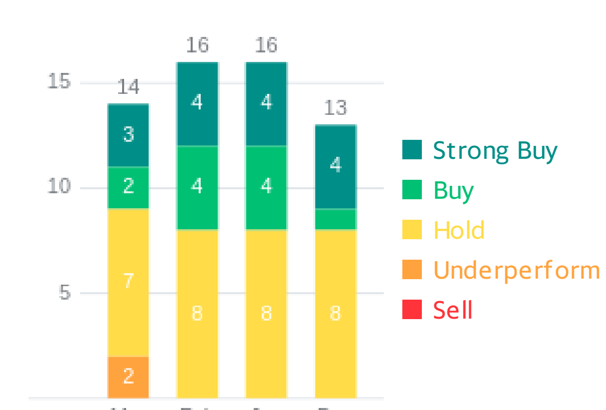
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	1	N/A	3	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	PKI	Industry	Sector(s)	S&P 500
Current Qtr.	347.80%	N/A	N/A	N/A
Next Qtr.	51.60%	N/A	N/A	N/A
Current Year	7.80%	N/A	N/A	N/A
Next Year	-30.60%	N/A	N/A	N/A
Next 5 Years (per annum)	17.20%	N/A	N/A	N/A
Past 5 Years (per annum)	10.49%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
WAT Waters Corporation	286.03	+3.52	+1.25%
MTD Mettler-Toledo International, I	1,166.88	+17.61	+1.53%
RHI Robert Half International Inc.	78.41	+0.85	+1.10%
VAR Varian Medical Systems, Inc.	176.66	-0.27	-0.15%
PNW Pinnacle West Capital Corporati	80.84	+0.12	+0.15%

Recommendation Trends >



Recommendation Rating >

2.2

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (14) >

Average 161.64

Low 135.00 | High 193.00

Current 129.02

Upgrades & Downgrades >

Upgrade	Wells Fargo: Equal-Weight to Overweight	1/7/2021
Initiated	KeyBanc: to Sector Weight	11/10/2020
Maintains	Needham: to Buy	11/9/2020
Maintains	Wells Fargo: to Equal-Weight	10/29/2020
Upgrade	Needham: Hold to Buy	9/11/2020
Maintains	JP Morgan: to Neutral	7/29/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.89	33,122.81	13,303.66	2,218.27	60.66	1,714.00
+34.34 (+0.87%)	+55.85 (+0.17%)	+258.27 (+1.98%)	+22.48 (+1.02%)	+0.11 (+0.18%)	+28.00 (+1.66%)

Philip Morris International Inc. (PM)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

88.75 -0.60 (-0.67%)

As of 1:18PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	13	11	16	19
Avg. Estimate	1.4	1.54	5.99	6.55
Low Estimate	1.39	1.47	5.9	6.26
High Estimate	1.42	1.63	6.11	6.89
Year Ago EPS	1.21	1.29	5.17	5.99

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	16	16
Avg. Estimate	7.33B	7.66B	31.17B	33.05B
Low Estimate	7.02B	7.3B	30.14B	31.78B
High Estimate	7.9B	8.11B	31.78B	34.23B
Year Ago Sales	7.15B	N/A	28.69B	31.17B
Sales Growth (year/est)	2.50%	N/A	8.60%	6.10%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.13	1.1	1.36	1.21
EPS Actual	1.21	1.29	1.42	1.26
Difference	0.08	0.19	0.06	0.05
Surprise %	7.10%	17.30%	4.40%	4.10%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.4	1.54	5.99	6.55
7 Days Ago	1.4	1.53	6	6.56
30 Days Ago	1.4	1.53	6	6.57
60 Days Ago	1.28	1.5	5.81	6.34
90 Days Ago	1.27	1.49	5.72	6.26

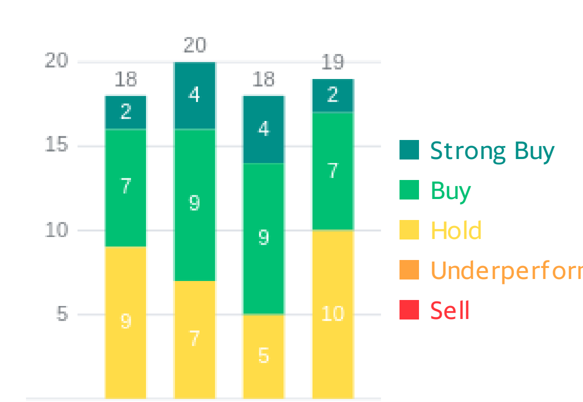
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	N/A	N/A	1	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	PM	Industry	Sector(s)	S&P 500
Current Qtr.	15.70%	N/A	N/A	N/A
Next Qtr.	19.40%	N/A	N/A	N/A
Current Year	15.90%	N/A	N/A	N/A
Next Year	9.30%	N/A	N/A	N/A
Next 5 Years (per annum)	11.42%	N/A	N/A	N/A
Past 5 Years (per annum)	3.91%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
MO Altria Group, Inc.	51.26	0.00	0.00%
MDLZ Mondelez International, Inc.	58.81	+0.03	+0.05%
KHC The Kraft Heinz Company	40.24	-0.04	-0.10%
PEP Pepsico, Inc.	142.16	-0.38	-0.27%
KMB Kimberly-Clark Corporation	139.91	+1.60	+1.16%

Recommendation Trends >



Recommendation Rating >

2.1

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (18) >

Average 98.54

Low 81.00 | Current 88.75 | High 110.00

Upgrades & Downgrades >

Maintains	Morgan Stanley: to Overweight	2/25/2021
Initiated	Bernstein: to Market Perform	1/20/2021
Downgrade	UBS: Buy to Neutral	11/23/2020
Upgrade	Citigroup: Neutral to Buy	10/7/2020
Maintains	B of A Securities: to Buy	9/11/2020
Maintains	UBS: to Buy	4/29/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.71	33,118.79	13,304.27	2,218.09	60.64	1,714.00
+34.16 (+0.86%)	+51.83 (+0.16%)	+258.87 (+1.98%)	+22.29 (+1.02%)	+0.09 (+0.15%)	+28.00 (+1.66%)

Pool Corporation (POOL)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

348.14 +5.77 (+1.69%)

As of 1:16PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	9	9
Avg. Estimate	1.15	4.52	9.46	10.51
Low Estimate	0.98	4.25	9.15	10.09
High Estimate	1.3	4.84	9.74	11.16
Year Ago EPS	0.9	3.87	9.13	9.46

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	9	9
Avg. Estimate	823.89M	1.52B	4.31B	4.59B
Low Estimate	794.21M	1.44B	4.26B	4.47B
High Estimate	845M	1.65B	4.4B	4.67B
Year Ago Sales	677.29M	N/A	3.94B	4.31B
Sales Growth (year/est)	21.60%	N/A	9.60%	6.40%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.65	3.1	2.18	0.76
EPS Actual	0.9	3.87	2.92	1.45
Difference	0.25	0.77	0.74	0.69
Surprise %	38.50%	24.80%	33.90%	90.80%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.15	4.52	9.46	10.51
7 Days Ago	1.15	4.52	9.46	10.51
30 Days Ago	1.14	4.53	9.46	10.51
60 Days Ago	1.1	4.48	9.24	10.37
90 Days Ago	1.09	4.44	9.19	10.29

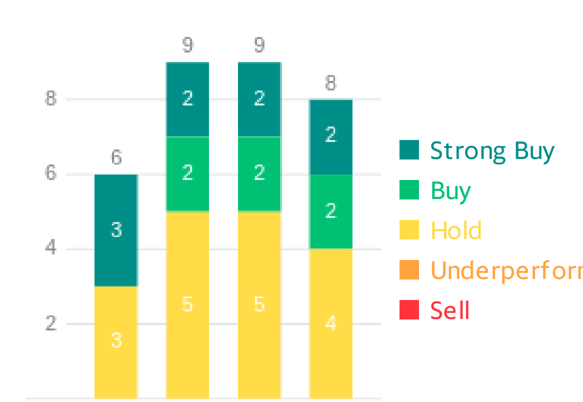
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	POOL	Industry	Sector(s)	S&P 500
Current Qtr.	27.80%	N/A	N/A	N/A
Next Qtr.	16.80%	N/A	N/A	N/A
Current Year	3.60%	N/A	N/A	N/A
Next Year	11.10%	N/A	N/A	N/A
Next 5 Years (per annum)	17.00%	N/A	N/A	N/A
Past 5 Years (per annum)	32.34%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
MKTX MarketAxess Holdings, Inc.	506.71	+10.96	+2.21%
WST West Pharmaceutical Services, I	281.96	+3.62	+1.30%
MPWR Monolithic Power Systems, Inc.	353.60	+11.01	+3.21%
ODFL Old Dominion Freight Line, Inc.	241.56	+0.95	+0.39%
ROL Rollins, Inc.	34.91	+0.99	+2.92%

Recommendation Trends >



Recommendation Rating >

2.3

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (7) >

Average 380.00

Low 350.00 High 417.00

Current 348.14

Upgrades & Downgrades >

Maintains	KeyBanc: to Overweight	11/25/2020
Maintains	Sidoti & Co.: to Neutral	10/8/2020
Maintains	Baird: to Outperform	6/19/2020
Maintains	KeyBanc: to Overweight	6/2/2020
Maintains	CFRA: to Strong Buy	5/27/2020
Maintains	KeyBanc: to Overweight	5/19/2020

More Upgrades & Downgrades

Post Holdings, Inc. (POST)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

106.20 -0.49 (-0.46%)

As of 1:16PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	9	10	11
Avg. Estimate	0.56	1.13	3.64	5.02
Low Estimate	0.47	0.97	3.2	4.03
High Estimate	0.61	1.63	4.25	6.38
Year Ago EPS	0.65	0.75	2.71	3.64

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	9	9
Avg. Estimate	1.42B	1.46B	5.85B	6.13B
Low Estimate	1.37B	1.38B	5.76B	5.9B
High Estimate	1.45B	1.54B	5.99B	6.27B
Year Ago Sales	1.49B	N/A	5.7B	5.85B
Sales Growth (year/est)	-5.20%	N/A	2.70%	4.70%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.89	0.71	0.77	0.71
EPS Actual	0.65	0.75	0.58	0.72
Difference	-0.24	0.04	-0.19	0.01
Surprise %	-27.00%	5.60%	-24.70%	1.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.56	1.13	3.64	5.02
7 Days Ago	0.56	1.13	3.64	5.02
30 Days Ago	0.56	1.13	3.67	5.01
60 Days Ago	0.66	1.2	3.69	4.92
90 Days Ago	0.66	1.2	3.69	4.9

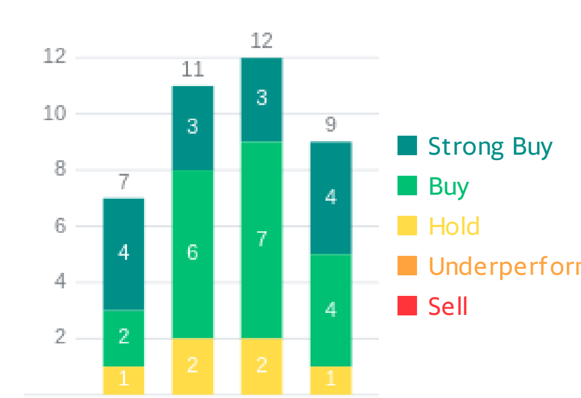
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	N/A

Growth Estimates	POST	Industry	Sector(s)	S&P 500
Current Qtr.	-13.80%	N/A	N/A	N/A
Next Qtr.	50.70%	N/A	N/A	N/A
Current Year	34.30%	N/A	N/A	N/A
Next Year	37.90%	N/A	N/A	N/A
Next 5 Years (per annum)	31.20%	N/A	N/A	N/A
Past 5 Years (per annum)	48.24%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
THS Treehouse Foods, Inc.	52.62	-0.53	-1.00%
EPC Edgewell Personal Care Company	39.99	-0.21	-0.51%
SPB Spectrum Brands Holdings, Inc.	85.14	-0.10	-0.11%
LW Lamb Weston Holdings, Inc.	78.39	-0.53	-0.67%
INGR Ingredion Incorporated	90.81	-0.75	-0.81%

Recommendation Trends



Recommendation Rating

1.9

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (11)

Average 112.64

Low 94.00 | Current 106.20 | High 128.00

Upgrades & Downgrades

Maintains	Citigroup: to Buy	2/10/2021
Maintains	BMO Capital: to Market Perform	8/10/2020
Maintains	Piper Sandler: to Overweight	8/10/2020
Maintains	Jefferies: to Buy	7/27/2020
Upgrade	Goldman Sachs: Neutral to Buy	6/22/2020
Maintains	BMO Capital: to Market Perform	5/11/2020

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.83	33,120.02	13,304.38	2,218.19	60.64	1,714.00
+34.28 (+0.87%)	+53.06 (+0.16%)	+258.99 (+1.99%)	+22.39 (+1.02%)	+0.09 (+0.15%)	+28.00 (+1.66%)

RLI Corp. (RLI)

NYSE - NYSE Delayed Price. Currency in USD

Add to watchlist

Quote Lookup

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111.64 -0.76 (-0.68%)

As of 1:00PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | Analysis | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	6	7	7
Avg. Estimate	0.65	0.71	2.83	3.09
Low Estimate	0.25	0.66	2.75	2.9
High Estimate	0.74	0.76	2.9	3.35
Year Ago EPS	0.66	0.77	2.59	2.83

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	3	3
Avg. Estimate	212.76M	251.74M	977.82M	1.05B
Low Estimate	210.08M	249.66M	975.68M	1.02B
High Estimate	214.27M	253.06M	981.83M	1.06B
Year Ago Sales	197.1M	230.09M	892.09M	977.82M
Sales Growth (year/est)	7.90%	9.40%	9.60%	6.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.63	0.47	0	0.65
EPS Actual	0.66	0.77	0.42	0.75
Difference	0.03	0.3	0.42	0.1
Surprise %	4.80%	63.80%	N/A	15.40%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.65	0.71	2.83	3.09
7 Days Ago	0.65	0.71	2.83	3.09
30 Days Ago	0.71	0.7	2.78	3.07
60 Days Ago	0.7	0.69	2.76	3.05
90 Days Ago	0.69	0.67	2.66	3.05

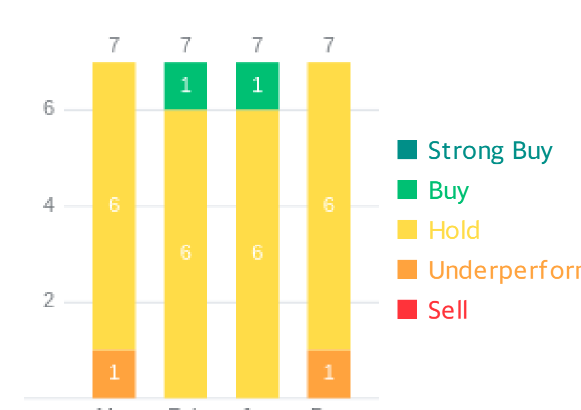
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	RLI	Industry	Sector(s)	S&P 500
Current Qtr.	-1.50%	N/A	N/A	N/A
Next Qtr.	-7.80%	N/A	N/A	N/A
Current Year	9.30%	N/A	N/A	N/A
Next Year	9.20%	N/A	N/A	N/A
Next 5 Years (per annum)	9.80%	N/A	N/A	N/A
Past 5 Years (per annum)	-4.20%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
SIGI Selective Insurance Group, Inc.	72.62	-0.68	-0.93%
RNR RenaissanceRe Holdings Ltd.	162.58	-2.07	-1.26%
PRA ProAssurance Corporation	26.66	-0.11	-0.41%
SCL Stepan Company	128.30	-0.40	-0.31%
MCY Mercury General Corporation	61.21	-0.19	-0.31%

Recommendation Trends >



Recommendation Rating >

2.9

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (4) >

Average 109.50

Low 102.00 | Current 111.64 | High 130.00

Upgrades & Downgrades >

Initiated	Compass Point: to Neutral	9/18/2020
Maintains	RBC Capital: to Sector Perform	4/8/2020
Upgrade	B. Riley FBR: Neutral to Buy	3/23/2020
Maintains	Keefe Bruyette & Woods: to Market Perform	7/19/2019
Initiated	Compass Point: to Sell	1/15/2019
Maintains	B. Riley FBR: Neutral to Neutral	10/3/2018

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.48	33,118.61	13,303.58	2,217.96	60.62	1,714.00
+33.93 (+0.86%)	+51.65 (+0.16%)	+258.18 (+1.98%)	+22.17 (+1.01%)	+0.07 (+0.12%)	+28.00 (+1.66%)

Rollins, Inc. (ROL)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

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34.90 +0.98 (+2.89%)

As of 1:18PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	3	1
Avg. Estimate	0.11	0.17	0.62	0.67
Low Estimate	0.1	0.16	0.61	0.67
High Estimate	0.13	0.18	0.62	0.67
Year Ago EPS	0.09	0.15	0.54	0.62

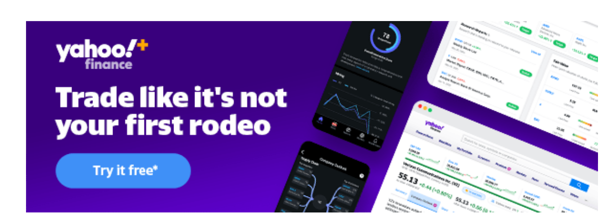
Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	3	3	3	2
Avg. Estimate	518.25M	601.66M	2.32B	2.47B
Low Estimate	515.2M	600.68M	2.31B	2.46B
High Estimate	520M	603M	2.32B	2.47B
Year Ago Sales	487.9M	541.25M	2.16B	2.32B
Sales Growth (year/est)	6.20%	11.20%	7.30%	6.40%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.09	0.12	0.16	0.13
EPS Actual	0.09	0.15	0.17	0.13
Difference	0	0.03	0.01	0
Surprise %	0.00%	25.00%	6.30%	0.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.11	0.17	0.62	0.67
7 Days Ago	0.11	0.17	0.62	0.67
30 Days Ago	0.11	0.17	0.62	0.67
60 Days Ago	0.11	0.17	0.61	0.67
90 Days Ago	0.11	0.17	0.6	0.67

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

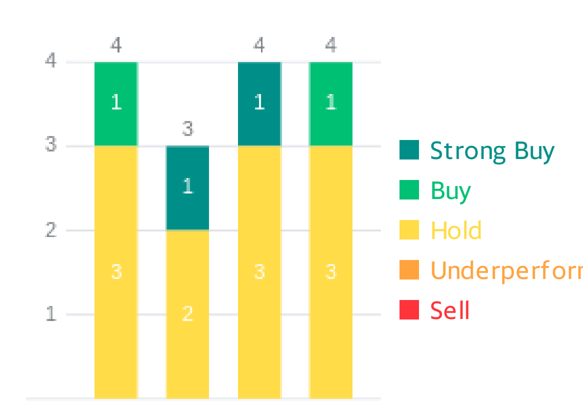
Growth Estimates	ROL	Industry	Sector(s)	S&P 500
Current Qtr.	22.20%	N/A	N/A	N/A
Next Qtr.	13.30%	N/A	N/A	N/A
Current Year	14.80%	N/A	N/A	N/A
Next Year	8.10%	N/A	N/A	N/A
Next 5 Years (per annum)	8.20%	N/A	N/A	N/A
Past 5 Years (per annum)	13.51%	N/A	N/A	N/A



People Also Watch

Symbol	Last Price	Change	% Change
ROP Roper Technologies, Inc.	405.07	+2.06	+0.51%
RHI Robert Half International Inc.	78.32	+0.76	+0.98%
JKHY Jack Henry & Associates, Inc.	153.27	-0.13	-0.08%
MTD Mettler-Toledo International, I	1,166.88	+17.61	+1.53%
IEX IDEX Corporation	210.92	+0.46	+0.22%

Recommendation Trends >



Recommendation Rating >

2.3

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (2) >

Average 36.00

Low 33.00 | Current 34.90 | High 39.00

Upgrades & Downgrades >

Maintains	Stifel: to Hold	10/29/2020
Maintains	RBC Capital: to Sector Perform	7/30/2020
Maintains	Buckingham: to Neutral	2/4/2020
Initiated	Jefferies: to Hold	11/22/2019
Upgrade	Stifel Nicolaus: Sell to Hold	11/6/2019
Initiated	RBC Capital: to Sector Perform	10/8/2019

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.48	33,118.61	13,303.58	2,217.96	60.62	1,714.00
+33.93 (+0.86%)	+51.65 (+0.16%)	+258.18 (+1.98%)	+22.17 (+1.01%)	+0.07 (+0.12%)	+28.00 (+1.66%)

Selective Insurance Group, Inc. (SIGI)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

72.62 -0.68 (-0.93%)

As of 1:14PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	6	7	7
Avg. Estimate	1.05	1.09	4.48	4.76
Low Estimate	0.81	0.99	4.3	4.5
High Estimate	1.26	1.33	4.78	4.9
Year Ago EPS	0.84	0.4	4.15	4.48

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	5	5	5	4
Avg. Estimate	710M	765.82M	2.96B	3.11B
Low Estimate	681.7M	732.66M	2.91B	3.06B
High Estimate	767.8M	792M	3.05B	3.18B
Year Ago Sales	647.3M	724.8M	2.77B	2.96B
Sales Growth (year/est)	9.70%	5.70%	6.90%	4.90%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.02	0.36	1.03	1.2
EPS Actual	0.84	0.4	1.06	1.84
Difference	-0.18	0.04	0.03	0.64
Surprise %	-17.60%	11.10%	2.90%	53.30%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.05	1.09	4.48	4.76
7 Days Ago	1.05	1.09	4.48	4.76
30 Days Ago	1.05	1.09	4.48	4.76
60 Days Ago	0.99	1.02	4.31	4.57
90 Days Ago	0.99	1.02	4.29	4.57

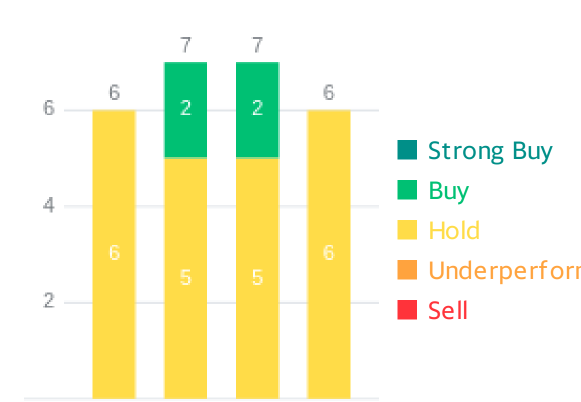
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	SIGI	Industry	Sector(s)	S&P 500
Current Qtr.	25.00%	N/A	N/A	N/A
Next Qtr.	172.50%	N/A	N/A	N/A
Current Year	8.00%	N/A	N/A	N/A
Next Year	6.20%	N/A	N/A	N/A
Next 5 Years (per annum)	5.10%	N/A	N/A	N/A
Past 5 Years (per annum)	9.79%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
STFC State Auto Financial Corporatio	19.54	-0.46	-2.30%
UFCS United Fire Group, Inc	34.83	-0.37	-1.05%
RLI RLI Corp.	111.64	-0.76	-0.68%
THG Hanover Insurance Group Inc	130.49	-0.80	-0.61%
SAFT Safety Insurance Group, Inc.	84.85	-0.36	-0.42%

Recommendation Trends >



Recommendation Rating >

2.7

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (5) >

Average 70.20

Low 67.00 | Current 72.62 | High 75.00

Upgrades & Downgrades >

Maintains	Credit Suisse: to Outperform	11/10/2020
Upgrade	Credit Suisse: Underperform to Outperform	5/14/2020
Maintains	RBC Capital: to Sector Perform	4/8/2020
Maintains	Piper Sandler: to Neutral	4/6/2020
Upgrade	JMP Securities: Market Perform to Market Outperform	3/9/2020
Maintains	Buckingham: to Neutral	9/12/2019

More Upgrades & Downgrades

U.S. markets close in 2 hours 42 minutes

S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	Gold
3,992.99	33,124.33	13,304.29	2,218.51	60.68	1,713.90
+34.44 (+0.87%)	+57.37 (+0.17%)	+258.90 (+1.98%)	+22.72 (+1.03%)	+0.13 (+0.21%)	+27.90 (+1.65%)

Sirius XM Holdings Inc. (SIRI)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Quote Lookup

Advertisement

6.13 +0.01 (+0.16%)

As of 1:17PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	13	12	15	13
Avg. Estimate	0.06	0.06	0.27	0.31
Low Estimate	0.05	0.06	0.23	0.26
High Estimate	0.07	0.07	0.29	0.36
Year Ago EPS	0.07	0.05	0.25	0.27

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	11	9	15	13
Avg. Estimate	2.01B	2.05B	8.41B	8.81B
Low Estimate	1.98B	2.02B	8.35B	8.7B
High Estimate	2.05B	2.11B	8.48B	8.95B
Year Ago Sales	1.95B	1.89B	8.04B	8.41B
Sales Growth (year/est)	2.90%	8.50%	4.60%	4.80%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.05	0.06	0.05	0.01
EPS Actual	0.07	0.05	0.06	0.07
Difference	0.02	-0.01	0.01	0.06
Surprise %	40.00%	-16.70%	20.00%	600.00%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.06	0.06	0.27	0.31
7 Days Ago	0.06	0.06	0.27	0.31
30 Days Ago	0.06	0.06	0.27	0.31
60 Days Ago	0.06	0.07	0.27	0.35
90 Days Ago	0.06	0.07	0.27	0.31

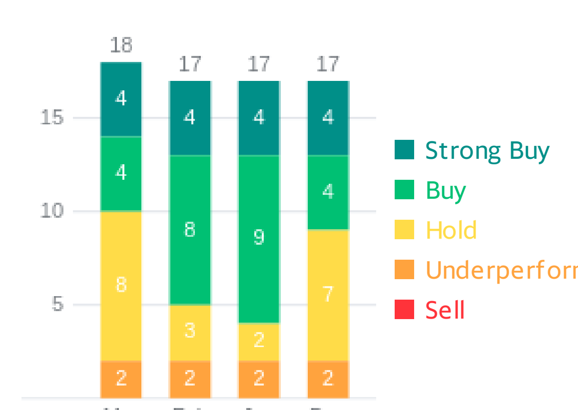
EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	SIRI	Industry	Sector(s)	S&P 500
Current Qtr.	-14.30%	N/A	N/A	N/A
Next Qtr.	20.00%	N/A	N/A	N/A
Current Year	8.00%	N/A	N/A	N/A
Next Year	14.80%	N/A	N/A	N/A
Next 5 Years (per annum)	12.93%	N/A	N/A	N/A
Past 5 Years (per annum)	22.38%	N/A	N/A	N/A

People Also Watch

Symbol	Last Price	Change	% Change
EBAY eBay Inc.	62.40	+2.08	+3.45%
F Ford Motor Company	12.27	-0.19	-1.48%
CSCO Cisco Systems, Inc.	51.74	-0.03	-0.05%
C Citigroup, Inc.	73.04	+0.08	+0.10%
BAC Bank of America Corporation	38.79	-0.20	-0.51%

Recommendation Trends >



Recommendation Rating >

2.2

1 Strong Buy · 2 Buy · 3 Hold · 4 Under-perform · 5 Sell

Analyst Price Targets (16) >

Average 7.17

Low 5.00 · Current 6.13 · High 8.00

Upgrades & Downgrades >

Downgrade	Credit Suisse: Outperform to Neutral	1/28/2021
Upgrade	RBC Capital: Sector Perform to Outperform	10/27/2020
Maintains	Benchmark: to Buy	10/23/2020
Upgrade	Credit Suisse: Neutral to Outperform	10/7/2020
Upgrade	Benchmark: Hold to Buy	9/16/2020
Maintains	Citigroup: to Buy	8/4/2020

More Upgrades & Downgrades

Bio-Techne Corporation (TECH)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

383.08 +9.61 (+2.57%)

As of 1:22PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

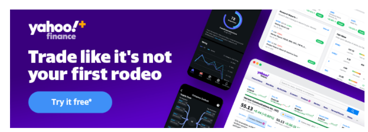
Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	10	10	11	11
Avg. Estimate	1.55	1.54	6.1	7.12
Low Estimate	1.42	1.42	5.67	6.64
High Estimate	1.68	1.87	6.6	8.45
Year Ago EPS	1.39	1	4.55	6.1

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	9	9	10	9
Avg. Estimate	228.22M	229.41M	889.94M	1.02B
Low Estimate	224.1M	218.5M	877.6M	975.24M
High Estimate	233.6M	235M	925M	1.08B
Year Ago Sales	N/A	175.83M	738.69M	889.94M
Sales Growth (year/est)	N/A	30.50%	20.50%	14.50%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.15	0.75	1.09	1.37
EPS Actual	1.39	1	1.43	1.62
Difference	0.24	0.25	0.34	0.25
Surprise %	20.90%	33.30%	31.20%	18.20%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.55	1.54	6.1	7.12
7 Days Ago	1.55	1.54	6.1	7.12
30 Days Ago	1.55	1.54	6.1	7.05
60 Days Ago	1.47	1.5	5.75	6.7
90 Days Ago	1.47	1.49	5.77	6.66

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)



People Also Watch

Symbol	Last Price	Change	% Change
UTHR United Therapeutics Corporation	169.49	+4.02	+2.43%
QGEN Qiagen N.V.	48.78	+0.87	+1.82%
CRL Charles River Laboratories Inte	293.83	+5.87	+2.04%
NEOG Neogen Corporation	88.00	+1.08	+1.24%
BIO Bio-Rad Laboratories, Inc.	575.09	+10.94	+1.94%

Recommendation Trends >

Recommendation Rating >

1.8

Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	TECH	Industry	Sector(s)	S&P 500
Current Qtr.	11.50%	N/A	N/A	N/A
Next Qtr.	54.00%	N/A	N/A	N/A
Current Year	34.10%	N/A	N/A	N/A
Next Year	16.70%	N/A	N/A	N/A
Next 5 Years (per annum)	15.00%	N/A	N/A	N/A
Past 5 Years (per annum)	8.09%	N/A	N/A	N/A

Analyst Price Targets (9) ›

Average 417.22

Low 365.00 High 470.00
Current 383.08

Upgrades & Downgrades ›

Upgrade	Stephens & Co.: Equal-Weight to Overweight	3/8/2021
Upgrade	Stifel: Hold to Buy	2/23/2021
Maintains	Citigroup: to Neutral	2/3/2021
Maintains	Craig-Hallum: to Buy	2/3/2021
Initiated	KeyBanc: to Sector Weight	11/10/2020
Maintains	SVB Leerink: to Outperform	11/6/2020

More Upgrades & Downgrades

Tetra Tech, Inc. (TTEK)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

136.13 +2.50 (+1.87%)

As of 1:22PM EDT. Market open.

Currency in USD

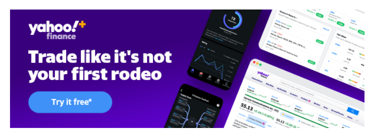
Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	8	8
Avg. Estimate	0.75	0.87	3.56	3.89
Low Estimate	0.74	0.84	3.51	3.75
High Estimate	0.77	0.94	3.7	4.06
Year Ago EPS	0.73	0.78	3.26	3.56

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	7	7	8	8
Avg. Estimate	581.72M	624.86M	2.45B	2.59B
Low Estimate	575.5M	592.99M	2.41B	2.5B
High Estimate	588.26M	656.12M	2.51B	2.66B
Year Ago Sales	584.46M	N/A	2.35B	2.45B
Sales Growth (year/est)	-0.50%	N/A	4.50%	5.60%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.71	0.73	0.8	0.81
EPS Actual	0.73	0.78	0.91	0.96
Difference	0.02	0.05	0.11	0.15
Surprise %	2.80%	6.80%	13.70%	18.50%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.75	0.87	3.56	3.89
7 Days Ago	0.74	0.88	3.55	3.88
30 Days Ago	0.74	0.88	3.54	3.84
60 Days Ago	0.73	0.88	3.52	3.88
90 Days Ago	0.73	0.89	3.42	3.78

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)



People Also Watch

Symbol	Last Price	Change	% Change
WTS Watts Water Technologies, Inc.	119.89	+0.27	+0.23%
ACM AECOM	64.51	-0.78	-1.19%
AAWW Atlas Air Worldwide Holdings	60.74	+0.90	+1.50%
OSIS OSI Systems, Inc.	95.77	-0.88	-0.91%
ITRI Itron, Inc.	88.82	+1.71	+1.96%

Recommendation Trends >

Recommendation Rating >

Up Last 7 Days	2	1	2	2
Up Last 30 Days	2	1	2	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	N/A	N/A

Growth Estimates	TTEK	Industry	Sector(s)	S&P 500
Current Qtr.	2.70%	N/A	N/A	N/A
Next Qtr.	11.50%	N/A	N/A	N/A
Current Year	9.20%	N/A	N/A	N/A
Next Year	9.30%	N/A	N/A	N/A
Next 5 Years (per annum)	15.00%	N/A	N/A	N/A
Past 5 Years (per annum)	17.71%	N/A	N/A	N/A

Analyst Price Targets (6) ›

Average 151.00

Low 135.00
Current 136.14
High 183.00

Upgrades & Downgrades ›

Maintains	Roth Capital: to Buy	2/1/2021
Initiated	Berenberg: to Buy	6/11/2020
Maintains	Sidoti & Co.: to Buy	6/10/2020
Maintains	Stifel: to Hold	4/2/2020
Maintains	Sidoti & Co.: to Buy	3/16/2020
Maintains	Baird: Neutral to Neutral	11/8/2018

More Upgrades & Downgrades

Waters Corporation (WAT)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↓ 10W ↑ 9M ↑ | Quote Lookup

286.27 +3.76 (+1.33%)

As of 1:31PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	17	17
Avg. Estimate	1.56	2.1	9.6	10.63
Low Estimate	1.5	1.9	9.43	10.14
High Estimate	1.6	2.4	10.27	11.15
Year Ago EPS	1.15	2.1	9.05	9.6

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	14	14	15	15
Avg. Estimate	522.58M	595.61M	2.56B	2.7B
Low Estimate	500.5M	564M	2.55B	2.64B
High Estimate	550.2M	628.3M	2.62B	2.73B
Year Ago Sales	464.94M	496.86M	2.37B	2.56B
Sales Growth (year/est)	12.40%	19.90%	8.40%	5.20%

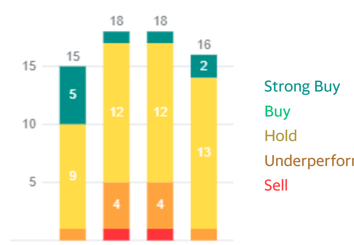
Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	1.47	1.54	1.93	2.89
EPS Actual	1.15	2.1	2.16	3.65
Difference	-0.32	0.56	0.23	0.76
Surprise %	-21.80%	36.40%	11.90%	26.30%

EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.56	2.1	9.6	10.63
7 Days Ago	1.56	2.1	9.6	10.63
30 Days Ago	1.56	2.1	9.6	10.63
60 Days Ago	1.52	2.18	9.32	10.04
90 Days Ago	1.5	2.14	9.25	9.97

People Also Watch

Symbol	Last Price	Change	% Change
PKI PerkinElmer, Inc.	128.90	+1.17	+0.92%
VAR Varian Medical Systems, Inc.	176.68	-0.25	-0.14%
MTD Mettler-Toledo International, I	1,161.93	+12.66	+1.10%
XRAY DENTSPLY SIRONA Inc.	64.17	+0.62	+0.98%
UHS Universal Health Services, Inc.	134.71	-1.48	-1.09%

Recommendation Trends >



Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	WAT	Industry	Sector(s)	S&P 500
Current Qtr.	35.70%	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	6.10%	N/A	N/A	N/A
Next Year	10.70%	N/A	N/A	N/A
Next 5 Years (per annum)	7.17%	N/A	N/A	N/A
Past 5 Years (per annum)	9.11%	N/A	N/A	N/A

1 Strong Buy | 2 Buy | 3 Hold | 4 Under-perform | 5 Sell

Analyst Price Targets (13) >

Average 274.62

Low 250.00 High 300.00
Current 286.33

Upgrades & Downgrades >

Downgrade	Wells Fargo: Equal-Weight to Underweight	1/7/2021
Upgrade	Citigroup: Sell to Neutral	12/16/2020
Initiated	KeyBanc: to Sector Weight	11/10/2020
Maintains	Stifel: to Hold	10/28/2020
Maintains	Wells Fargo: to Equal-Weight	10/28/2020
Maintains	SVB Leerink: to Market Perform	10/28/2020

More Upgrades & Downgrades

West Pharmaceutical Services, Inc. (WST)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

282.16 +3.82 (+1.37%)

As of 1:30PM EDT. Market open.

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	6	6	6	6
Avg. Estimate	1.43	1.56	6.15	6.9
Low Estimate	1.36	1.5	6.05	6.2
High Estimate	1.5	1.64	6.3	7.3
Year Ago EPS	1.01	1.25	4.76	6.15

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	6	6	7	7
Avg. Estimate	611.39M	635.77M	2.55B	2.73B
Low Estimate	599.93M	625.2M	2.52B	2.62B
High Estimate	620.8M	654.5M	2.61B	2.84B
Year Ago Sales	491.5M	527.21M	2.15B	2.55B
Sales Growth (year/est)	24.40%	20.60%	19.00%	7.00%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.82	0.91	1	1.12
EPS Actual	1.01	1.25	1.15	1.34
Difference	0.19	0.34	0.15	0.22
Surprise %	23.20%	37.40%	15.00%	19.60%

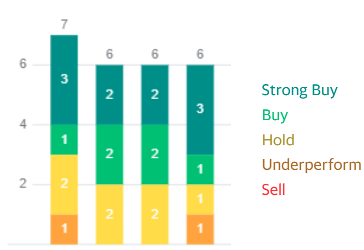
EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.43	1.56	6.15	6.9
7 Days Ago	1.43	1.56	6.15	6.9
30 Days Ago	1.43	1.56	6.15	6.9
60 Days Ago	1.2	1.31	5.12	5.95
90 Days Ago	1.2	1.3	5.12	5.94

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)

People Also Watch

Symbol	Last Price	Change	% Change
TFX Teleflex Incorporated	418.27	+3.48	+0.84%
STE STERIS plc (Ireland)	191.70	+1.67	+0.88%
CTLT Catalent, Inc.	106.22	+2.65	+2.56%
COO The Cooper Companies, Inc.	387.27	+2.38	+0.62%
MTD Mettler-Toledo International, I	1,161.93	+12.66	+1.10%

Recommendation Trends >



Recommendation Rating >

2

Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	WST	Industry	Sector(s)	S&P 500
Current Qtr.	41.60%	N/A	N/A	N/A
Next Qtr.	24.80%	N/A	N/A	N/A
Current Year	29.20%	N/A	N/A	N/A
Next Year	12.20%	N/A	N/A	N/A
Next 5 Years (per annum)	22.60%	N/A	N/A	N/A
Past 5 Years (per annum)	14.38%	N/A	N/A	N/A

Analyst Price Targets (5) >

Average 328.00

Low 280.00 Current 282.16 High 365.00

Upgrades & Downgrades >

Initiated	KeyBanc: to Overweight	11/10/2020
Initiated	Stephens & Co.: to Equal-Weight	10/14/2020
Upgrade	B of A Securities: Underperform to Neutral	4/24/2020
Downgrade	Bank of America: Neutral to Underperform	12/12/2019
Upgrade	Bank of America: Underperform to Neutral	7/26/2019
Downgrade	Jefferies: Buy to Hold	5/1/2019

More Upgrades & Downgrades

The Western Union Company (WU)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist | Visitors trend 2W ↑ 10W ↑ 9M ↑ | Quote Lookup

24.58 -0.26 (-1.06%)

As of 1:32PM EDT. Market open.

Summary | Company Outlook | Chart | Conversations | Statistics | Historical Data | Profile | Financials | **Analysis** | Options | Holders | Sustainability

Currency in USD

Earnings Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	21	21	22	22
Avg. Estimate	0.46	0.5	2.06	2.29
Low Estimate	0.41	0.47	2.03	2.19
High Estimate	0.49	0.53	2.1	2.46
Year Ago EPS	0.44	0.41	1.87	2.06

Revenue Estimate	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	15	15	19	19
Avg. Estimate	1.2B	1.25B	5.1B	5.26B
Low Estimate	1.17B	1.19B	5.04B	5.15B
High Estimate	1.23B	1.3B	5.18B	5.41B
Year Ago Sales	1.19B	1.11B	4.83B	5.1B
Sales Growth (year/est)	0.80%	12.20%	5.50%	3.10%

Earnings History	3/30/2020	6/29/2020	9/29/2020	12/30/2020
EPS Est.	0.41	0.35	0.46	0.42
EPS Actual	0.44	0.41	0.57	0.45
Difference	0.03	0.06	0.11	0.03
Surprise %	7.30%	17.10%	23.90%	7.10%

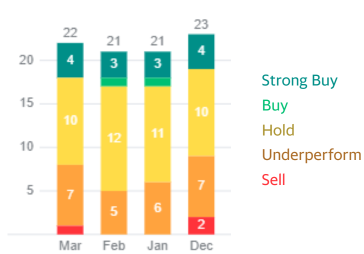
EPS Trend	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	0.46	0.5	2.06	2.29
7 Days Ago	0.46	0.5	2.06	2.29
30 Days Ago	0.46	0.5	2.06	2.29
60 Days Ago	0.46	0.48	2.02	2.24
90 Days Ago	0.46	0.48	2.01	2.24

EPS Revisions	Current Qtr. (Mar 2021)	Next Qtr. (Jun 2021)	Current Year (2021)	Next Year (2022)

People Also Watch

Symbol	Last Price	Change	% Change
UNM Unum Group	27.87	-0.06	-0.21%
WAT Waters Corporation	286.03	+3.52	+1.25%
SEE Sealed Air Corporation	46.25	-0.32	-0.69%
FIS Fidelity National Information S	141.54	-0.97	-0.68%
ZION Zions Bancorporation N.A.	55.35	-0.56	-1.00%

Recommendation Trends ›



Recommendation Rating ›

2.9

Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	2	2	2	1

Growth Estimates	WU	Industry	Sector(s)	S&P 500
Current Qtr.	4.50%	N/A	N/A	N/A
Next Qtr.	22.00%	N/A	N/A	N/A
Current Year	10.20%	N/A	N/A	N/A
Next Year	11.20%	N/A	N/A	N/A
Next 5 Years (per annum)	9.25%	N/A	N/A	N/A
Past 5 Years (per annum)	2.99%	N/A	N/A	N/A

Analyst Price Targets (18) >

Average 25.36

Low 20.00 Current 24.58 High 32.00

Upgrades & Downgrades >

Maintains	Credit Suisse: to Underperform	2/11/2021
Maintains	Morgan Stanley: to Underweight	2/11/2021
Upgrade	Wells Fargo: Underweight to Equal-Weight	2/11/2021
Upgrade	Guggenheim: Neutral to Buy	1/8/2021
Maintains	Morgan Stanley: to Underweight	11/12/2020
Upgrade	Citigroup: Sell to Neutral	11/5/2020

More Upgrades & Downgrades

ATO

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:33
Sample (adjusted): 697 1143
Included observations: 447 after adjustments
Convergence achieved after 10 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	2.251472	0.762757	2.951757	0.0032
Variance Equation				
C	0.000152	7.00E-05	2.176412	0.0295
RESID(-1)^2	0.108206	0.028012	3.862918	0.0001
GARCH(-1)	0.851310	0.037047	22.97896	0.0000

R-squared	-0.004722	Mean dependent var	0.007338
Adjusted R-squared	-0.004722	S.D. dependent var	0.057219
S.E. of regression	0.057354	Akaike info criterion	-2.959465
Sum squared resid	1.467087	Schwarz criterion	-2.922753
Log likelihood	665.4404	Hannan-Quinn criter.	-2.944991
Durbin-Watson stat	2.344462		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:34
Sample (adjusted): 565 1143
Included observations: 579 after adjustments
Convergence achieved after 73 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	2.041229	0.745805	2.736945	0.0062
Variance Equation				
C	0.001471	0.000425	3.460845	0.0005
RESID(-1)^2	0.205405	0.041911	4.901020	0.0000
GARCH(-1)	0.415504	0.144485	2.875749	0.0040

R-squared	-0.046468	Mean dependent var	0.006385
Adjusted R-squared	-0.046468	S.D. dependent var	0.059927
S.E. of regression	0.061303	Akaike info criterion	-2.810951
Sum squared resid	2.172161	Schwarz criterion	-2.780821
Log likelihood	817.7704	Hannan-Quinn criter.	-2.799204
Durbin-Watson stat	2.242992		

NWN

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:35
Sample (adjusted): 565 1143
Included observations: 579 after adjustments
Convergence achieved after 10 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	1.541797	0.707129	2.180362	0.0292
Variance Equation				
C	0.000313	0.000103	3.037827	0.0024
RESID(-1)^2	0.127256	0.034594	3.678531	0.0002
GARCH(-1)	0.777508	0.055154	14.09708	0.0000

R-squared	-0.005779	Mean dependent var	0.004592
Adjusted R-squared	-0.005779	S.D. dependent var	0.056956
S.E. of regression	0.057121	Akaike info criterion	-2.967448
Sum squared resid	1.885890	Schwarz criterion	-2.937318
Log likelihood	863.0761	Hannan-Quinn criter.	-2.955700
Durbin-Watson stat	2.300226		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:37
Sample (adjusted): 1058 1143
Included observations: 86 after adjustments
Convergence achieved after 23 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	4.362963	2.377677	1.834969	0.0665
Variance Equation				
C	0.000433	0.000652	0.664817	0.5062
RESID(-1)^2	0.077744	0.101045	0.769394	0.4417
GARCH(-1)	0.790539	0.258785	3.054805	0.0023

R-squared	-0.003673	Mean dependent var	0.011062
Adjusted R-squared	-0.003673	S.D. dependent var	0.054653
S.E. of regression	0.054753	Akaike info criterion	-2.918048
Sum squared resid	0.254821	Schwarz criterion	-2.803892
Log likelihood	129.4761	Hannan-Quinn criter.	-2.872105
Durbin-Watson stat	2.299457		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:45
Sample (adjusted): 394 1143
Included observations: 750 after adjustments
Convergence achieved after 29 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	1.587803	0.649007	2.446513	0.0144
Variance Equation				
C	0.000283	7.85E-05	3.606344	0.0003
RESID(-1)^2	0.117482	0.015587	7.537299	0.0000
GARCH(-1)	0.813559	0.027569	29.50939	0.0000

R-squared	-0.002969	Mean dependent var	0.004110
Adjusted R-squared	-0.002969	S.D. dependent var	0.060429
S.E. of regression	0.060519	Akaike info criterion	-2.849479
Sum squared resid	2.743228	Schwarz criterion	-2.824838
Log likelihood	1072.555	Hannan-Quinn criter.	-2.839984
Durbin-Watson stat	2.135128		

SWX

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:47
Sample (adjusted): 565 1143
Included observations: 579 after adjustments
Convergence achieved after 19 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	1.375194	0.609828	2.255052	0.0241
Variance Equation				
C	0.000372	0.000124	3.009784	0.0026
RESID(-1)^2	0.089965	0.026671	3.373073	0.0007
GARCH(-1)	0.826769	0.047459	17.42082	0.0000

R-squared	0.000848	Mean dependent var	0.004355
Adjusted R-squared	0.000848	S.D. dependent var	0.065569
S.E. of regression	0.065542	Akaike info criterion	-2.644382
Sum squared resid	2.482922	Schwarz criterion	-2.614252
Log likelihood	769.5486	Hannan-Quinn criter.	-2.632635
Durbin-Watson stat	2.234176		

SR

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 04/14/21 Time: 19:48
Sample: 1 1143
Included observations: 1143
Convergence achieved after 28 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	0.944845	0.354832	2.662794	0.0077
Variance Equation				
C	6.49E-05	1.38E-05	4.715232	0.0000
RESID(-1)^2	0.096398	0.009054	10.64754	0.0000
GARCH(-1)	0.896510	0.006927	129.4261	0.0000

R-squared	-0.014188	Mean dependent var	0.004158
Adjusted R-squared	-0.014188	S.D. dependent var	0.083320
S.E. of regression	0.083909	Akaike info criterion	-2.669379
Sum squared resid	8.040595	Schwarz criterion	-2.651736
Log likelihood	1529.550	Hannan-Quinn criter.	-2.662717
Durbin-Watson stat	2.150125		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Student's t distribution
Date: 04/14/21 Time: 19:15
Sample: 1 1143
Included observations: 1143
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	3.107979	0.516045	6.022694	0.0000
Variance Equation				
C	0.000119	3.85E-05	3.096559	0.0020
RESID(-1)^2	0.126829	0.025986	4.880592	0.0000
GARCH(-1)	0.823625	0.032435	25.39318	0.0000
T-DIST. DOF	8.758446	1.995377	4.389369	0.0000

R-squared	-0.018687	Mean dependent var	0.005570
Adjusted R-squared	-0.018687	S.D. dependent var	0.053903
S.E. of regression	0.054404	Akaike info criterion	-3.358407
Sum squared resid	3.380076	Schwarz criterion	-3.336354
Log likelihood	1924.330	Hannan-Quinn criter.	-3.350080
Durbin-Watson stat	1.779146		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Student's t distribution
Date: 04/14/21 Time: 19:17
Sample (adjusted): 25 1143
Included observations: 1119 after adjustments
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	1.531041	0.508843	3.008868	0.0026
Variance Equation				
C	5.48E-05	2.10E-05	2.605214	0.0092
RESID(-1)^2	0.108789	0.021191	5.133799	0.0000
GARCH(-1)	0.869747	0.022904	37.97399	0.0000
T-DIST. DOF	10.68259	3.245403	3.291607	0.0010

R-squared	-0.015514	Mean dependent var	0.003228
Adjusted R-squared	-0.015514	S.D. dependent var	0.054872
S.E. of regression	0.055296	Akaike info criterion	-3.365866
Sum squared resid	3.418494	Schwarz criterion	-3.343434
Log likelihood	1888.202	Hannan-Quinn criter.	-3.357387
Durbin-Watson stat	1.760589		

Dependent Variable: RP
Method: ML - ARCH (Marquardt) - Student's t distribution
Date: 04/14/21 Time: 19:19
Sample (adjusted): 25 1143
Included observations: 1119 after adjustments
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	2.756527	0.515763	5.344561	0.0000
Variance Equation				
C	0.000111	3.71E-05	2.978757	0.0029
RESID(-1)^2	0.128505	0.026425	4.863021	0.0000
GARCH(-1)	0.826747	0.031803	25.99614	0.0000
T-DIST. DOF	8.454911	1.920904	4.401528	0.0000

R-squared	-0.014502	Mean dependent var	0.004615
Adjusted R-squared	-0.014502	S.D. dependent var	0.054220
S.E. of regression	0.054612	Akaike info criterion	-3.352466
Sum squared resid	3.334420	Schwarz criterion	-3.330035
Log likelihood	1880.705	Hannan-Quinn criter.	-3.343987
Durbin-Watson stat	1.787675		

Atmos Energy Corporation | Credit Ratings

NYSE:ATO, BOVESPA:A1TM34 (MI KEY: 4057157; SPCIQ KEY: 252684)

A-

S&P Global Ratings

Issuer Credit Rating (Foreign Currency LT)
2/22/2021

Outlook: Negative
3/11/2021

A1

Moody's

Long Term Rating (Senior Unsecured Domestic)
2/25/2021

Outlook:

Current Ratings

S&P GLOBAL RATINGS (S&P Entity Name:Atmos Energy Corp.)

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating							
Local Currency LT	A-	2/22/2021	3/11/2021	A-	CreditWatch/Outlook	Negative	3/11/2021
Local Currency ST	A-2	2/22/2021	3/11/2021	A-1	Downgrade		
Foreign Currency LT	A-	2/22/2021	3/11/2021	A-	CreditWatch/Outlook	Negative	3/11/2021
Foreign Currency ST	A-2	2/22/2021	3/11/2021	A-1	Downgrade		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Ratings Summary				
Long Term Rating (Senior Unsecured Domestic)	A1	2/25/2021	Rating Affirmation	
Short Term Rating (Commercial Paper Domestic)	P-1	2/25/2021	Rating Affirmation	
Outlook		2/25/2021		Negative
Ratings Detail				
Commercial Paper (Domestic)	P-1	2/25/2021	Rating Affirmation	
Senior Unsec. Shelf (Domestic)	(P)A1	2/25/2021	Rating Affirmation	
Senior Unsecured (Domestic)	A1	2/25/2021	Rating Affirmation	
Subordinate Shelf (Domestic)	WR	3/27/2016	Withdrawn	
Senior Unsecured MTN (Domestic)	WR	8/18/1999	Withdrawn	
Senior Unsecured Bank Credit Facility (Domestic)	WR	7/17/1998	Withdrawn	

Ratings History

S&P GLOBAL RATINGS (S&P Entity Name:Atmos Energy Corp.)

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating					
Local Currency LT	A-	2/22/2021	CreditWatch/Outlook	Negative	3/11/2021
Local Currency LT	A-	2/22/2021	Downgrade | CreditWatch/Outlook	Watch Neg	2/22/2021
Local Currency LT	A	5/13/2016	Upgrade | CreditWatch/Outlook	Stable	5/13/2016
Local Currency LT	A-	10/8/2013	CreditWatch/Outlook	Positive	10/29/2015
Local Currency LT	A-	10/8/2013	Upgrade | CreditWatch/Outlook	Stable	10/8/2013
Local Currency ST	A-2	2/22/2021	Downgrade		
Local Currency ST	A-1	5/13/2016	Upgrade		
Foreign Currency LT	A-	2/22/2021	CreditWatch/Outlook	Negative	3/11/2021
Foreign Currency LT	A-	2/22/2021	Downgrade | CreditWatch/Outlook	Watch Neg	2/22/2021

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Foreign Currency LT	A	5/13/2016	Upgrade | CreditWatch/Outlook	Stable	5/13/2016
Foreign Currency LT	A-	10/8/2013	CreditWatch/Outlook	Positive	10/29/2015
Foreign Currency LT	A-	10/8/2013	Upgrade | CreditWatch/Outlook	Stable	10/8/2013
Foreign Currency ST	A-2	2/22/2021	Downgrade		
Foreign Currency ST	A-1	5/13/2016	Upgrade		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Outlook		**2/25/2021**		**Negative**
Outlook		12/16/2019		Stable
Outlook		12/14/2018		Positive
Outlook		1/30/2014		Stable
Outlook		11/8/2013		Ratings Under Review
Outlook		5/11/2011		Stable
Outlook		3/31/2011		Ratings Under Review
Outlook		3/19/2010		Positive
Outlook		5/18/2009		Stable
Outlook		3/23/2009		Ratings Under Review
Outlook		1/8/2009		Positive
Outlook		9/29/2004		Stable
Outlook		6/17/2004		Ratings Under Review
Outlook		11/15/2003		Stable

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
Txu Gas Capital Iv	Moody's	Long Term Rating (BACKED Pref. Shelf Domestic)	WR	10/4/2004				

Market Intelligence News

HEADLINE	DATE
Atmos Energy downgraded by S&P Global Ratings on winter storm gas costs The rating agency expects the company's financial measures to "materially weaken" after the eight-state gas utility operator spent up to $3.5 billion to procure natural gas at elevated prices.	2/22/2021 5:37:00 PM ET
Gas utility stocks still boast elevated multiples and attractive dividends, analysts say, but their burgeoning reliance on debt after share prices collapsed prompted UBS to stop awarding the group a bonus for balance sheet strength. Market sell-off crushing 1 pillar of gas utilities' valuations, analysts say	4/8/2020 11:50:00 AM ET
Governance risks are a key factor in the credit quality for all debt issuers, including for publicly traded companies, the bond credit rating agency found. Moody's: North American utilities generally practice credit-friendly governance	9/20/2019 3:33:00 PM ET

S&P Credit Ratings and Research provided by S&P Global Ratings

'Last Review Date' indicates the date on which an Issue/Issuer Credit Rating was last formally reviewed within a twelve-month period or when a Credit Rating Action was last published. For certain dependent instruments, the 'Last Review Date' will only be updated in the event of a Credit Rating change of the linked organization.

Latest S&P Ratings available unless you are a subscriber of S&P Ratings history.

New Jersey Resources Corporation | Credit Ratings

NYSE:NJR (MI KEY: 4057128; SPCIQ KEY: 291335)

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
New Jersey Natural Gas Co.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	NR	5/27/2019	5/27/2019	BBB+	NR	5/27/2019
	Moody's	Long Term Rating (Senior Secured Domestic)	A1	3/18/2020				

Market Intelligence News

HEADLINE	DATE
CreditSights analysts said nearly one-third of 58 utilities with at least 100,000 customers are at higher risk of regulatory and political pushback against natural gas use, evident in building gas bans and pipeline opposition. Report identifies 20 utilities most at risk from rising anti-gas sentiment	7/13/2020 1:12:00 PM ET

S&P Credit Ratings and Research provided by S&P Global Ratings

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Latest S&P Ratings available unless you are a subscriber of S&P Ratings history.

Northwest Natural Holding Company | Credit Ratings

NYSE:NWN (MI KEY: 4057132; SPCIQ KEY: 292047)

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
Northwest Energy Corp.	Moody's	Long Term Rating (Pref. Stock)	WR	11/23/1983				
Northwest Natural Gas Co.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	A+	1/25/2010	5/27/2020	AA-	Stable	1/25/2010
	Moody's	Long Term Rating (Senior Unsec. Shelf Domestic)	(P)Baa1	5/17/2019				

Market Intelligence News

HEADLINE	DATE
CreditSights analysts said nearly one-third of 58 utilities with at least 100,000 customers are at higher risk of regulatory and political pushback against natural gas use, evident in building gas bans and pipeline opposition. Report identifies 20 utilities most at risk from rising anti-gas sentiment	7/13/2020 1:12:00 PM ET
Gas utility stocks still boast elevated multiples and attractive dividends, analysts say, but their burgeoning reliance on debt after share prices collapsed prompted UBS to stop awarding the group a bonus for balance sheet strength. Market sell-off crushing 1 pillar of gas utilities' valuations, analysts say	4/8/2020 11:50:00 AM ET
Moody's downgrades Northwest Natural Gas, changes outlook to stable Northwest Natural Gas's ratings were decreased by one notch as its financial performance in the next few years is expected to be in line with companies of the lower rating level. The outlook was revised to stable from negative.	5/17/2019 10:57:00 AM ET

S&P Credit Ratings and Research provided by S&P Global Ratings

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Latest S&P Ratings available unless you are a subscriber of S&P Ratings history.

ONE Gas, Inc. | Credit Ratings

NYSE:OGS (MI KEY: 4427129; SPCIQ KEY: 243685856)

BBB+

S&P Global Ratings

Issuer Credit Rating (Foreign Currency LT)
2/23/2021

Outlook: Negative
2/23/2021

A3

Moody's

Long Term Rating (Senior Unsecured Domestic)
2/23/2021

Outlook:

Current Ratings

S&P GLOBAL RATINGS (S&P Entity Name:ONE Gas Inc.)

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating							
Local Currency LT	BBB+	2/23/2021	2/23/2021	A	Downgrade | CreditWatch/Outlook	Negative	2/23/2021
Local Currency ST	A-2	2/23/2021	2/23/2021	A-1	Downgrade		
Foreign Currency LT	BBB+	2/23/2021	2/23/2021	A	Downgrade | CreditWatch/Outlook	Negative	2/23/2021
Foreign Currency ST	A-2	2/23/2021	2/23/2021	A-1	Downgrade		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Ratings Summary				
Long Term Rating (Senior Unsecured Domestic)	A3	2/23/2021	Downgrade	
Short Term Rating (Commercial Paper Domestic)	P-2	2/23/2021	Downgrade	
Outlook		2/23/2021		Negative
Ratings Detail				
Commercial Paper (Domestic)	P-2	2/23/2021	Downgrade	
Senior Unsecured (Domestic)	A3	2/23/2021	Downgrade	
Senior Unsec. Shelf (Domestic)	WR	5/31/2020	Withdrawn	

Ratings History

S&P GLOBAL RATINGS (S&P Entity Name:ONE Gas Inc.)

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating					
Local Currency LT	BBB+	2/23/2021	Downgrade | CreditWatch/Outlook	Negative	2/23/2021
Local Currency LT	A	8/16/2017	Upgrade | CreditWatch/Outlook	Stable	8/16/2017
Local Currency LT	A-	1/9/2014	CreditWatch/Outlook	Positive	6/23/2016
Local Currency LT	A-	1/9/2014	New Rating | CreditWatch/Outlook	Stable	1/9/2014
Local Currency ST	A-2	2/23/2021	Downgrade		
Local Currency ST	A-1	8/16/2017	Upgrade		
Local Currency ST	A-2	9/4/2014	New Rating		

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Foreign Currency LT	BBB+	2/23/2021	Downgrade | CreditWatch/Outlook	Negative	2/23/2021
Foreign Currency LT	A	8/16/2017	Upgrade | CreditWatch/Outlook	Stable	8/16/2017
Foreign Currency LT	A-	1/9/2014	CreditWatch/Outlook	Positive	6/23/2016
Foreign Currency LT	A-	1/9/2014	New Rating | CreditWatch/Outlook	Stable	1/9/2014
Foreign Currency ST	A-2	2/23/2021	Downgrade		
Foreign Currency ST	A-1	8/16/2017	Upgrade		
Foreign Currency ST	A-2	9/4/2014	New Rating		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Outlook		**2/23/2021**		**Negative**
Outlook		1/28/2019		Stable
Outlook		1/19/2018		Negative
Outlook		1/13/2014		Stable

Market Intelligence News

HEADLINE	DATE
S&P downgrades One Gas due to weather impacts on financial measures S&P Global Ratings has lowered the issuer credit rating of One Gas to BBB+ from A, with a negative outlook.	2/24/2021 10:26:00 AM ET
Moody's downgrades One Gas' ratings; outlook negative Moody's said the $2.2 billion that One Gas spent to procure gas during the recent deep freeze is nearly 30 times the amount the company would spend on gas in a typical February.	2/23/2021 7:02:00 PM ET
Gas utility stocks still boast elevated multiples and attractive dividends, analysts say, but their burgeoning reliance on debt after share prices collapsed prompted UBS to stop awarding the group a bonus for balance sheet strength. Market sell-off crushing 1 pillar of gas utilities' valuations, analysts say	4/8/2020 11:50:00 AM ET

S&P Credit Ratings and Research provided by S&P Global Ratings

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Latest S&P Ratings available unless you are a subscriber of S&P Ratings history.

South Jersey Industries, Inc. | Credit Ratings

NYSE:SJI (MI KEY: 4057145; SPCIQ KEY: 303963)

BBB

S&P Global Ratings

Issuer Credit Rating (Foreign Currency LT)
7/2/2018

Outlook: Stable
3/19/2021

Current Ratings

S&P GLOBAL RATINGS (S&P Entity Name:South Jersey Industries Inc.)

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating							
Local Currency LT	BBB	7/2/2018	3/19/2021	BBB	CreditWatch/Outlook	Stable	3/19/2021
Foreign Currency LT	BBB	7/2/2018	3/19/2021	BBB	CreditWatch/Outlook	Stable	3/19/2021

Ratings History

S&P GLOBAL RATINGS (S&P Entity Name:South Jersey Industries Inc.)

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating					
Local Currency LT	BBB	7/2/2018	CreditWatch/Outlook	Stable	3/19/2021
Local Currency LT	BBB	7/2/2018	CreditWatch/Outlook	Negative	3/10/2020
Local Currency LT	BBB	7/2/2018	Downgrade | CreditWatch/Outlook	Stable	7/2/2018
Local Currency LT	BBB+	6/17/2011	CreditWatch/Outlook	Negative	10/17/2017
Local Currency LT	BBB+	6/17/2011	New Rating | CreditWatch/Outlook	Stable	6/17/2011
Foreign Currency LT	BBB	7/2/2018	CreditWatch/Outlook	Stable	3/19/2021
Foreign Currency LT	BBB	7/2/2018	CreditWatch/Outlook	Negative	3/10/2020
Foreign Currency LT	BBB	7/2/2018	Downgrade | CreditWatch/Outlook	Stable	7/2/2018
Foreign Currency LT	BBB+	6/17/2011	CreditWatch/Outlook	Negative	10/17/2017
Foreign Currency LT	BBB+	6/17/2011	New Rating | CreditWatch/Outlook	Stable	6/17/2011

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
Elizabethtown Gas Co.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	BBB	9/5/2018	3/19/2021	BBB	Stable	3/19/2021
	Moody's	Long Term Rating (Senior Unsecured Domestic)	WR	9/30/1992				
SJI Utilities Inc.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	BBB	9/5/2018	3/19/2021	BBB	Stable	3/19/2021
South Jersey Gas Co.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	BBB	7/2/2018	3/19/2021	BBB	Stable	3/19/2021
	Moody's	Long Term Rating (LT Issuer Rating Domestic)	A3	2/1/2021				

Market Intelligence News

HEADLINE	DATE
South Jersey Industries outlook upgraded to stable at S&P Global Ratings While a recent equity offering announcement hammered shares of South Jersey Industries, S&P Global Ratings said the offering would strengthen the gas distributor's financial risk profile.	3/22/2021 2:21:00 PM ET
CreditSights analysts said nearly one-third of 58 utilities with at least 100,000 customers are at higher risk of regulatory and political pushback against natural gas use, evident in building gas bans and pipeline opposition. Report identifies 20 utilities most at risk from rising anti-gas sentiment	7/13/2020 1:12:00 PM ET
Moody's downgrades South Jersey Gas on weak credit metrics The rating agency lowered its issuer rating on the South Jersey Industries utility subsidiary to A3 from A2 while keeping its outlook at negative.	7/17/2019 4:31:00 PM ET

S&P Global
Ratings

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Latest S&P Ratings available unless you are a subscriber of S&P Ratings history.

Southwest Gas Holdings, Inc. | Credit Ratings

NYSE:SWX (MI KEY: 4884928; SPCIQ KEY: 304227)

BBB+
S&P Global Ratings
Issuer Credit Rating (Foreign Currency LT)
12/28/2016
Outlook: Stable
9/28/2020

Baa2
Moody's
Long Term Rating (LT Issuer Rating Domestic)
1/29/2021
Outlook:

Current Ratings

S&P GLOBAL RATINGS (S&P Entity Name:Southwest Gas Holdings Inc)

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating							
Local Currency LT	BBB+	12/28/2016	9/28/2020	BBB+	CreditWatch/Outlook	Stable	9/28/2020
Foreign Currency LT	BBB+	12/28/2016	9/28/2020	BBB+	CreditWatch/Outlook	Stable	9/28/2020

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Ratings Summary				
Long Term Rating (LT Issuer Rating Domestic)	Baa2	1/29/2021	Downgrade	
Outlook		1/29/2021		Stable
Ratings Detail				
LT Issuer Rating (Domestic)	Baa2	1/29/2021	Downgrade	

Ratings History

S&P GLOBAL RATINGS (S&P Entity Name:Southwest Gas Holdings Inc)

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating					
Local Currency LT	BBB+	12/28/2016	CreditWatch/Outlook	Stable	9/28/2020
Local Currency LT	BBB+	12/28/2016	CreditWatch/Outlook	Negative	11/28/2018
Local Currency LT	BBB+	12/28/2016	New Rating | CreditWatch/Outlook	Stable	12/28/2016
Foreign Currency LT	BBB+	12/28/2016	CreditWatch/Outlook	Stable	9/28/2020
Foreign Currency LT	BBB+	12/28/2016	CreditWatch/Outlook	Negative	11/28/2018
Foreign Currency LT	BBB+	12/28/2016	New Rating | CreditWatch/Outlook	Stable	12/28/2016

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
LT Issuer Rating (Domestic)	**Baa2**	**1/29/2021**	**Downgrade**	
LT Issuer Rating (Domestic)	Baa1	12/29/2016	New	
Outlook		**1/29/2021**		**Stable**
Outlook		1/28/2020		Negative
Outlook		12/29/2016		Stable

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
Southwest Gas Capital III	Moody's	Long Term Rating (BACKED Pref. Shelf Domestic)	WR	1/7/2009				
Southwest Gas Capital IV	Moody's	Long Term Rating (BACKED Pref. Shelf Domestic)	WR	1/7/2009				
Southwest Gas Capital I	Moody's	Long Term Rating (BACKED Pref. Stock Domestic)	WR	9/24/2003				
Southwest Gas Capital II	Moody's	Long Term Rating (BACKED Pref. Stock Domestic)	WR	5/26/2010				
Southwest Gas Corp.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	A-	10/30/2019	9/28/2020	A-	Stable	9/28/2020
	Moody's	Long Term Rating (Senior Unsecured Domestic)	Baa1	1/29/2021				

Market Intelligence News

HEADLINE	DATE

HEADLINE	DATE
CreditSights analysts said nearly one-third of 58 utilities with at least 100,000 customers are at higher risk of regulatory and political pushback against natural gas use, evident in building gas bans and pipeline opposition. Report identifies 20 utilities most at risk from rising anti-gas sentiment	7/13/2020 1:12:00 PM ET
Gas utility stocks still boast elevated multiples and attractive dividends, analysts say, but their burgeoning reliance on debt after share prices collapsed prompted UBS to stop awarding the group a bonus for balance sheet strength. Market sell-off crushing 1 pillar of gas utilities' valuations, analysts say	4/8/2020 11:50:00 AM ET
Regulatory delays, new rules bite deeply into Southwest Gas' Q3'19 results Shares of Southwest Gas dipped after the company missed earnings expectations. Executives blamed changing natural gas infrastructure rules in the Northeast U.S. and the delay of two Arizona pipe replacement cases.	11/7/2019 3:24:00 PM ET
Governance risks are a key factor in the credit quality for all debt issuers, including for publicly traded companies, the bond credit rating agency found. Moody's: North American utilities generally practice credit-friendly governance	9/20/2019 3:33:00 PM ET
The Williams Capital Group on June 18 upgraded its investment rating on Southwest Gas Holdings to "buy" from "hold" and raised the target price to $96 from $81. Williams Capital Group upgrades Southwest Gas to 'buy' on promising outlook	6/18/2019 4:43:00 PM ET

S&P Credit Ratings and Research provided by S&P Global Ratings

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Spire Inc. | Credit Ratings

NYSE:SR (MI KEY: 4002506; SPCIQ KEY: 284847)

A-	Baa2
S&P Global Ratings	**Moody's**
Issuer Credit Rating (Foreign Currency LT) 7/19/2013	Long Term Rating (Senior Unsecured Domestic) 8/12/2014
Outlook: Stable 6/13/2014	Outlook:

Current Ratings

S&P GLOBAL RATINGS (S&P Entity Name:Spire Inc.)

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating							
Local Currency LT	A-	7/19/2013	6/24/2020	A-	CreditWatch/Outlook	Stable	6/13/2014
Local Currency ST	A-2	12/22/2016	6/24/2020	New	New Rating		
Foreign Currency LT	A-	7/19/2013	6/24/2020	A-	CreditWatch/Outlook	Stable	6/13/2014
Foreign Currency ST	A-2	12/22/2016	6/24/2020	New	New Rating		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Ratings Summary				
Short Term Rating (Commercial Paper Domestic)	P-2	12/22/2016	New	
Long Term Rating (Senior Unsecured Domestic)	Baa2	8/12/2014	New	
Outlook		7/22/2014		Stable
Ratings Detail				
Pref. Stock (Domestic)	Ba1	5/14/2019	New	
Senior Unsec. Shelf (Domestic)	WR	6/2/2017	Withdrawn	
Subordinate Shelf (Domestic)	WR	6/2/2017	Withdrawn	
Pref. Shelf (Domestic)	WR	6/2/2017	Withdrawn	
Commercial Paper (Domestic)	P-2	12/22/2016	New	
Senior Unsecured (Domestic)	Baa2	8/12/2014	New	

Ratings History

S&P GLOBAL RATINGS (S&P Entity Name:Spire Inc.)

RATING TYPE	RATING	RATING DATE	ACTION	CREDITWATCH/ OUTLOOK	CREDITWATCH/ OUTLOOK DATE
Issuer Credit Rating					
Local Currency LT	A-	7/19/2013	CreditWatch/Outlook	Stable	6/13/2014
Local Currency LT	A-	7/19/2013	CreditWatch/Outlook	Watch Neg	4/7/2014
Local Currency LT	A-	7/19/2013	Downgrade | CreditWatch/Outlook	Stable	7/19/2013
Local Currency LT	A	5/5/2003	CreditWatch/Outlook	Watch Neg	4/4/2013
Local Currency LT	A	5/5/2003	CreditWatch/Outlook	Negative	12/17/2012
Local Currency ST	A-2	12/22/2016	New Rating		
Foreign Currency LT	A-	7/19/2013	CreditWatch/Outlook	Stable	6/13/2014
Foreign Currency LT	A-	7/19/2013	CreditWatch/Outlook	Watch Neg	4/7/2014
Foreign Currency LT	A-	7/19/2013	Downgrade | CreditWatch/Outlook	Stable	7/19/2013
Foreign Currency LT	A	5/5/2003	CreditWatch/Outlook	Watch Neg	4/4/2013
Foreign Currency LT	A	5/5/2003	CreditWatch/Outlook	Negative	12/17/2012
Foreign Currency ST	A-2	12/22/2016	New Rating		

MOODY'S

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Outlook		**7/22/2014**		**Stable**

RATING TYPE	RATING	DATE	ACTION	OUTLOOK
Outlook		4/7/2014		Negative
Outlook		1/31/2014		Stable
Outlook		11/8/2013		Ratings Under Review
Outlook		7/26/2013		Stable
Outlook		12/17/2012		Negative
Outlook		11/15/2003		Stable

Subsidiaries

SUBSIDIARY	AGENCY	DEBT TYPE (RATING TYPE)	RATING	RATING DATE	LAST REVIEW DATE	PREVIOUS RATING	CREDITWATCH / OUTLOOK	CREDITWATCH / OUTLOOK DATE
Laclede Capital Trust I	Moody's	Long Term Rating (BACKED Pref. Stock Domestic)	WR	5/5/2008				
Spire Alabama Inc.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	A-	9/2/2014	6/24/2020	BBB-	Stable	9/2/2014
	Moody's	Long Term Rating (Senior Unsecured Domestic)	A2	7/30/2019				
Spire Missouri Inc.	S&P Global Ratings	Issuer Credit Rating (Local Currency LT)	A-	7/19/2013	6/24/2020	A-	Stable	6/13/2014
	Moody's	Long Term Rating (First Mortgage Bonds Domestic)	A1	7/30/2019				

S&P Credit Ratings and Research provided by S&P Global Ratings

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THE VALUE LINE® Investment Survey®

Part 1
Summary & Index

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April 2, 2021

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Untimely Stocks (5 for Performance) 38
Highest Dividend Yielding Non-utility Stocks 38
Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

22.0

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
20.8	11.0	21.3

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.8%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
2.4%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
60%	145%	30%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

5%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
20%	72%	3%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

Industry	PAGE
Advertising **(64)**	**2386**
Aerospace/Defense **(49)**	**701**
Air Transport **(79)**	**301**
Apparel **(69)**	**2101**
Asset Management **(16)**	**2222**
Automotive **(2)**	**101**
Auto Parts **(43)**	**962**
Bank **(19)**	**2501**
Bank (Midwest) **(3)**	**772**
Beverage **(27)**	**1965**
Biotechnology **(55)**	**827**
Brokers & Exchanges **(35)**	**1797**
Building Materials **(61)**	**1101**
Cable TV **(28)**	**1001**
Cannabis **(56)**	**1419**
*Chemical (Basic) **(80)**	**1597**
Chemical (Diversified) **(22)**	**2429**
Chemical (Specialty) **(41)**	**550**
Computers/Peripherals **(32)**	**1397**
Computer Software **(21)**	**2573**
Cyber Security **(14)**	**2025**
Diversified Co. **(42)**	**1744**
*Drug **(75)**	**1607**
E-Commerce **(57)**	**1815**
Educational Services **(88)**	**1996**
Electrical Equipment **(50)**	**1301**
Electric Util. (Central) **(89)**	**901**
Electric Utility (East) **(62)**	**134**
Electric Utility (West) **(78)**	**2210**
Electronics **(51)**	**1319**
Engineering & Const **(26)**	**1019**
Entertainment **(4)**	**2329**
Entertainment Tech **(13)**	**2005**
Environmental **(54)**	**406**
Financial Svcs. (Div.) **(48)**	**2534**
Food Processing **(40)**	**1901**
Foreign Electronics **(5)**	**1981**
Furn/Home Furnishings **(85)**	**1146**
Healthcare Information **(90)**	**817**
Heavy Truck & Equip **(34)**	**146**
Homebuilding **(53)**	**1125**
Hotel/Gaming **(84)**	**2352**
Household Products **(23)**	**1186**
*Human Resources **(44)**	**1636**
Industrial Services **(47)**	**373**
Information Services **(58)**	**429**
IT Services **(39)**	**2603**
*Insurance (Life) **(81)**	**1554**
Insurance (Prop/Cas.) **(46)**	**751**
Internet **(29)**	**2627**
Investment Banking **(1)**	**1807**
Investment Co. **(--)**	**1198**
Investment Co.(Foreign) **(--)**	**416**
Machinery **(45)**	**1701**
Maritime **(36)**	**330**
Medical Services **(37)**	**788**
Med Supp Invasive **(6)**	**168**
Med Supp Non-Invasive **(17)**	**200**
Metal Fabricating **(71)**	**726**
*Metals & Mining (Div.) **(7)**	**1581**
Natural Gas Utility **(68)**	**539**
Natural Gas (Div.) **(83)**	**522**
Office Equip/Supplies **(91)**	**1411**
Oil/Gas Distribution **(95)**	**600**
Oilfield Svcs/Equip. **(93)**	**2411**
Packaging & Container **(38)**	**1170**
Paper/Forest Products **(52)**	**1161**
Petroleum (Integrated) **(97)**	**501**
Petroleum (Producing) **(92)**	**2395**
Pipeline MLPs **(96)**	**613**
Power **(66)**	**1209**
*Precious Metals **(65)**	**1565**
Precision Instrument **(20)**	**111**
Public/Private Equity **(67)**	**2440**
Publishing **(76)**	**2377**
Railroad **(9)**	**337**
*R.E.I.T. **(94)**	**1510**
Recreation **(82)**	**2301**
Reinsurance **(77)**	**2015**
Restaurant **(87)**	**348**
Retail Automotive **(59)**	**2117**
Retail Building Supply **(33)**	**1137**
Retail (Hardlines) **(63)**	**2165**
Retail (Softlines) **(24)**	**2191**
Retail Store **(25)**	**2134**
Retail/Wholesale Food **(70)**	**1944**
Semiconductor **(18)**	**1348**
Semiconductor Equip **(30)**	**1383**
Shoe **(72)**	**2155**
Steel **(11)**	**736**
Telecom. Equipment **(15)**	**937**
Telecom. Services **(74)**	**916**
Telecom. Utility **(86)**	**1012**
*Thrift **(31)**	**1501**
Tobacco **(10)**	**1989**
Toiletries/Cosmetics **(12)**	**991**
Trucking **(60)**	**317**
Water Utility **(8)**	**1788**
Wireless Networking **(73)**	**584**

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 34.
Published weekly by VALUE LINE PUBLISHING LLC, 551 Fifth Avenue, New York, NY 10176

THE VALUE LINE Investment Survey®

Part 1
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March 26, 2021

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March 19, 2021

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Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.5

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
21.2	11.0	21.3

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.8%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
2.3%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
50%	145%	30%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

5%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
15%	72%	3%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

Industry	PAGE
Advertising (43)	2386
Aerospace/Defense (51)	701
Air Transport (84)	301
Apparel (75)	2101
Asset Management (24)	2222
Automotive (7)	101
Auto Parts (46)	962
Bank (28)	2501
Bank (Midwest) (4)	772
Beverage (32)	1965
Biotechnology (62)	827
Brokers & Exchanges (34)	1797
*Building Materials (58)	1101
Cable TV (30)	1001
Cannabis (56)	1420
Chemical (Basic) (78)	1596
Chemical (Diversified) (19)	2429
Chemical (Specialty) (45)	550
Computers/Peripherals (14)	1398
Computer Software (20)	2573
Cyber Security (23)	2025
Diversified Co. (42)	1744
Drug (73)	1606
E-Commerce (50)	1815
Educational Services (83)	1996
Electrical Equipment (59)	1301
Electric Util. (Central) (80)	901
Electric Utility (East) (61)	134
Electric Utility (West) (70)	2210
Electronics (47)	1319
Engineering & Const (25)	1019
Entertainment (22)	2329
Entertainment Tech (27)	2005
Environmental (64)	406
Financial Svcs. (Div.) (49)	2534
Food Processing (44)	1901
Foreign Electronics (5)	1981
*Furn/Home Furnishings (88)	1146
Healthcare Information (85)	817
Heavy Truck & Equip (40)	146
*Homebuilding (48)	1125
Hotel/Gaming (87)	2352
*Household Products (9)	1186
Human Resources (39)	1635
Industrial Services (57)	373
Information Services (66)	429
IT Services (36)	2603
Insurance (Life) (71)	1554
Insurance (Prop/Cas.) (35)	751
Internet (33)	2627
Investment Banking (1)	1807
*Investment Co. (--)	1198
Investment Co.(Foreign) (--)	416
Machinery (37)	1701
Maritime (52)	330
Medical Services (38)	788
Med Supp Invasive (10)	168
Med Supp Non-Invasive (16)	200
Metal Fabricating (72)	726
Metals & Mining (Div.) (11)	1580
Natural Gas Utility (77)	539
Natural Gas (Div.) (89)	522
Office Equip/Supplies (92)	1412
Oil/Gas Distribution (94)	600
Oilfield Svcs/Equip. (93)	2411
*Packaging & Container (29)	1170
*Paper/Forest Products (65)	1161
Petroleum (Integrated) (97)	501
Petroleum (Producing) (95)	2395
Pipeline MLPs (96)	613
*Power (63)	1209
Precious Metals (54)	1565
Precision Instrument (17)	111
Public/Private Equity (68)	2440
Publishing (76)	2377
Railroad (3)	337
R.E.I.T. (91)	1510
Recreation (81)	2301
Reinsurance (82)	2015
Restaurant (86)	348
Retail Automotive (55)	2117
*Retail Building Supply (21)	1137
Retail (Hardlines) (67)	2165
Retail (Softlines) (31)	2191
Retail Store (8)	2134
Retail/Wholesale Food (74)	1944
Semiconductor (18)	1349
Semiconductor Equip (13)	1384
Shoe (79)	2155
Steel (12)	736
Telecom. Equipment (15)	937
Telecom. Services (69)	916
Telecom. Utility (90)	1012
Thrift (41)	1501
Tobacco (2)	1989
Toiletries/Cosmetics (26)	991
Trucking (53)	317
Water Utility (6)	1788
Wireless Networking (60)	584

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 32.

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THE VALUE LINE® Investment Survey®

Part 1
Summary & Index

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March 12, 2021

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The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.5

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
21.4	11.0	21.3

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
2.2%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
50%	145%	30%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

3%

26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
14%	72%	3%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

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Chemical (Diversified) **(4)**	2429
Chemical (Specialty) **(42)**	550
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Electric Utility (West) **(63)**	2210
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*Engineering & Const **(31)**	1019
Entertainment **(17)**	2329
Entertainment Tech **(36)**	2005
Environmental **(64)**	406
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Foreign Electronics **(6)**	1981
Furn/Home Furnishings **(84)**	1147
Healthcare Information **(85)**	817
Heavy Truck & Equip **(38)**	146
Homebuilding **(45)**	1126
Hotel/Gaming **(83)**	2352
Household Products **(2)**	1187
Human Resources **(37)**	1635
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Information Services **(61)**	429
IT Services **(40)**	2603
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*Telecom. Utility **(89)**	1012
Thrift **(39)**	1501
Tobacco **(3)**	1989
*Toiletries/Cosmetics **(25)**	991
Trucking **(54)**	317
Water Utility **(18)**	1788
Wireless Networking **(68)**	584

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 31.
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THE VALUE LINE® Investment Survey®

Part 1
Summary & Index

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March 5, 2021

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Measure	Current	26 Weeks Ago	Market Low 3-23-20	Market High 2-12-21
The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings	21.4	21.6	11.0	21.3
The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks	1.9%	2.2%	3.7%	1.9%
The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe	30%	50%	145%	30%
The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe	4%	14%	72%	3%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

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*Aerospace/Defense **(65)** **701**
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*Bank (Midwest) **(9)** **772**
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Building Materials **(61)** **1101**
Cable TV **(48)** **1002**
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THE VALUE LINE Investment Survey®

Part 1
Summary & Index

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The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.3

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
22.0	11.0	21.7

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
2.2%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
50%	145%	25%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

3%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
13%	72%	6%

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THE VALUE LINE® Investment Survey®

Part 1
Summary & Index

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February 19, 2021

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The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

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26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
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The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

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2.2%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

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26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
13%	72%	6%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

Industry	PAGE
Advertising **(76)**	**2386**
Aerospace/Defense **(51)**	**701**
*Air Transport **(82)**	**301**
Apparel **(78)**	**2101**
Asset Management **(27)**	**2222**
Automotive **(5)**	**101**
Auto Parts **(24)**	**963**
Bank **(42)**	**2501**
Bank (Midwest) **(33)**	**772**
Beverage **(28)**	**1965**
Biotechnology **(49)**	**827**
Brokers & Exchanges **(44)**	**1797**
Building Materials **(64)**	**1101**
Cable TV **(21)**	**1002**
Cannabis **(62)**	**1420**
Chemical (Basic) **(52)**	**1596**
Chemical (Diversified) **(3)**	**2429**
Chemical (Specialty) **(37)**	**553**
Computers/Peripherals **(16)**	**1398**
Computer Software **(15)**	**2573**
Cyber Security **(30)**	**2025**
Diversified Co. **(38)**	**1744**
Drug **(72)**	**1606**
E-Commerce **(50)**	**1815**
Educational Services **(87)**	**1996**
Electrical Equipment **(43)**	**1301**
Electric Util. (Central) **(53)**	**901**
Electric Utility (East) **(17)**	**134**
Electric Utility (West) **(67)**	**2210**
Electronics **(54)**	**1319**
Engineering & Const **(79)**	**1228**
Entertainment **(29)**	**2329**
Entertainment Tech **(60)**	**2005**
*Environmental **(68)**	**406**
Financial Svcs. (Div.) **(63)**	**2534**
Food Processing **(31)**	**1901**
Foreign Electronics **(11)**	**1981**
Furn/Home Furnishings **(80)**	**1147**
Healthcare Information **(86)**	**817**
Heavy Truck & Equip **(40)**	**146**
Homebuilding **(18)**	**1126**
Hotel/Gaming **(85)**	**2352**
Household Products **(9)**	**1187**
Human Resources **(70)**	**1635**
*Industrial Services **(45)**	**373**
*Information Services **(47)**	**429**
IT Services **(22)**	**2603**
Insurance (Life) **(32)**	**1554**
Insurance (Prop/Cas.) **(39)**	**751**
Internet **(36)**	**2627**
Investment Banking **(1)**	**1807**
Investment Co. **(--)**	**1199**
*Investment Co.(Foreign) **(--)**	**416**
Machinery **(41)**	**1701**
*Maritime **(55)**	**330**
Medical Services **(25)**	**788**
Med Supp Invasive **(19)**	**168**
Med Supp Non-Invasive **(7)**	**200**
Metal Fabricating **(74)**	**726**
Metals & Mining (Div.) **(20)**	**1580**
Natural Gas Utility **(81)**	**542**
Natural Gas (Div.) **(91)**	**523**
Office Equip/Supplies **(92)**	**1412**
Oil/Gas Distribution **(94)**	**603**
Oilfield Svcs/Equip. **(93)**	**2411**
Packaging & Container **(23)**	**1171**
Paper/Forest Products **(56)**	**1162**
Petroleum (Integrated) **(97)**	**501**
Petroleum (Producing) **(96)**	**2395**
Pipeline MLPs **(95)**	**615**
Power **(48)**	**1210**
Precious Metals **(66)**	**1565**
Precision Instrument **(12)**	**111**
Public/Private Equity **(71)**	**2440**
Publishing **(89)**	**2377**
*Railroad **(13)**	**337**
R.E.I.T. **(88)**	**1510**
Recreation **(77)**	**2301**
Reinsurance **(84)**	**2015**
*Restaurant **(83)**	**348**
Retail Automotive **(61)**	**2117**
Retail Building Supply **(6)**	**1138**
Retail (Hardlines) **(65)**	**2165**
Retail (Softlines) **(34)**	**2191**
Retail Store **(14)**	**2134**
Retail/Wholesale Food **(73)**	**1944**
Semiconductor **(10)**	**1349**
Semiconductor Equip **(4)**	**1384**
Shoe **(75)**	**2155**
Steel **(35)**	**736**
Telecom. Equipment **(8)**	**938**
Telecom. Services **(69)**	**916**
Telecom. Utility **(90)**	**1013**
Thrift **(57)**	**1501**
Tobacco **(2)**	**1989**
Toiletries/Cosmetics **(58)**	**992**
*Trucking **(46)**	**317**
Water Utility **(26)**	**1788**
Wireless Networking **(59)**	**587**

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 28.

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THE VALUE LINE®
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Part 1
Summary & Index

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February 12, 2021

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Highest Dividend Yielding Non-utility Stocks 38
Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

20.5

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
21.4	11.0	21.7

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

2.0%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
2.3%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

35%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
55%	145%	25%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

9%

26 Weeks Ago	Market Low 3-23-20	Market High 1-25-21
17%	72%	6%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

Industry	PAGE
Advertising **(75)**	**2386**
Aerospace/Defense **(66)**	**701**
Air Transport **(84)**	**301**
Apparel **(79)**	**2101**
Asset Management **(28)**	**2222**
*Automotive **(3)**	**101**
Auto Parts **(16)**	**963**
Bank **(47)**	**2501**
Bank (Midwest) **(48)**	**772**
Beverage **(39)**	**1965**
Biotechnology **(56)**	**827**
Brokers & Exchanges **(45)**	**1797**
Building Materials **(50)**	**1101**
Cable TV **(24)**	**1002**
Cannabis **(76)**	**1420**
Chemical (Basic) **(71)**	**1596**
Chemical (Diversified) **(4)**	**2429**
Chemical (Specialty) **(43)**	**553**
Computers/Peripherals **(27)**	**1398**
Computer Software **(22)**	**2573**
Cyber Security **(15)**	**2025**
Diversified Co. **(49)**	**1744**
Drug **(74)**	**1606**
E-Commerce **(55)**	**1815**
Educational Services **(81)**	**1996**
Electrical Equipment **(41)**	**1301**
Electric Util. (Central) **(34)**	**901**
*Electric Utility (East) **(17)**	**134**
Electric Utility (West) **(65)**	**2210**
Electronics **(69)**	**1319**
Engineering & Const **(77)**	**1228**
Entertainment **(36)**	**2329**
Entertainment Tech **(59)**	**2005**
Environmental **(68)**	**406**
Financial Svcs. (Div.) **(62)**	**2534**
Food Processing **(29)**	**1901**
Foreign Electronics **(12)**	**1981**
Furn/Home Furnishings **(80)**	**1147**
Healthcare Information **(88)**	**817**
*Heavy Truck & Equip **(35)**	**146**
Homebuilding **(18)**	**1126**
Hotel/Gaming **(87)**	**2352**
Household Products **(7)**	**1187**
Human Resources **(58)**	**1635**
Industrial Services **(38)**	**374**
Information Services **(40)**	**429**
IT Services **(33)**	**2603**
Insurance (Life) **(44)**	**1554**
Insurance (Prop/Cas.) **(20)**	**751**
Internet **(31)**	**2627**
Investment Banking **(1)**	**1807**
Investment Co. **(--)**	**1199**
Investment Co.(Foreign) **(--)**	**416**
Machinery **(46)**	**1701**
Maritime **(51)**	**330**
Medical Services **(23)**	**788**
*Med Supp Invasive **(14)**	**168**
*Med Supp Non-Invasive **(8)**	**200**
Metal Fabricating **(83)**	**726**
Metals & Mining (Div.) **(25)**	**1580**
Natural Gas Utility **(78)**	**542**
Natural Gas (Div.) **(91)**	**523**
Office Equip/Supplies **(92)**	**1412**
Oil/Gas Distribution **(94)**	**603**
Oilfield Svcs/Equip. **(93)**	**2411**
Packaging & Container **(32)**	**1171**
Paper/Forest Products **(42)**	**1162**
Petroleum (Integrated) **(97)**	**501**
Petroleum (Producing) **(96)**	**2395**
Pipeline MLPs **(95)**	**615**
Power **(57)**	**1210**
Precious Metals **(70)**	**1565**
*Precision Instrument **(10)**	**111**
Public/Private Equity **(60)**	**2440**
Publishing **(90)**	**2377**
Railroad **(11)**	**337**
R.E.I.T. **(89)**	**1510**
Recreation **(73)**	**2301**
Reinsurance **(85)**	**2015**
Restaurant **(82)**	**348**
Retail Automotive **(64)**	**2117**
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Telecom. Utility **(86)**	**1013**
Thrift **(52)**	**1501**
Tobacco **(2)**	**1989**
Toiletries/Cosmetics **(53)**	**992**
Trucking **(30)**	**317**
Water Utility **(26)**	**1788**
Wireless Networking **(54)**	**587**

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 27.

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THE VALUE LINE Investment Survey®

Part 1
Summary & Index

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February 5, 2021

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Bargain Basement Stocks 37
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Highest Dividend Yielding Non-utility Stocks 38
Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.7

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
22.0	11.0	21.7

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
2.3%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

25%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
55%	145%	25%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

6%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
17%	72%	6%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

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Automotive (4)	101
Auto Parts (18)	963
*Bank (47)	2501
Bank (Midwest) (52)	772
Beverage (41)	1965
Biotechnology (61)	827
Brokers & Exchanges (57)	1797
Building Materials (50)	1101
Cable TV (14)	1002
Cannabis (86)	1420
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Chemical (Diversified) (3)	2429
Chemical (Specialty) (45)	553
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*Computer Software (17)	2573
Cyber Security (11)	2025
Diversified Co. (51)	1744
Drug (75)	1606
E-Commerce (60)	1815
Educational Services (76)	1996
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Electric Utility (West) (54)	2210
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Entertainment (67)	2329
Entertainment Tech (40)	2005
Environmental (71)	406
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Food Processing (25)	1901
Foreign Electronics (26)	1981
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Healthcare Information (88)	817
Heavy Truck & Equip (49)	147
Homebuilding (21)	1126
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Natural Gas (Div.) (92)	523
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Precision Instrument (12)	112
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Reinsurance (84)	2015
Restaurant (81)	348
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Steel (39)	736
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Telecom. Services (66)	916
Telecom. Utility (85)	1013
Thrift (56)	1501
Tobacco (1)	1989
Toiletries/Cosmetics (58)	992
Trucking (30)	317
Water Utility (16)	1788
Wireless Networking (44)	587

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 26.

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THE VALUE LINE® Investment Survey®

Part 1
Summary & Index

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January 29, 2021

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Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.6

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
21.5	11.0	21.7

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
2.4%	3.7%	1.9%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

25%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
60%	145%	25%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

6%

26 Weeks Ago	Market Low 3-23-20	Market High 1-8-21
19%	72%	6%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

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Water Utility **(27)**	**1788**
Wireless Networking **(47)**	**587**

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THE VALUE LINE® Investment Survey®

Part 1
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January 22, 2021

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Highest Dividend Yielding Non-utility Stocks 38
Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.7

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
20.6	11.0	21.3

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

1.9%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
2.4%	3.7%	2.0%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

25%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
65%	145%	30%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

6%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
23%	72%	7%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

Industry	PAGE
Advertising **(82)**	2384
Aerospace/Defense **(72)**	701
Air Transport **(84)**	301
*Apparel **(80)**	2101
*Asset Management **(44)**	2222
Automotive **(3)**	101
Auto Parts **(20)**	963
Bank **(62)**	2501
Bank (Midwest) **(69)**	772
Beverage **(47)**	1965
Biotechnology **(42)**	827
Brokers & Exchanges **(41)**	1797
Building Materials **(36)**	1101
Cable TV **(4)**	1002
Cannabis **(87)**	1420
Chemical (Basic) **(73)**	1596
Chemical (Diversified) **(33)**	2425
Chemical (Specialty) **(49)**	553
Computers/Peripherals **(21)**	1398
Computer Software **(8)**	2583
Cyber Security **(7)**	2025
Diversified Co. **(65)**	1744
Drug **(71)**	1606
E-Commerce **(43)**	1815
Educational Services **(70)**	1996
Electrical Equipment **(38)**	1301
Electric Util. (Central) **(37)**	901
Electric Utility (East) **(14)**	135
*Electric Utility (West) **(34)**	2210
Electronics **(75)**	1319
Engineering & Const **(63)**	1228
Entertainment **(60)**	2329
Entertainment Tech **(58)**	2005
Environmental **(67)**	406
Financial Svcs. (Div.) **(68)**	2534
Food Processing **(25)**	1901
Foreign Electronics **(28)**	1981
Furn/Home Furnishings **(81)**	1147
Healthcare Information **(77)**	817
Heavy Truck & Equip **(64)**	147
Homebuilding **(12)**	1126
Hotel/Gaming **(89)**	2351
Household Products **(5)**	1187
Human Resources **(61)**	1635
Industrial Services **(50)**	374
Information Services **(35)**	429
IT Services **(30)**	2611
Insurance (Life) **(52)**	1554
Insurance (Prop/Cas.) **(13)**	751
Internet **(22)**	2634
Investment Banking **(9)**	1807
Investment Co. **(--)**	1199
Investment Co.(Foreign) **(--)**	416
Machinery **(45)**	1701
Maritime **(78)**	330
Medical Services **(27)**	788
Med Supp Invasive **(11)**	169
Med Supp Non-Invasive **(10)**	201
Metal Fabricating **(79)**	726
Metals & Mining (Div.) **(53)**	1580
Natural Gas Utility **(74)**	542
Natural Gas (Div.) **(91)**	523
Office Equip/Supplies **(90)**	1412
Oil/Gas Distribution **(94)**	603
Oilfield Svcs/Equip. **(93)**	2408
Packaging & Container **(31)**	1171
Paper/Forest Products **(39)**	1162
Petroleum (Integrated) **(97)**	501
Petroleum (Producing) **(96)**	2393
Pipeline MLPs **(95)**	615
Power **(40)**	1210
Precious Metals **(26)**	1565
Precision Instrument **(15)**	112
Public/Private Equity **(17)**	2436
Publishing **(92)**	2375
Railroad **(23)**	337
R.E.I.T. **(88)**	1510
Recreation **(76)**	2301
Reinsurance **(83)**	2015
Restaurant **(85)**	348
*Retail Automotive **(59)**	2117
Retail Building Supply **(6)**	1138
*Retail (Hardlines) **(48)**	2165
*Retail (Softlines) **(32)**	2191
*Retail Store **(16)**	2134
Retail/Wholesale Food **(51)**	1944
Semiconductor **(19)**	1349
Semiconductor Equip **(2)**	1384
*Shoe **(66)**	2155
Steel **(46)**	736
Telecom. Equipment **(18)**	938
Telecom. Services **(55)**	916
Telecom. Utility **(86)**	1013
Thrift **(54)**	1501
Tobacco **(1)**	1989
Toiletries/Cosmetics **(56)**	992
Trucking **(24)**	317
Water Utility **(29)**	1788
Wireless Networking **(57)**	587

*Reviewed in this week's issue.

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Published weekly by VALUE LINE PUBLISHING LLC, 551 Fifth Avenue, New York, NY 10176

THE VALUE LINE Investment Survey®

Part 1
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January 15, 2021

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Untimely Stocks (5 for Performance) 38
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Highest Growth Stocks 39

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

21.1

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
21.0	11.0	21.3

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

2.0%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
2.4%	3.7%	2.0%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
60%	145%	30%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

11%

26 Weeks Ago	Market Low 3-23-20	Market High 12-31-20
20%	72%	7%

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26 Weeks Ago	Market Low 3-23-20	Market High 12-8-20
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The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

2.0%

26 Weeks Ago	Market Low 3-23-20	Market High 12-8-20
2.5%	3.7%	2.0%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

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26 Weeks Ago	Market Low 3-23-20	Market High 12-8-20
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CRSP Deciles Size Premia as of December 31, 2020

	Market Capitalization of Smallest Company (in USD millions)	Market Capitalization of Largest Company (in USD millions)	Size Premium (Return in Excess of CAPM)
Decile			
Mid Cap	2,445.693	13,177.828	0.78%
Low Cap	451.955	2,444.745	1.43%
Micro Cap	2.194	451.80	3.21%
Breakdown of CRSP Deciles 1 - 10			
1	29,025.803	1,966,078.882	-0.22%
2	13,178.743	28,808.073	0.49%
3	6,743.361	13,177.828	0.71%
4	3,861.858	6,710.676	0.75%
5	2,445.693	3,836.536	1.09%
6	1,591.865	2,444.745	1.37%
7	911.586	1,591.765	1.54%
8	451.955	911.103	1.46%
9	190.019	451.80	2.29%
10	2.194	189.831	5.01%
Breakdown of CRSP 10th Decile			
10A	96.55	189.831	3.49%
10W	138.833	189.831	2.6%
10X	96.55	137.883	4.65%
10B	2.194	95.182	8.12%
10Y	46.901	95.182	6.6%
10Z	2.194	46.887	11.29%

Source: Duff & Phelps Cost of Capital Navigator (dpcostofcapital.com)

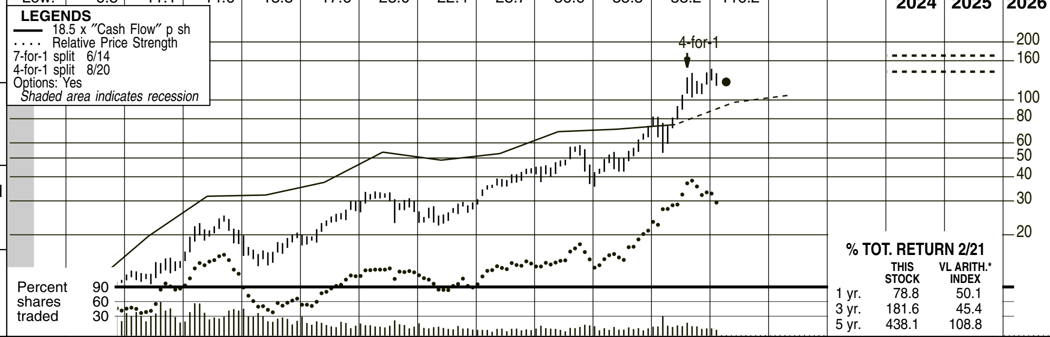
APPLE INC. NDQ-AAPL

RECENT PRICE **123.99** | P/E RATIO **27.6** (Trailing: 33.4; Median: 13.0) | RELATIVE P/E RATIO **1.25** | DIV'D YLD **0.7%** | VALUE LINE

TIMELINESS 2 Raised 1/1/21
SAFETY 1 Raised 4/17/20
TECHNICAL 1 Raised 3/5/21
BETA .90 (1.00 = Market)

High:	11.7	15.2	25.2	20.5	29.9	33.6	29.7	44.3	58.4	73.5	138.8	145.1
Low:	6.8	11.1	14.6	13.8	17.6	23.0	22.4	28.7	36.6	35.5	53.2	116.2

LEGENDS
—— 18.5 x "Cash Flow" p sh
. . . . Relative Price Strength
7-for-1 split 6/14
4-for-1 split 8/20
Options: Yes
Shaded area indicates recession



Target Price Range
2024 | 2025 | 2026

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$91-$205	$148 (20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	170	(+35%)	9%
Low	140	(+15%)	4%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	1336	3258	1716
to Sell	1838	121	1798
Hld's(000)	251248	9721629	9629654

% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	78.8	50.1
3 yr.	181.6	45.4
5 yr.	438.1	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
.60	.81	.98	1.31	1.45	2.54	4.16	5.95	6.79	7.79	10.47	10.10	11.18	13.96	14.64	16.17	**20.60**	**22.60**	Sales per sh A	**33.35**
.06	.09	.16	.21	.25	.59	1.07	1.71	1.74	2.02	2.90	2.63	2.85	3.70	3.82	4.03	**5.25**	**5.75**	"Cash Flow" per sh	**8.35**
.05	.08	.14	.19	.22	.54	.99	1.58	1.42	1.61	2.31	2.08	2.30	2.98	2.97	3.28	**4.50**	**4.85**	Earnings per sh B	**7.00**
- -	- -	- -	- -	- -	- -	- -	.09	.41	.45	.50	.55	.60	.68	.75	.80	**.85**	**.94**	Div'ds Decl'd per sh E	**1.60**
.01	.03	.03	.04	.05	.08	.16	.32	.32	.41	.50	.60	.61	.70	.59	.43	**.60**	**.75**	Cap'l Spending per sh	**1.25**
.32	.42	.60	.85	1.10	1.86	2.94	4.50	4.91	4.75	5.35	6.01	6.54	5.63	5.09	3.85	**4.75**	**5.70**	Book Value per sh	**9.25**
23381	23947	24425	24873	25195	25647	26020	26298	25178	23465	22315	21345	20505	19020	17773	16977	**16250**	**15500**	Common Shs Outst'g C	**13500**
26.2	29.1	26.3	30.4	19.2	15.2	12.4	12.0	12.3	13.0	12.8	12.6	14.9	15.3	16.1	24.7	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**22.0**
1.40	1.57	1.40	1.83	1.28	.97	.78	.76	.69	.68	.64	.66	.75	.83	.86	1.26			Relative P/E Ratio	**1.20**
- -	- -	- -	- -	- -	- -	- -	.5%	2.3%	2.2%	1.7%	2.1%	1.8%	1.5%	1.6%	1.0%			Avg Ann'l Div'd Yield	**1.0%**

CAPITAL STRUCTURE as of 12/26/20
Total Debt $112043 mill. **Due in 5 Yrs** $55000 mill.
LT Debt $99281 mill. **LT Interest** $4500 mill. (60% of Cap'l)
Leases, Uncapitalized Annual rentals $1493 mill.

No Defined Benefit Pension Plan
Pfd Stock None
Common Stock 16,788 mill. shs. **as of 1/15/21**

MARKET CAP: $2.1 trillion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
108249	156508	170910	182795	233715	215639	229234	265595	260174	274515	**335000**	**350000**	Sales ($mill) A	**450000**
32.9%	37.4%	32.6%	33.1%	35.3%	32.7%	31.2%	30.8%	29.4%	28.2%	**29.0%**	**29.0%**	Operating Margin	**28.5%**
1814.0	3277.0	6757.0	7946.0	11257	10505	10157	10903	12547	11056	**12500**	**14000**	Depreciation ($mill) D	**18500**
25922	41733	37037	39510	53394	45687	48351	59531	55256	57411	**73100**	**75200**	Net Profit ($mill)	**94500**
24.2%	25.2%	26.2%	26.1%	26.4%	25.6%	24.6%	18.3%	15.9%	14.4%	**16.0%**	**16.0%**	Income Tax Rate	**16.0%**
23.9%	26.7%	21.7%	21.6%	22.8%	21.2%	21.1%	22.4%	21.2%	20.9%	**21.8%**	**21.5%**	Net Profit Margin	**21.0%**
17018	19111	29628	5083.0	8768.0	27863	27831	14473	57101	38321	**25000**	**25000**	Working Cap'l ($mill)	**50000**
- -	- -	16960	28987	53463	75427	97207	93735	91807	98667	**99000**	**99500**	Long-Term Debt ($mill)	**100000**
76615	118210	123549	111547	119355	128249	134047	107147	90488	65339	**77000**	**88500**	Shr. Equity ($mill)	**125000**
33.8%	35.3%	26.5%	28.4%	31.3%	23.2%	21.8%	30.8%	31.5%	36.5%	**43.0%**	**41.5%**	Return on Total Cap'l	**43.0%**
33.8%	35.3%	30.0%	35.4%	44.7%	35.6%	36.1%	55.6%	61.1%	87.9%	**95.0%**	**85.0%**	Return on Shr. Equity	**75.5%**
33.8%	33.2%	21.4%	25.4%	35.0%	26.2%	26.5%	42.8%	45.5%	66.3%	**77.0%**	**68.5%**	Retained to Com Eq	**58.5%**
- -	6%	29%	28%	22%	27%	26%	23%	26%	25%	**19%**	**19%**	All Div'ds to Net Prof	**23%**

CURRENT POSITION ($MILL.)	2019	2020	12/26/20
Cash Assets	100557	90943	76826
Receivables	22926	16120	27101
Inventory (FIFO)	4106	4061	4973
Other	35230	32589	45206
Current Assets	162819	143713	154106
Accts Payable	46236	42296	63846
Debt Due	16240	13769	12762
Other	43242	49327	55899
Current Liab.	105718	105392	132507

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Sales	24.0%	12.5%	*14.5%*
"Cash Flow"	27.0%	11.5%	*14.0%*
Earnings	25.5%	11.5%	*14.5%*
Dividends	- -	10.5%	*13.5%*
Book Value	14.5%	-.5%	*11.5%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Dec.Per	Mar.Per	Jun.Per	Sep.Per	Full Fiscal Year
2018	88293	61137	53265	62900	265595
2019	84310	58015	53809	64040	260174
2020	91819	58313	59685	64698	274515
2021	111439	**76861**	**68800**	**77900**	**335000**
2022	**116400**	**80300**	**71900**	**81400**	**350000**

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.Per	Mar.Per	Jun.Per	Sep.Per	Full Fiscal Year
2018	.97	.68	.59	.74	2.98
2019	1.05	.62	.55	.75	2.97
2020	1.25	.64	.65	.73	3.28
2021	1.68	**.98**	**.82**	**1.02**	**4.50**
2022	**1.80**	**1.05**	**.90**	**1.10**	**4.85**

Cal-endar	QUARTERLY DIVIDENDS PAID E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.143	.158	.158	.158	.62
2018	.158	.183	.183	.183	.71
2019	.183	.193	.193	.193	.76
2020	.193	.205	.205	.205	.81
2021	.205				

BUSINESS: Apple Inc., established in 1977, is one of the world's largest makers of PCs and peripheral and consumer products, such as the *iPod* digital music player, the *iPad* tablet, the *iPhone* smartphone, and the *Apple Watch*, for sale primarily to the business, creative, education, government, and consumer markets. It also sells operating systems, services like *iCloud* storage and *Apple Pay*, and a host of digital content from the popular *iTunes* store and other portals. Research and development: 6.8% of '20 sales. Has approximately 147,000 employees. Off./dir. own less than 1.0% of common stock; Vanguard, 7.8%; BlackRock, 6.6% (1/21 Proxy). CEO: Tim Cook. Inc.: CA. Addr.: One Apple Park Way, Cupertino, CA 95014. Tel.: 408-996-1010. Internet: www.apple.com.

Apple stock has been hurt by a broader tech selloff of late. The Dow component exhibited further strength during the early part of this year, rallying nicely ahead of the blowout December-period earnings report in late January (more on these results below). Indeed, the issue, among the market leaders throughout much of the COVID-19 crisis, surged to a fresh record high in the mid-$140s. Over the past several weeks, however, the technology sector has generally lagged, with money rotating from growth to value names, and to reopening plays that should shine as the coronavirus finally subsides. This has put moderate pressure on AAPL shares, which are now trading back in the lower $120s, just slightly ahead of where they were at the time of our last full-page review three months ago.

The fundamentals remain very bright. While the stock has hit a soft patch, the company continues to grow its ecosystem (of installed devices and accompanying services) and put up impressive results. As suggested, the first stanza of fiscal 2021 (ended December 26th) was a blowout by most measures, even as some brick-and-mortar stores continued to experience temporary closures. Share net of $1.68 handily surpassed our $1.40 estimate and marked a near-35% improvement versus the year-earlier tally. The top line, of $111.4 billion, was better than anticipated, too, and was the first time that quarterly revenue crossed the $100 billion threshold. And . . .

The momentum shows no sign of abating, given the robust sales that the company is seeing in most geographies and product categories. In particular, we think that Apple will continue to benefit from strong demand for its new 5G-enabled *iPhones*. Work-from-home trends ought to further bolster the *Mac* and *iPad* lines, as well. And the wearables segment, led by the *Apple Watch* franchise, should remain a powerful growth engine, along with an expansion of the high-margined services business. All in all, considering all the positives, we envision share earnings climbing to $4.50 and $4.85 in fiscal 2021 and fiscal 2022, respectively.

This stock is timely (2) and should provide investors with decent risk-adjusted returns out to 2024-2026.

Justin Hellman *March 26, 2021*

(A) Fiscal year ends last Saturday in September. (B) Diluted earnings. Quarters may not add to total due to rounding/changes in the share count. Next earnings report due in late April. (C) In millions, adjusted for splits. (D) Depreciation on accelerated basis. (E) New dividend policy adopted 3/12. Payments typically made in February, May, August, and November.

Company's Financial Strength	A++
Stock's Price Stability	80
Price Growth Persistence	80
Earnings Predictability	85

ABBOTT LABS. NYSE-ABT

RECENT PRICE 122.54 | P/E RATIO 23.5 (Trailing: 33.6 Median: 18.0) | RELATIVE P/E RATIO 1.15 | DIV'D YLD 1.5% | VALUE LINE

TIMELINESS 3 Lowered 1/15/21
SAFETY 1 New 4/12/13
TECHNICAL 4 Lowered 2/5/21
BETA .95 (1.00 = Market)

High:	56.8	56.4	72.5	38.8	46.5	51.7	45.8	57.8	74.9	89.2	115.1	124.8
Low:	44.6	45.1	54.0	31.6	35.7	39.0	36.0	38.3	55.6	65.5	61.6	107.3

18-Month Target Price Range

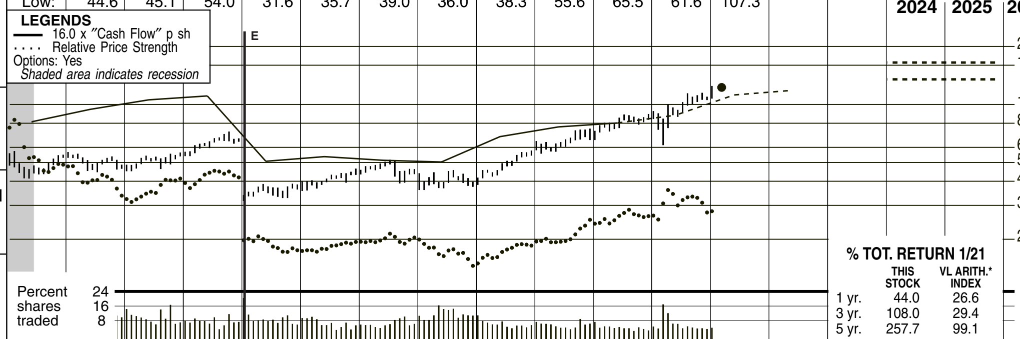
Low-High	Midpoint (% to Mid)
$82-$179	$131 (5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	165	(+35%)	9%
Low	135	(+10%)	4%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	940	1047	1008
to Sell	1010	915	983
Hld's(000)	1311948	1303464	1291873



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	44.0	26.6
3 yr.	108.0	29.4
5 yr.	257.7	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
14.51	14.62	16.72	19.40	19.82	22.73	24.74	25.29	14.11	14.80	13.86	14.16	15.71	17.42	18.10	***19.50***	***23.60***	***23.80***	Sales per sh	***26.65***
3.42	3.51	4.05	4.32	5.09	5.90	6.61	6.91	3.17	3.35	3.21	3.15	4.26	4.79	5.01	***5.50***	***7.00***	***7.40***	"Cash Flow" per sh	***8.65***
2.50	2.52	2.84	3.03	3.72	4.17	4.66	4.99	2.01	2.28	2.15	2.20	2.50	2.88	3.24	3.65	***5.10***	***5.40***	Earnings per sh A	***6.30***
1.10	1.18	1.30	1.44	1.60	1.76	1.88	2.01	.56	.88	.96	1.04	1.06	1.12	1.28	1.44	***1.80***	***1.96***	Div'ds Decl'd per sh B■	***2.44***
.78	.87	1.07	.85	.70	.66	.95	1.14	.74	.71	.75	.76	.65	.79	.93	***1.15***	***1.20***	***1.20***	Cap'l Spending per sh	***1.25***
9.37	9.14	11.47	11.48	14.73	14.47	15.56	16.95	16.26	14.27	14.40	13.94	17.72	17.39	17.64	***18.30***	***19.40***	***20.75***	Book Value per sh C	***25.55***
1539.2	1537.2	1549.9	1522.4	1551.9	1547.0	1570.4	1576.7	1548.1	1508.0	1472.7	1472.9	1743.6	1755.6	1762.5	***1775.0***	***1780.0***	***1785.0***	Common Shs Outst'g D	***1800.0***
18.1	17.9	19.2	18.3	13.0	12.2	11.0	12.6	17.8	18.0	21.5	18.4	19.4	22.3	24.9	26.3	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	***24.0***
.96	.97	1.02	1.10	.87	.78	.69	.80	1.00	.95	1.08	.97	.98	1.20	1.33	1.33			Relative P/E Ratio	***1.35***
2.4%	2.6%	2.4%	2.6%	3.3%	3.5%	3.7%	3.2%	1.6%	2.1%	2.1%	2.6%	2.2%	1.7%	1.6%	1.5%			Avg Ann'l Div'd Yield	***1.6%***

CAPITAL STRUCTURE as of 9/30/20
Total Debt $18.5 bill. **Due in 5 Yrs** $5.5 bill.
LT Debt $18.3 bill. **LT Interest** $.6 bill.
(37% of Capital)

Leases, Uncapitalized Annual rentals $238 mill.

Pension Assets-12/19 $10.3 bill. **Oblig.** $11.2 bill.

Preferred Stock None

Common Stock 1,772,361,581 shares

MARKET CAP: $217 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
38851	39874	21848	22324	20405	20853	27390	30578	31904	34608	***42000***	***42500***	Sales ($mill)	***48000***
31.2%	35.4%	26.3%	26.4%	17.0%	17.9%	13.5%	19.1%	20.3%	***21.0%***	***23.5%***	***24.5%***	Operating Margin	***25.5%***
3043.9	2783.2	1719.0	1548.0	1472.0	1353.0	3021.0	3278.0	3014.0	***3200***	***3400***	***3600***	Depreciation ($mill)	***4200***
7330.4	8119.0	3189.0	3503.0	3258.0	3281.0	4400.0	5131.0	5810.0	6552.0	***9080***	***9640***	Net Profit ($mill)	***11340***
15.1%	14.8%	19.0%	17.9%	15.0%	9.6%	29.9%	14.1%	14.0%	15.0%	***15.0%***	***15.0%***	Income Tax Rate	***15.0%***
18.9%	20.4%	14.6%	15.7%	16.0%	15.7%	16.1%	16.8%	18.2%	18.9%	***21.6%***	***22.7%***	Net Profit Margin	***23.6%***
8288.6	18042	9740.0	4729.0	4969.0	20116	11235	5620.0	4804.0	***6000***	***6300***	***6700***	Working Cap'l ($mill)	***7500***
12040	18085	3388.0	3408.0	5871.0	20681	27210	19359	16661	***18000***	***17500***	***17000***	Long-Term Debt ($mill)	***17000***
24440	26721	25171	21526	21211	20538	30897	30524	31088	***32500***	***34500***	***37000***	Shr. Equity ($mill)	***46000***
20.6%	18.6%	11.3%	14.2%	12.1%	8.4%	8.2%	11.0%	12.8%	***13.5%***	***18.0%***	***18.5%***	Return on Total Cap'l	***18.5%***
30.0%	30.4%	12.7%	16.3%	15.4%	16.0%	14.2%	16.8%	18.7%	***20.0%***	***26.5%***	***26.0%***	Return on Shr. Equity	***24.5%***
18.0%	18.5%	9.2%	10.0%	8.6%	8.5%	8.3%	10.3%	11.4%	***12.5%***	***17.0%***	***16.5%***	Retained to Com Eq	***15.0%***
40%	39%	28%	38%	44%	47%	42%	38%	39%	***39%***	***35%***	***36%***	All Div'ds to Net Prof	***39%***

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	3844	3860	4480
Receivables	5182	5425	5649
Inventory (FIFO)	3796	4316	5152
Other	1810	2066	2109
Current Assets	14632	15667	17390
Accts Payable	2975	3252	3189
Debt Due	207	1478	214
Other	5830	6133	6854
Current Liab.	9012	10863	10257

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	-1.0%	-1.0%	*6.5%*
"Cash Flow"	.5%	1.0%	*9.0%*
Earnings	-1.0%	-1.5%	*12.0%*
Dividends	-2.0%	- -	*11.5%*
Book Value	3.5%	2.0%	*5.5%*

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	7390	7767	7656	7765	30578
2019	7535	7979	8076	8314	31904
2020	7726	7328	8853	10701	34608
2021	***10400***	***10500***	***10500***	***10600***	***42000***
2022	***10500***	***10600***	***10600***	***10800***	***42500***

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.59	.73	.75	.81	2.88
2019	.63	.82	.84	.95	3.24
2020	.65	.57	.98	1.45	3.65
2021	***1.23***	***1.25***	***1.28***	***1.34***	***5.10***
2022	***1.27***	***1.32***	***1.35***	***1.46***	***5.40***

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.265	.265	.265	.265	1.06
2018	.28	.28	.28	.28	1.12
2019	.32	.32	.32	.32	1.28
2020	.36	.36	.36	.36	1.44
2021	.45				

BUSINESS: Abbott Laboratories engages in the discovery, development, manufacture, and sale of health care products worldwide. The company has four reportable segments: Established Pharmaceutical Products, Nutritional Products, Diagnostic Products, and Medical Devices. Completed separation of AbbVie (1/13). Completed sale of Abbott Medical Optics (2/17). Acquired St. Jude (1/17) and Alere (10/17). Has 107,000 employees. Officers and directors own less than 1% of common stock; Vanguard Group, 8.6%; BlackRock, 7.1%; Capital Research Global Investors, 6.5% (3/20 proxy). Chairman: Miles D. White. President and CEO: Robert B. Ford. Inc.: IL. Address: 100 Abbott Park Road, Abbott Park, IL 60064. Telephone: 847-937-6100. Internet: www.abbott.com.

Abbott Laboratories reported better-than-expected fourth-quarter results. The company posted adjusted earnings of $1.45 a share on sales of $10.7 billion, versus $0.95 on $8.3 billion in the comparable year-ago period. Performance was driven primarily by growth in the Diagnostics business (+111% year over year), which continued to benefit from surging demand for COVID-19 tests. Management highlighted that these pandemic-related offerings generated $2.4 billion in sales during Q4, and that it delivered more than 300 million tests. Strength in Diagnostics was complemented by more modest gains in Nutrition (+3.6%) and Medical Devices (+1.7%), partly offset by weakness in Established Pharmaceuticals (-2.3%). Altogether, the Q4 tallies beat our expectations by $0.10 a share on the bottom line and about $700 million on the top.

We have raised our 2021 estimates. Abbott entered the new year with a good amount of momentum, thanks in large part to its massive share of the COVID-19 testing market. With the outbreak showing little sign of a slowdown, we anticipate these COVID-19 tests will remain in high demand over the next few quarters. Management's recent guidance calling for 2021 adjusted earnings of "at least" $5.00 a share blew past our previous expectation of $4.40. As a result, we have upped our full-year earnings call to $5.10 a share.

In 2022, we are targeting earnings of $5.40 a share on sales of $42.5 billion. While subsiding pressures on the COVID front will likely dampen Diagnostics growth next year, it should provide a tailwind to a few of Abbott's other businesses that have been adversely impacted by the pandemic. The Established Pharma segment in particular is poised to improve.

The stock's Timeliness rank was recently downgraded to 3 (Average). ABT shares are up about 15% in value since our last report went to press in November, and have now risen more than 100% since the pandemic-fueled lows of last March. Based on our analysis, the stock is now pegged to track the broader market in the year ahead. However, total-return potential over the 18-month and 2024-2026 time frames is a bit light compared to the current *Value Line* medians.

Michael Ratty *February 12, 2021*

(A) Diluted earnings. Excludes nonrecurring gain/ (losses): '05, (34¢); '06, ($1.40); '07, (53¢); '08, 19¢; '10, ($1.21); '11, ($1.65); '12, ($1.27); '13, (39¢); '14, (79¢); '15, 77¢; '16, ($1.26); '17, ($2.23); '18, ($1.55); '19, ($1.18); '20, ($1.15). Next egs. report due mid-April. **(B)** Dividends historically paid in February, May, August, and November. ■ Dividend reinvestment plan available. **(C)** Includes intangibles. In '19: $40.2 billion, $22.82 a share. **(D)** In millions. **(E)** Data post-2012 reflect the spinoff of the pharmaceuticals operation (AbbVie).

Company's Financial Strength	A++
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	100

ASSURANT, INC. NYSE-AIZ

RECENT PRICE **132.73** | P/E RATIO **18.2** (Trailing: 20.2 Median: 11.0) | RELATIVE P/E RATIO **0.84** | DIV'D YLD **2.0%** | **VALUE LINE**

TIMELINESS	2	Lowered 1/15/21
SAFETY	2	Raised 5/16/14
TECHNICAL	2	Lowered 1/22/21

BETA .95 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$106-$238	$172 (30%)

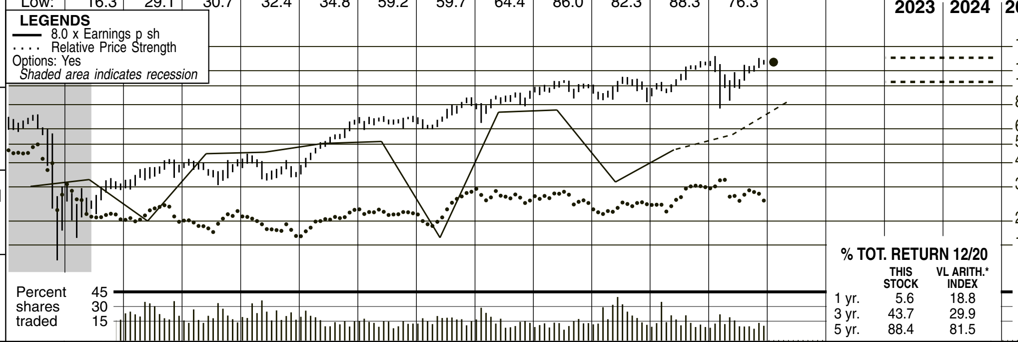
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	140	(+5%)	3%
Low	105	(-20%)	-3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	181	170	156
to Sell	203	196	204
Hld's(000)	56315	56699	55783

High:	33.4	41.9	41.9	44.5	66.7	69.9	87.2	94.4	107.0	111.4	134.3	142.6
Low:	16.3	29.1	30.7	32.4	34.8	59.2	59.7	64.4	86.0	82.3	88.3	76.3



Target Price Range

2023	2024	2025

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	5.6	18.8
3 yr.	43.7	29.9
5 yr.	88.4	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
46.38	49.93	55.81	62.77	67.53	64.73	72.58	80.49	92.00	108.03	124.56	126.82	89.51	84.02	99.45	133.79	143.80	163.65	Premium Inc per sh	230.00
4.54	5.26	6.01	6.77	6.60	5.99	6.89	7.79	9.07	9.05	9.47	9.51	9.22	9.42	9.67	11.26	10.35	12.70	Investment Inc per sh	17.00
2.53	3.50	5.56	5.38	3.77	4.09	2.50	5.58	5.67	6.30	6.44	2.05	9.13	9.39	3.98	5.84	7.00	10.60	Earnings per sh A	12.25
.21	.31	.38	.46	.54	.59	.63	.70	.81	.96	1.06	1.37	2.03	2.15	2.28	2.43	2.55	2.67	Div'ds Decl'd per sh B	2.88
26.01	28.33	31.26	34.65	31.61	41.61	46.87	56.79	65.92	67.29	74.77	68.70	73.26	81.47	82.53	94.25	100.20	104.50	Book Value per sh C	125.45
139.77	130.59	122.62	118.01	117.37	116.65	102.00	88.52	78.66	71.83	69.30	65.85	55.94	52.42	61.91	59.95	58.00	55.00	Common Shs Outst'g D	50.00
101%	129%	159%	165%	172%	64%	76%	66%	57%	76%	88%	104%	114%	121%	118%	118%	117%		Price to Book Value	84%
10.4	10.4	9.0	10.6	14.4	6.5	14.3	6.7	6.6	8.2	10.3	34.8	9.2	10.5	24.4	19.0	16.9		Avg Ann'l P/E Ratio	10.0
.55	.55	.49	.56	.87	.43	.91	.42	.42	.46	.54	1.75	.48	.53	1.32	1.03	.85		Relative P/E Ratio	.55
.8%	.9%	.8%	.8%	1.0%	2.2%	1.8%	1.9%	2.2%	1.9%	1.6%	1.9%	2.4%	2.2%	2.3%	2.2%	2.1%		Avg Ann'l Div'd Yield	2.4%

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
7403.0	7125.4	7237.0	7759.8	8632.1	8351.0	5007.4	4404.1	6156.9	8020.0	8340	9000	Premium Inc ($mill)	11500
703.2	689.5	713.1	650.3	656.4	626.2	515.7	493.8	598.4	675.0	600	700	Investment Inc ($mill)	850
372.2	425.3	493.8	603.0	1032.3	1318.6	1846.2	31.0	31.0	31.0	20.0	30.0	Other Income ($mill)	300
8478.4	8240.2	8443.9	9013.1	10321	10296	7369.3	4928.9	6755.3	8695.0	8960	9730	Total Income ($mill)	12650
2480.3	2389.7	3655.4	3675.5	4405.3	4742.5	1808.5	1870.6	2342.6	2654.7	2700	2900	Benefits & Reserves ($m)	3000
54.0%	23.7%	36.2%	38.1%	36.7%	29.6%	33.4%	NMF	24.3%	30.2%	23.0%	23.0%	Income Tax Rate	23.0%
279.2	545.8	483.7	488.9	470.9	141.6	565.4	519.6	251.0	382.6	405	585	Net Profit ($mill)	615
80.7	84.7	77.7	72.3	69.7	- -	4.3	3.6	5.3	5.3	70.0	70.0	Insur in Force ($bill)	65.0
26397	27115	28947	29715	31562	30043	29709	31843	41089	44291	45000	46000	Total Assets ($mill)	50000
4780.5	5026.9	5185.4	4833.5	5181.3	4524.0	4098.1	4270.6	5112.0	5652.8	5895	6330	Shr. Equity ($mill) C	7685
5.8%	10.9%	9.3%	10.1%	9.1%	3.1%	13.8%	12.2%	4.9%	6.8%	6.0%	8.0%	Return on Shr. Equity	7.0%
4.4%	9.5%	8.0%	8.6%	7.6%	1.0%	10.7%	9.4%	2.0%	3.8%	4.5%	7.0%	Retained to Com Eq	6.0%
25%	12%	14%	15%	16%	67%	22%	23%	59%	44%	36%	25%	All Div'ds to Net Prof	24%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $2009 mill. **Due in 5 Yrs** None.
LT Debt $2009 mill. **LT Interest** $42.7 mill.
(LT Interest Earned: 11.8x)
(25% of Cap'l)
Leases, Uncapitalized: Annual rentals: $20.4 mill.

Pension Assets-12/19 $809.3 mill.shs. **Oblig.** $803.0 mill

Pfd Stock None
Common Stock 58,759,191 shs
as of 10/30/20

MARKET CAP: $7.8 billion (Large Cap)

FINANCIAL POSITION ($MILL.)	2018	2019	9/30/20
Investments	13404	14552	15206
Cash& equiv.	1254	1867	2203
Premiums Due	1644	1693	1577
Other	24787	26179	24597
Total Assets	41089	44291	43583
Notes Payable	- -	- -	- -
Debt	2006	2007	2009
Other	33949	36602	35634
Total Liab.	35955	38609	37643

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Premium Inc	- -	8.0%	4.0%
Earnings	- -	1.0%	11.5%
Dividends	- -	16.5%	4.0%
Book Value	- -	11.0%	6.5%

Cal-endar	QUARTERLY PREMIUM INC. ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1050	1115	1073	1165	4404.1
2018	1124	1338	1853	1840	6156.9
2019	1904	2033	2015	2068	8020
2020	2084	2036	2103	2117	8340
2021	2200	2200	2300	2300	9000

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	2.53	2.16	d1.05	5.75	9.39
2018	1.96	1.09	.76	.32	3.98
2019	2.52	2.21	d.96	1.91	5.84
2020	2.43	2.81	d.58	2.34	7.00
2021	2.80	2.75	2.25	2.80	10.60

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.53	.53	.53	.56	2.15
2018	.56	.56	.56	.60	2.28
2019	.60	.60	.60	.63	2.43
2020	.63	.63	.63	.66	2.55
2021					

BUSINESS: Assurant, Inc. provides specialized insurance products and related services primarily in North America, South America, and Europe. The company operates in four segments: Global Housing (homeowners insurance); Global Lifestlye (offers domestic and international extended service contracts); Global Preneed (pre-paid funeral insurance); Corporate & Other. Exited the health insurance market (2016) and completed the sale of its Employee Benefits segment (3/16). Had 14,200 employees at 12/31/19. Pres./CEO: Alan B. Colberg. Dir.'s/off.'s own less than 1% of company stock; Vanguard Group, 11.7%; T. Rowe Price Assoc., 9.6%; BlackRock, 7.7% (3/20 proxy). Inc.: DE. Addrs.: 28 Liberty St., 41st Floor, New York, NY 10005. Tel.: 212-859-7000. Internet: www.assurant.com.

Assurant likely forged ahead in 2020, despite a tough operating environment. The top line likely rose 2% in the fourth quarter, owing to premium growth in its Global Lifestyle unit. That's despite a surge in catastrophe losses in the Housing business. Moreover, the bottom line probably rose 23% over the prior year's tally, to $2.34 a share. This comes after a $0.58-a-share deficit in the third quarter, stemming from a goodwill impairment charge of $135.6 million in the Global Preneed unit, given management's decision to evaluate strategic alternatives for the segment combined with an adverse impact from the COVID-19-induced low interest-rate environment. Looking ahead, we think share net ought to get a boost from expense management efforts, combined with expectations for continued normalized claim activity in the connected living and global automotive sectors of the core Lifestyle business. As a result, share earnings should see accelerated growth in 2021, on a modest 8% top-line gain.

The company is seeking strategic alternatives for its Global Preneed business. Assurant seeks to sell this business in order to capitalize on a greater potential of faster-growing sectors (i.e., connected car, auto, and mobile coverage) within its Lifestyle unit. To that end, the company acquired HYLA Mobile, a smartphone software and service firm for $325 million in October. Subsequently, it purchased EPG Insurance, a provider of service contracts and insurance for $43 million.

The company remains shareholder friendly. The board raised its quarterly distribution payment 5%, to $0.66 a share. Additionally, it repurchased $41 million in common shares subsequent to the third quarter (through October 31st) and expects to complete the remaining $292 million in its current plan through the newly commenced year.

This good-quality stock garners an Above Average rank for Timeliness (2). True, our long-term outlook is hazy as the company continues to restructure its business model and is susceptible to the possibility of excessive catastrophe losses in the Housing segment. Nevertheless, our near-term view remains favorable as its Lifestyle unit remains strong.

Oriatal J. Haiby *February 5, 2021*

(A) Diluted earnings. Next earnings report due mid-May. Earnings may not sum due to changes in shares outstanding.
(B) Dividends historically paid in mid-March, June, September, and December.
(C) Includes intangibles. In 2019, $2974.2 million, $49.60 per share.
(D) In millions.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	90
Earnings Predictability	40

ANSYS, INC. NDQ-ANSS

RECENT PRICE 367.87 | P/E RATIO 55.6 (Trailing: 61.5; Median: 26.0) | RELATIVE P/E RATIO 2.56 | DIV'D YLD Nil | VALUE LINE

TIMELINESS 1 Raised 1/22/21
SAFETY 2 Raised 5/15/15
TECHNICAL 3 Raised 2/5/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$250-$487	$369 (0%)

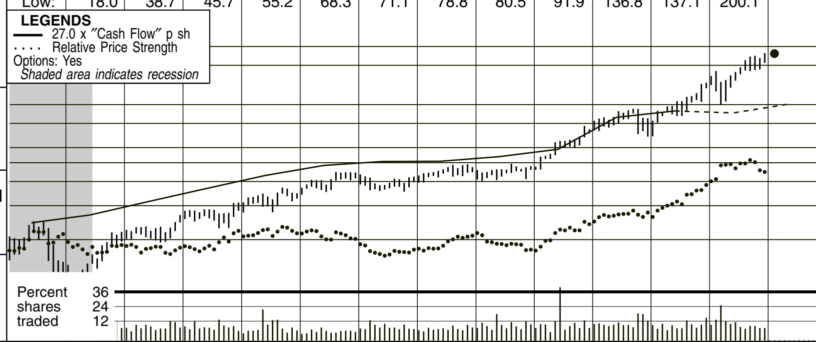
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	335	(-10%)	-2%
Low	250	(-30%)	-9%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	290	301	304
to Sell	320	312	294
Hld's(000)	78965	77467	77420

High:	43.9	53.6	62.3	74.4	89.7	87.1	98.4	99.0	155.1	190.5	260.1	369.8
Low:	18.0	38.7	45.7	55.2	68.3	71.1	78.8	80.5	91.9	136.8	137.1	200.1



Target Price Range

2023 | 2024 | 2025

400
320
200
160
120
100
80
60
40

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	41.3	18.8
3 yr.	146.5	29.9
5 yr.	293.3	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.14	2.47	3.42	4.93	5.35	5.76	6.33	7.57	8.72	9.38	10.37	10.72	11.54	13.04	15.59	17.83	19.00	21.20	Revenues per sh	29.50
.65	.81	.90	1.51	1.81	1.99	2.33	2.73	3.18	3.59	3.77	3.78	3.99	4.35	6.36	6.87	6.70	7.50	"Cash Flow" per sh	10.50
.51	.65	.56	.98	1.29	1.25	1.64	2.53	2.91	3.27	3.41	3.42	3.63	4.01	5.98	6.58	6.25	7.00	Earnings per sh	9.75
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	Nil	Div'ds Decl'd per sh	Nil
.05	.07	.09	.14	.19	.09	.16	.24	.26	.31	.29	.18	.15	.23	.26	.52	.50	.50	Cap'l Spending per sh	.50
2.79	3.51	6.93	8.20	13.23	14.63	16.69	18.94	20.94	23.14	24.43	24.90	25.77	26.68	31.68	40.28	44.20	49.40	Book Value per sh B	67.00
62.83	64.10	77.18	78.20	89.38	89.72	91.65	92.65	92.67	92.32	90.77	88.14	85.69	84.19	83.63	85.73	86.00	86.00	Common Shs Outst'g C	82.00
23.3	27.9	42.5	31.0	29.4	25.7	27.0	21.3	22.4	24.5	23.0	26.1	24.8	30.2	27.5	30.8	47.0		Avg Ann'l P/E Ratio	30.0
1.23	1.49	2.29	1.65	1.77	1.71	1.72	1.34	1.43	1.38	1.21	1.31	1.30	1.52	1.49	1.67	2.40		Relative P/E Ratio	1.65
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		Avg Ann'l Div'd Yield	Nil
						580.2	701.1	807.7	865.9	941.4	944.5	988.6	1098.1	1303.5	1528.4	1635	1825	Revenues ($mill)	2425
						48.3%	52.3%	52.3%	51.2%	50.2%	49.5%	48.9%	48.0%	48.8%	46.8%	43.5%	43.5%	Operating Margin	43.5%
						60.8	14.2	18.1	20.0	20.9	19.5	18.7	17.9	18.4	23.6	30.0	35.0	Depreciation ($mill)	40.0
						153.1	239.0	276.8	311.5	320.9	313.3	322.9	347.9	513.9	565.0	545	610	Net Profit ($mill)	825
						29.2%	32.0%	31.5%	26.5%	29.1%	30.6%	31.1%	32.3%	18.2%	19.2%	19.5%	19.5%	Income Tax Rate	19.5%
						26.4%	34.1%	34.3%	36.0%	34.1%	33.2%	32.7%	31.7%	39.4%	37.0%	33.3%	33.4%	Net Profit Margin	34.0%
						403.2	301.2	436.0	627.2	645.4	592.2	630.3	661.7	786.4	860.4	800	750	Working Cap'l ($mill)	750
						127.6	53.1	- -	- -	- -	- -	- -	- -	53.1	423.5	800	800	Long-Term Debt ($mill)	Nil
						1529.9	1754.5	1940.3	2136.2	2217.5	2194.4	2208.4	2245.8	2649.5	3453.4	3800	4250	Shr. Equity ($mill)	5500
						9.4%	13.3%	14.3%	14.6%	14.5%	14.3%	14.6%	15.5%	19.4%	14.6%	12.0%	12.0%	Return on Total Cap'l	15.0%
						10.0%	13.6%	14.3%	14.6%	14.5%	14.3%	14.6%	15.5%	19.4%	16.4%	14.5%	14.5%	Return on Shr. Equity	15.0%
						10.0%	13.6%	14.3%	14.6%	14.5%	14.3%	14.6%	15.5%	19.4%	16.4%	14.5%	14.5%	Retained to Com Eq	15.0%
						- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	Nil	All Div'ds to Net Prof	Nil

CAPITAL STRUCTURE as of 9/30/20
Total Debt $423.8 mill. **Due in 5 Yrs** $425.0 mill.
LT Debt $423.8 mill. **LT Interest** $6.0 mill.
(11% of Cap'l)

Leases, Uncapitalized Annual rentals $21.6 mill.

No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 85,884,127 shs.
as of 10/31/20
MARKET CAP: $31.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	777.4	872.4	845.2
Receivables	317.7	433.5	371.4
Other	216.1	249.6	242.1
Current Assets	1311.2	1555.5	1458.7
Accts Payable	8.0	14.3	10.6
Debt Due	- -	75.0	- -
Deferred Revenue	328.6	351.4	326.5
Other	188.2	254.4	224.7
Current Liab.	524.8	695.1	561.8

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	11.0%	10.5%	11.5%
"Cash Flow"	12.5%	11.0%	10.0%
Earnings	17.0%	11.5%	10.0%
Dividends	- -	- -	NMF
Book Value	10.5%	7.5%	12.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	253.5	264.3	276.8	303.4	1098.1
2018	283.7	308.8	293.0	418.0	1303.5
2019	319.9	370.5	345.5	492.5	1528.4
2020	308.9	389.7	369.1	567.3	1635
2021	385	410	435	595	1825

Cal-endar	EARNINGS PER SHARE AD Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.89	.99	1.05	1.07	4.01
2018	1.20	1.35	1.31	2.13	5.98
2019	1.29	1.61	1.42	2.24	6.58
2020	.83	1.55	1.36	2.51	6.25
2021	1.25	1.50	1.60	2.65	7.00

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	NO CASH DIVIDENDS BEING PAID				
2018					
2019					
2020					
2021					

BUSINESS: ANSYS, Inc. develops and markets software and technologies widely used by engineers and designers across a broad spectrum of disciplines, including aerospace, automotive, manufacturing, electronics, and biomedical. Product/market emphasis includes: Structures, Fluids, Electronics, Multiphysics, Embedded Software, Systems, 3-D Modeling, and Academic. Software licenses, 46% of '19 revenue; Maintenance and service, 54%. '19 R&D expense, 19.7% of revenue. Employed about 4,500 (9/30/20). Stock owners: two fin'l inst., 19.2%; Off. & dir., less than 1% (3/20 proxy). Chrmn.: Ronald W. Hovsepian; Pres. & CEO: Dr. Ajei S. Gopal. Inc.: DE. Address: 2600 ANSYS Drive, Cannonsburg, PA 15317. Tel.: 844-462-6797. Internet: www.ansys.com.

ANSYS should continue to perform well in its targeted markets. The company's simulation software plays an important role in its customers' new product development programs. And, as ANSYS has grown, it has markedly expanded the range of applications where simulation can aid development efforts (e.g., its recent agreement to acquire Analytic Graphics, Inc.). Meanwhile, the ability to simulate designs and potential interactions with operating environments before moving into the expensive prototyping phase has become more important, given the increasing level of complexity.

The company probably finished 2020 with a flourish. COVID-19 likely remained a factor affecting the company's operations as the year came to a close. Nonetheless, our sense is the December period was particularly strong due to the renewal of a range of large enterprise agreements, which probably worked to send the top and bottom lines sharply forward on a sequential basis. In addition, annual contract value (ACV) was estimated to come in between $1.555 billion and $1.590 billion for 2020, an increase of about 7.5% over 2019 at the midpoint, despite the difficult business environment posed by COVID-19. In this regard, we note that the ACV has a large recurring component (about 81% at the end of the third quarter), in keeping with the increase ANSYS is experiencing for software lease and service-type agreements.

We continue to expect earnings growth to return in 2021. R&D budgets are often more resistant than others to reduction during challenging times, especially if a company depends on innovation for growth. Still, some of ANSYS' small and midsize customers have had to reassess their financial and spending plans in response to COVID-19. True, economic activity has improved markedly since the second quarter of last year, but there is a growing sense that unemployment may remain elevated for some time yet and that the path to full recovery may be longer than previously anticipated, suggesting a degree of conservatism may be warranted here. This, combined with the stock's high relative valuation, makes it best suited for venturesome investors.

Charles Clark *February 5, 2021*

(A) Diluted earnings; nonGAAP 2011 forward. Next earnings report date late February. Excluded items: '04, d3¢; '06, d73¢; '11, d62¢; '12, d77¢; '13, d69¢; '14, d71¢; '15, d66¢; '16, d64¢; '17, d$1.03; '18, d$1.10, '19, d$1.32.
(B) Includes intangibles, in '19: $2,413.3 mill., $28.15 per share.
(C) In millions.
(D) Quarters may not sum to annual figure, due to rounding or changes in shares outstanding.

Company's Financial Strength	A++
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	85

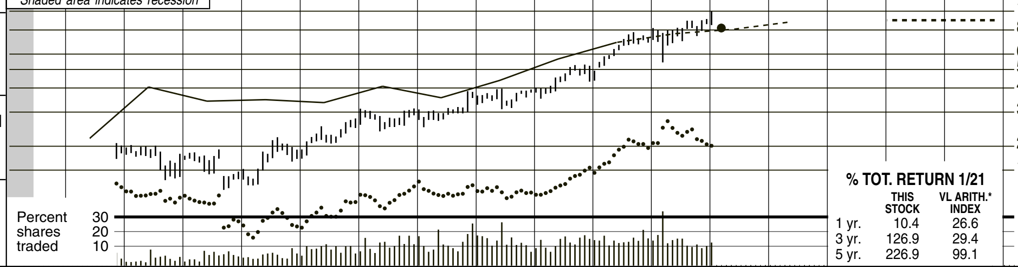
BOOZ ALLEN NYSE-BAH

RECENT PRICE	P/E RATIO		RELATIVE P/E RATIO	DIV'D YLD	VALUE LINE
81.95	21.3	(Trailing: 20.6 Median: 16.0)	0.99	1.8%	375

TIMELINESS 3 Lowered 12/25/20
SAFETY 3 New 11/30/12
TECHNICAL 3 Lowered 1/29/21
BETA .90 (1.00 = Market)

High:	20.7	20.3	19.2	22.3	27.8	31.3	38.5	39.7	52.9	78.0	91.2	100.3
Low:	17.2	13.3	11.9	12.5	17.2	23.9	25.0	31.1	35.2	43.7	54.4	80.6

LEGENDS
— 17.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range
2024 | 2025 | 2026

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$74-$159	$117 (40%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	140	(+70%)	16%
Low	90	(+10%)	4%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	224	237	222
to Sell	263	248	257
Hld's(000)	126315	127216	124054

Percent shares traded: 30, 20, 10

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.4	26.6
3 yr.	126.9	29.4
5 yr.	226.9	99.1

Booz Allen Hamilton Holding Corporation completed its initial public offering on November 16, 2010. At that time, 16.1 million shares were sold to the public at an average price of $17.00 per share. The underwriting syndicate was led by Bank of America Merrill Lynch, Barclays, and Credit Suisse.

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
44.25	39.49	36.85	35.38	36.53	38.98	43.03	47.88	53.81	*57.50*	*62.05*	*66.90*	Revenues per sh A	*78.90*
2.38	2.01	2.05	1.98	2.40	2.10	2.58	3.33	4.06	*4.50*	*4.75*	*5.20*	"Cash Flow" per sh	*6.40*
1.70	1.45	1.54	1.52	1.94	1.67	2.05	2.76	3.41	*3.80*	*4.05*	*4.45*	Earnings per sh AB	*5.50*
.09	.36	.40	.46	.54	.62	.70	.80	1.04	*1.30*	*1.50*	*1.62*	Div'ds Decl'd per sh D	*1.90*
.58	.23	.14	.24	.45	.36	.55	.68	.92	*.55*	*.65*	*.75*	Cap'l Spending per sh	*.90*
8.95	1.56	1.15	1.25	2.76	3.85	3.87	4.82	6.17	*7.60*	*9.05*	*10.90*	Book Value per sh C	*18.10*
132.41	145.80	148.69	149.09	147.99	148.89	143.45	140.03	138.72	*137.00*	*135.00*	*133.00*	Common Shs Outst'g E	*128.00*
10.1	10.0	11.9	16.4	14.3	19.2	17.9	17.3	20.3	*Bold figures are*	*Value Line*		Avg Ann'l P/E Ratio	*21.0*
.63	.64	.67	.86	.72	1.01	.90	.93	1.08		*estimates*		Relative P/E Ratio	*1.15*
.5%	2.5%	2.2%	1.8%	1.9%	1.9%	1.9%	1.7%	1.5%				Avg Ann'l Div'd Yield	*1.6%*
5859.2	5758.1	5478.7	5274.8	5405.7	5804.3	6171.9	6704.0	7463.8	*7875*	*8375*	*8900*	Revenues ($mill)	*10100*
8.2%	9.0%	9.7%	9.9%	9.4%	9.4%	9.5%	10.0%	10.1%	*10.3%*	*10.5%*	*10.5%*	Operating Margin	*11.0%*
75.2	74.0	72.3	62.7	61.5	59.5	64.8	68.6	81.1	*84.0*	*88.0*	*92.0*	Depreciation ($mill)	*105*
240.0	219.1	232.2	232.6	294.1	252.5	305.1	397.1	482.6	*530*	*555*	*600*	Net Profit ($mill)	*715*
30.2%	40.5%	39.0%	39.7%	22.5%	38.7%	30.3%	23.0%	16.7%	*20.0%*	*24.0%*	*24.0%*	Income Tax Rate	*25.0%*
4.1%	3.8%	4.2%	4.4%	5.4%	4.4%	4.9%	5.9%	6.5%	*6.7%*	*6.6%*	*6.7%*	Net Profit Margin	*7.1%*
743.2	459.7	338.9	314.2	249.9	193.1	452.5	520.1	1000.5	*1425*	*1450*	*1550*	Working Cap'l ($mill)	*1750*
922.9	1659.6	1585.2	1569.3	1484.4	1470.2	1755.5	1701.8	2008.0	*2275*	*2200*	*2750*	Long-Term Debt ($mill)	*2625*
1185.2	226.8	171.6	186.5	408.5	573.6	554.6	675.4	856.4	*1040*	*1225*	*1450*	Shr. Equity ($mill)	*2315*
12.5%	13.4%	15.3%	15.2%	17.3%	13.6%	14.8%	18.3%	18.3%	*17.0%*	*17.0%*	*17.0%*	Return on Total Cap'l	*15.0%*
20.2%	96.6%	135.3%	124.7%	72.0%	44.0%	55.0%	58.8%	56.4%	*51.0%*	*45.5%*	*41.5%*	Return on Shr. Equity	*31.0%*
19.2%	75.3%	100.6%	88.2%	52.4%	27.4%	36.2%	41.9%	39.2%	*33.5%*	*28.5%*	*26.5%*	Retained to Com Eq	*20.0%*
5%	22%	26%	29%	27%	38%	34%	29%	30%	*34%*	*37%*	*36%*	All Div'ds to Net Prof	*35%*

CAPITAL STRUCTURE as of 12/31/20
Total Debt $2375.0 mill. **Debt Due 5 Yrs** $1.5 bill.
LT Debt $2297.1 mill. **LT Interest** $56.0 mill.
(Total interest coverage: 11.4x) (68% of Cap'l)

Leases, Uncapitalized: Annual Rentals $61.9 mill.

No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 137,706,170 shs.
as of 1/26/21
MARKET CAP: $11.3 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	284.0	741.9	1341.3
Receivables	1330.4	1459.5	1420.7
Inventory	- -	- -	- -
Other	84.9	126.8	59.4
Current Assets	1699.3	2328.2	2821.4
Accts Payable	664.9	698.0	826.8
Debt Due	57.9	177.9	77.9
Other	456.4	451.8	516.3
Current Liab.	1179.2	1327.7	1421.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	- -	5.5%	8.5%
"Cash Flow"	- -	10.5%	11.5%
Earnings	- -	13.0%	12.5%
Dividends	- -	16.0%	14.5%
Book Value	- -	30.5%	24.0%

Fiscal Year Begins	QUARTERLY REVENUES ($ mill.) A Jun.30	Sep.30	Dec.31	Mar.31	Full Fiscal Year
2018	1646.8	1614.0	1663.1	1780.1	6704.0
2019	1825.2	1819.6	1849.4	1969.6	7463.8
2020	1956.5	2019.2	1904.0	*1995.3*	*7875*
2021	*1975*	*2100*	*2125*	*2175*	*8375*
2022	*2100*	*2225*	*2250*	*2325*	*8900*

Fiscal Year Begins	EARNINGS PER SHARE AB Jun.30	Sep.30	Dec.31	Mar.31	Full Fiscal Year
2018	.72	.68	.72	.64	2.76
2019	.83	.80	.80	.98	3.41
2020	.93	1.03	1.04	*.80*	*3.80*
2021	*.95*	*1.05*	*1.04*	*1.01*	*4.05*
2022	*1.08*	*1.16*	*1.10*	*1.11*	*4.45*

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.17	.17	.17	.17	.68
2018	.19	.19	.19	.19	.76
2019	.23	.23	.23	.27	.96
2020	.31	.31	.31	.31	1.24
2021	.37				

BUSINESS: Booz Allen Hamilton Corp. provides management and technology consulting services to the U.S. government (both defense and civil), major corporations, institutions, and not-for-profit organizations. In fiscal 2019, 96% of revenues were derived from contracts where the end client was an agency or department of the U.S. government, with the Navy Marine Corps accounting for 13% of the top line. Has had contracts with the U.S. Army and Navy for more than 70 years. At 3/31/20, total backlog was $20.7 billion. Has about 27,200 employees. CEO & Pres.: Horacio Rozanski. Off./dir. own 2.0% of common stock; T.Rowe Price Assoc. 12.1%; (6/20 Proxy). Inc.: DE. Addr.: 8283 Greensboro Dr., McLean, Virginia 22102. Telephone: (703) 902-5000. Internet: www.boozallen.com.

Booz Allen Hamilton stock, which has been on an upward trajectory for much of the last half-decade, hit a speed bump. The shares recently traded off their all-time high of just over $100 a share, which was established in late January. The primary culprit was a mixed December-quarter showing, with revenues (up a modest 3%) falling short of expectations. The company's ability to control costs helped the bottom line expand 30%, but Wall Street was disappointed by the revenue miss and some noted erosion in a few key operating metrics (more below). Nevertheless, even with the lackluster revenue performance, we are adding a dime to our fiscal 2020 (ends March 31, 2021) share-net estimate, which is now at $3.80.

The outlook over the next few quarters is not as favorable as it seemed last summer. We did warn investors that the company's business, a large chunk of which is derived from services provided to the Department of Defense, could be hurt by a change in the White House. The Biden Administration doesn't appear that it will be as aggressive when it comes to military and defense spending, which may make the task of renewing defense contracts and securing new military projections more difficult. On point, the government change did affect contract signings at the end of 2020 and that, along with COVID-19 disruptions, played a role in the erosion of some key metrics. Of note, Booz Allen's book-to-bill ratio fell to 0.3 times in the December quarter. A reading below 1.0x implies that the company is fulfilling more orders than it is taking in, which may hurt the future revenue performance and result in less hirings on the consulting side. This was a sharp reversal from the September quarter when BAH's book-to-bill ratio came in at 1.8 times.

This stock does not stand out for the year ahead. And given that it trades at a P/E multiple above its historical norm, we don't think there is need to hastily jump aboard here. However, patient investors may like the equity's worthwhile appreciation potential to 2024-2026 and should note that the dividend payout was recently increased 19.4%, pushing the stock's yield close to the *Value Line* median.

William G. Ferguson *February 19, 2021*

(A) Fiscal years end March 31st of the following calendar year. **(B)** Diluted egs. Excludes nonrecurring gain/(loss): '18, 15¢; '20 Q1-Q3 (6¢). Next egs. report due late May. **(C)** Incl. Intang. In fiscal 2019: $1882.2 mill., $13.57/sh. **(D)** Payments in February, June, August, and November. Paid special dividend of $1.50 per share on 6/29/12, $6.50 per share on 8/31/12, $1.00 per share on 11/29/13, $1.00 per share on 2/28/14, and $1.00 per share on 8/29/14. **(E)** In millions.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	80
Earnings Predictability	80

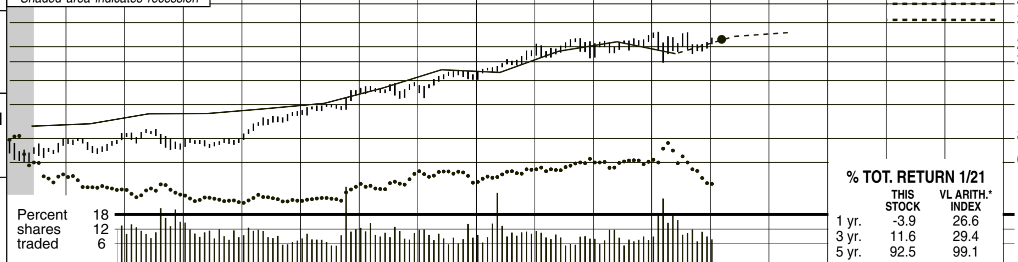
BECTON, D'SON. NYSE-BDX

RECENT PRICE **261.37** | P/E RATIO **20.5** (Trailing: 25.6; Median: 19.0) | RELATIVE P/E RATIO **1.00** | DIV'D YLD **1.3%** | VALUE LINE

TIMELINESS 3 Lowered 1/22/21
SAFETY 1 Raised 3/4/05
TECHNICAL 5 Lowered 1/8/21
BETA .80 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	85.5	89.8	80.6	110.9	142.6	157.5	181.8	229.7	265.9	275.5	286.7	267.4
Low:	66.5	69.6	71.6	78.7	105.2	128.9	129.5	161.5	208.6	210.7	197.8	246.8

LEGENDS
—— 13.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$189-$378	$284 (10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	400	(+55%)	12%
Low	330	(+25%)	7%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	628	677	638
to Sell	692	601	619
Hld's(000)	233070	244612	242320

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-3.9	26.6
3 yr.	11.6	29.4
5 yr.	92.5	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
21.86	23.79	26.08	29.44	30.20	32.08	36.44	39.15	41.52	43.99	48.80	58.53	53.05	59.59	63.94	59.02	*65.75*	*65.85*	Sales per sh A	*74.60*
4.60	5.08	5.82	6.60	7.13	7.34	8.27	8.30	8.78	9.37	11.25	13.99	13.56	17.48	19.58	16.97	*20.85*	*21.90*	"Cash Flow" per sh	*27.60*
2.88	3.28	3.84	4.46	4.95	4.94	5.62	5.36	5.81	6.25	7.16	8.59	9.48	11.01	11.68	10.20	*12.75*	*13.40*	Earnings per sh AB	*18.25*
.72	.86	.98	1.14	1.32	1.48	1.64	1.80	1.98	2.18	2.40	2.64	2.92	3.00	3.08	3.16	*3.32*	*3.48*	Div'ds Decl'd per sh C■	*4.25*
1.28	1.87	2.28	2.68	2.96	2.75	2.82	2.81	3.03	3.40	2.83	3.25	3.19	3.34	3.54	2.79	*3.20*	*3.10*	Cap'l Spending per sh	*3.10*
13.26	15.63	17.89	20.30	21.69	23.65	22.48	21.00	26.00	26.32	34.00	35.79	56.80	78.26	77.95	81.94	*84.75*	*86.65*	Book Value per sh D	*90.15*
247.68	245.47	243.84	243.08	237.08	229.82	214.82	196.91	194.00	191.98	210.70	213.29	227.94	268.22	270.43	290.02	*295.00*	*300.00*	Common Shs Outst'g E	*305.00*
19.3	18.8	19.5	19.0	13.7	14.9	14.5	14.1	15.6	18.1	19.5	18.4	19.4	20.8	20.8	24.7	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	*20.0*
1.03	1.02	1.04	1.14	.91	.95	.91	.90	.88	.95	.98	.97	.98	1.12	1.11	1.25	*estimates*		Relative P/E Ratio	*1.10*
1.3%	1.4%	1.3%	1.3%	1.9%	2.0%	2.0%	2.4%	2.2%	1.9%	1.7%	1.7%	1.6%	1.3%	1.3%	1.3%			Avg Ann'l Div'd Yield	*1.2%*

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
7828.9	7708.4	8054.0	8446.0	10282	12483	12093	15983	17290	17117	*19400*	*19750*	Sales ($mill) A	*22750*
29.1%	27.1%	26.9%	26.6%	32.8%	30.5%	32.9%	37.0%	39.2%	35.3%	*37.5%*	*39.5%*	Operating Margin	*43.0%*
504.1	510.9	546.0	562.0	891.0	1114.0	1088.0	1978.0	2253.0	2154.0	*2300*	*2450*	Depreciation ($mill)	*2850*
1271.5	1122.5	1158.0	1236.0	1480.0	1869.1	2072.0	2862.8	3195.0	2875.6	*3845*	*4120*	Net Profit ($mill)	*5565*
26.3%	24.8%	24.5%	22.8%	31.2%	20.0%	15.2%	17.3%	18.8%	15.3%	*15.0%*	*16.0%*	Income Tax Rate	*16.0%*
16.2%	14.6%	14.4%	14.6%	14.4%	15.0%	17.1%	17.9%	18.5%	16.8%	*19.8%*	*20.9%*	Net Profit Margin	*24.5%*
2845.1	3344.0	3743.0	3896.0	1659.0	1967.0	15291	195.0	1009.0	3133.0	*2955*	*1065*	Working Cap'l ($mill)	*1320*
2484.7	3761.1	3763.0	3768.0	11370	10550	18667	18894	18081	17224	*16000*	*14000*	Long-Term Debt ($mill)	*10000*
4828.2	4135.9	5043.0	5053.0	7164.0	7633.0	12948	20994	21081	23765	*25000*	*26000*	Shr. Equity ($mill) D	*27500*
18.2%	15.2%	13.9%	14.8%	9.0%	11.3%	7.4%	7.8%	8.9%	7.6%	*10.0%*	*11.0%*	Return on Total Cap'l	*15.5%*
26.3%	27.1%	23.0%	24.5%	20.7%	24.5%	16.0%	13.6%	15.2%	12.1%	*15.5%*	*16.0%*	Return on Shr. Equity	*20.0%*
18.9%	18.3%	15.3%	16.1%	13.9%	17.1%	10.8%	9.2%	10.5%	7.8%	*11.5%*	*12.0%*	Retained to Com Eq	*15.5%*
28%	33%	33%	34%	33%	30%	33%	32%	31%	36%	*26%*	*25%*	All Div'ds to Net Prof	*23%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $17931 mill. **Due in 5 Yrs** $11907 mill.
LT Debt $17224 mill. **LT Interest** $528 mill.
(Total interest coverage: 2.8x) (42% of Capital)

Leases, Uncapitalized Annual rentals $115 mill.

Pension Assets-9/20 $3045 mill.
Oblig. $3953 mill.

Pfd Stock $2400 mill. **Pfd Div'd** $105 mill.
Common Stock 290,071,212 shares
MARKET CAP: $75.8 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	1157	566	2845
Receivables	2319	2345	2938
Inventory (FIFO)	2451	2579	2743
Other	1484	1174	983
Current Assets	7411	6664	8969
Accts Payable	1106	1092	1355
Debt Due	2601	1309	707
Other	3509	3254	3774
Current Liab.	7216	5655	5836

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Sales	7.0%	6.5%	*3.5%*
"Cash Flow"	10.0%	13.0%	*7.5%*
Earnings	8.5%	11.5%	*9.0%*
Dividends	9.0%	7.0%	*5.5%*
Book Value	14.0%	22.5%	*2.0%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	3081	4222	4278	4402	15983
2019	4161	4195	4350	4584	17290
2020	4225	4253	3855	4784	17117
2021	*5310*	*4800*	*4600*	*4690*	*19400*
2022	*4800*	*4900*	*4950*	*5100*	*19750*

Fiscal Year Ends	EARNINGS PER SHARE AB Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	2.48	2.65	2.91	2.93	11.01
2019	2.70	2.59	3.08	3.31	11.68
2020	2.65	2.55	2.20	2.79	10.20
2021	*3.25*	*3.15*	*3.15*	*3.20*	*12.75*
2022	*3.25*	*3.30*	*3.35*	*3.50*	*13.40*

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.73	.73	.73	.75	2.94
2018	.75	.75	.75	.77	3.02
2019	.77	.77	.77	.77	3.10
2020	.79	.79	.79	.83	3.20
2021					

BUSINESS: Becton, Dickinson & Co. operates in three segments: Medical (51% of FY'20 sales) manufactures medical devices which include Diabetes Care, Medication Management Solutions, and Medication Delivery; Life Sciences (27%) includes Diagnostic and Preanalytical Systems; Interventional (22%) includes Peripheral Intervention and Urology and Critical Care. '20 R&D: $1096 mill, 6.4% of sales. Acquired CareFusion 3/15; C.R Bard 12/17. Employs about 72,000. Officers & dir. own less than 1.0% of common stock; The Vanguard Group, 8.5%; BlackRock, 7.4%; T. Rowe Price, 6.5% (12/20 proxy). CEO and President: Thomas E. Pohlen. Inc.: New Jersey. Address: One Becton Drive, Franklin Lakes, NJ 07417. Telephone: 201-847-6800. Internet: www.bd.com.

Becton, Dickinson (BD) started out strong in fiscal 2021. (Ends September 30th). Indeed, although the company was scheduled to report fiscal 2021 first-quarter results shortly after press time, it did offer some preliminary figures. Management reported that revenues came in at about $5.3 billion, roughly 25% over the prior-year period. The strong showing was spurred by high demand for COVID-19 testing solutions, especially the *BD Veritor System*. The portable, easy-to-use system generated sales of roughly $685 million. Too, the *BD-Max* platform has been vital in testing. Elsewhere, the company's largest segment, BD Medical rose approximately 8% year over year, thanks to nice gains in medication management and diabetes care.

We have raised our fiscal 2021 estimates. The need for COVID-19 testing kits is not likely to subside anytime soon. What's more, medical procedures should pick up overall, after many were put on the back burner during the height of the pandemic last spring. All, told we have hiked our full-year top-line estimate by $600 million, to $19.4 billion. We also added a quarter to our earnings call.

Fundamentals should remain sound in a post-COVID-19 world. In our view, barring any setbacks, mass vaccinations will likely lead to much-lower spread of the virus by the start of the next fiscal year. Although the end result will be sharply lower COVID-based revenues, the remainder of the company's businesses should be able to pick up the slack as hospital operations return to normal. With that in mind, we expect a mid-single-digit advance in revenues and even higher earnings gains out to mid-decade.

Finances are in good shape. BD has plenty of cash on hand and has been lowering its debt load at a nice clip over the past few years.

These shares are an average choice for relative price performance in the year ahead. The stock has trended higher recently, climbing over 10% in value since our last full-page review in November. From our perspective, this issue remains an ideal choice for conservative investors with a long-term horizon that also provides some income.

Kevin P. O'Sullivan *February 12, 2021*

(A) Fiscal years end September 30th.
(B) Dil. EPS. Quarterly EPS may not sum. Excludes nonrecurring: '05, (11¢); '06, (35¢); '07, (35¢); '08, (11¢); '09, 4¢; '10, 55¢; '12, 23¢; '13, 68¢; '14, (26¢); '15 ($3.81); '16 ($4.10); '17, ($4.88); '18, ($10.41); '19, ($7.79); '20, ($7.49). Next egs report due early May.
(C) Dividends paid in late December, late March, late June, and late September. ■ DRIP available.
(D) Includes intangibles. In FY'20: $37.4 billion, $129.08 a share. (E) In millions.

Company's Financial Strength	A++
Stock's Price Stability	95
Price Growth Persistence	95
Earnings Predictability	95

BROWN-FORMAN 'B' NYSE-BFB

RECENT PRICE 78.03 | P/E RATIO 44.1 (Trailing: 47.3; Median: 27.0) | RELATIVE P/E RATIO 2.09 | DIV'D YLD 0.9% | VALUE LINE

TIMELINESS 3 Lowered 3/27/20
SAFETY 1
TECHNICAL 3 Lowered 11/20/20
BETA .85 (1.00 = Market)

18-Month Target Price Range
Low-High: $45-$98 | Midpoint (% to Mid): $72 (-10%)

2023-25 PROJECTIONS

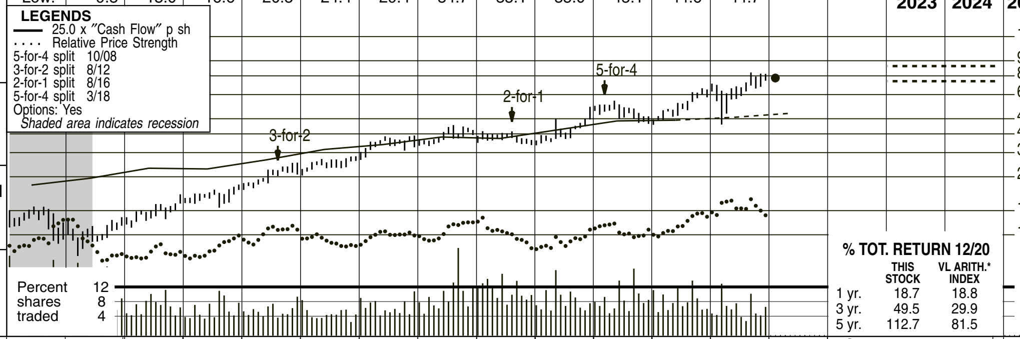
	Price	Gain	Ann'l Total Return
High	90	(+15%)	5%
Low	75	(-5%)	Nil

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	240	249	257
to Sell	293	278	260
Hld's(000)	150467	147964	147745

High:	14.8	19.5	21.9	28.4	30.7	39.2	44.4	41.4	55.3	59.6	69.0	83.4
Low:	9.3	13.0	16.6	20.5	24.4	29.4	34.7	35.1	35.0	45.1	44.6	44.7

Target Price Range 2023 | 2024 | 2025



% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	18.7	18.8
3 yr.	49.5	29.9
5 yr.	112.7	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
4.05	3.44	3.84	4.57	4.41	4.48	4.76	5.11	5.33	5.61	6.01	6.25	6.24	6.75	6.97	7.03	**7.10**	**7.35**	Sales per sh A	**8.80**
.63	.70	.75	.87	.87	.94	1.06	1.05	1.17	1.33	1.41	1.54	1.51	1.68	1.87	1.88	**1.95**	**2.05**	"Cash Flow" per sh	**3.45**
.52	.62	.67	.76	.77	.82	.95	.95	1.07	1.22	1.28	1.38	1.37	1.54	1.73	1.72	**1.75**	**1.90**	Earnings per sh B	**3.25**
.18	.22	.24	.27	.30	.31	.33	.36	.39	.44	.48	.52	.56	.61	.65	.68	**.70**	**.72**	Div'ds Decl'd per sh C■	**.88**
.09	.09	.10	.07	.10	.07	.08	.11	.18	.24	.23	.22	.23	.26	.25	.24	**.60**	**.70**	Cap'l Spending per sh	**.90**
2.29	2.72	2.72	3.05	3.23	3.44	3.79	3.88	3.05	3.81	3.65	3.16	2.85	2.74	3.45	4.13	**4.20**	**4.35**	Book Value per sh D	**5.35**
571.35	574.05	577.67	565.28	562.98	551.11	543.71	532.78	534.28	533.64	521.75	494.36	480.11	481.00	477.17	478.21	**478.00**	**475.00**	Common Shs Outst'g E	**465.00**
19.7	22.5	22.3	19.7	17.8	16.1	17.9	21.4	24.1	24.7	28.4	28.8	27.6	30.4	29.3	35.4	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**25.0**
1.04	1.20	1.20	1.05	1.07	1.07	1.14	1.34	1.53	1.39	1.49	1.45	1.45	1.53	1.58	1.89			Relative P/E Ratio	**1.40**
1.8%	1.6%	1.6%	1.8%	2.2%	2.4%	1.9%	1.8%	1.5%	1.4%	1.3%	1.3%	1.5%	1.3%	1.3%	1.1%			Avg Ann'l Div'd Yield	**1.1%**

CAPITAL STRUCTURE as of 10/31/20
Total Debt $2667 mill. **Due in 5 Yrs** $220 mill.
LT Debt $2309 mill. **LT Interest** $65 mill.

(Total interest coverage: 21.1x) (50% of Cap'l)
Leases, Uncapitalized Annual rentals $23 mill.
Pension Assets-4/20 $749 mill. **Obligations** $1056 mill.
Pfd Stock None
Common Stock 478,580,314 shs. (incl. 169,091,412 Cl. 'A' voting shs.) **as of 11/30/20**
MARKET CAP: $37.3 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
2586.0	2723.0	2849.0	2991.0	3134.0	3089.0	2994.0	3248.0	3324.0	3363.0	**3400**	**3500**	Sales ($mill) A	**4100**
29.5%	30.7%	32.5%	33.6%	35.1%	35.4%	34.6%	35.1%	35.5%	35.0%	**35.5%**	**36.0%**	Operating Margin	**36.5%**
55.0	49.0	51.0	50.0	51.0	56.0	58.0	64.0	58.0	74.0	**75.0**	**80.0**	Depreciation ($mill)	**95.0**
523.4	513.0	576.0	659.0	684.0	707.5	669.0	746.0	835.0	827.0	**850**	**900**	Net Profit ($mill)	**1500**
31.0%	32.5%	31.7%	30.4%	31.7%	29.5%	28.3%	26.6%	19.9%	18.0%	**21.0%**	**21.0%**	Income Tax Rate	**23.0%**
20.2%	18.8%	20.2%	22.0%	21.8%	22.9%	22.3%	23.0%	25.1%	24.6%	**25.0%**	**25.7%**	Net Profit Margin	**36.5%**
1269.0	1345.0	1348.0	1616.0	1296.0	1442.0	1381.0	1734.0	2016.0	2385.0	**2050**	**2075**	Working Cap'l ($mill)	**2125**
504.0	503.0	997.0	997.0	748.0	1230.0	1689.0	2341.0	2290.0	2269.0	**2200**	**2100**	Long-Term Debt ($mill)	**2000**
2060.0	2069.0	1628.0	2032.0	1905.0	1562.0	1370.0	1316.0	1647.0	1975.0	**2000**	**2075**	Shr. Equity ($mill)	**2500**
21.0%	20.5%	22.6%	22.2%	26.3%	26.2%	22.8%	21.3%	22.3%	20.5%	**21.0%**	**22.5%**	Return on Total Cap'l	**34.0%**
25.4%	24.8%	35.4%	32.4%	35.9%	45.3%	48.8%	56.7%	50.7%	41.9%	**42.5%**	**43.5%**	Return on Shr. Equity	**60.0%**
16.7%	15.5%	22.5%	21.0%	22.5%	28.3%	28.8%	NMF	31.9%	25.4%	**26.0%**	**26.5%**	Retained to Com Eq	**43.5%**
34%	37%	36%	35%	37%	38%	41%	104%	37%	39%	**39%**	**39%**	All Div'ds to Net Prof	**27%**

CURRENT POSITION ($MILL.)	2018	2019	10/31/20
Cash Assets	307	675	964
Receivables	609	570	879
Inventory (LIFO)	1520	1685	1715
Other	283	335	257
Current Assets	2719	3265	3815
Accts Payable	150	333	601
Debt Due	150	131	358
Other	403	416	63
Current Liab.	703	880	1022

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	4.5%	4.0%	4.0%
"Cash Flow"	7.5%	7.0%	11.5%
Earnings	8.0%	7.0%	12.0%
Dividends	8.0%	8.0%	5.5%
Book Value	.5%	-.5%	7.5%

Fiscal Year Begins	QUARTERLY SALES ($ mill.)A Jul.31	Oct.31	Jan.31	Apr.30	Full Fiscal Year
2017	723	914	878	733	3248
2018	766	910	904	744	3324
2019	766	989	899	709	3363
2020	753	985	**940**	**722**	**3400**
2021	**785**	**985**	**970**	**760**	**3500**

Fiscal Year Begins	EARNINGS PER SHARE A B Jul.31	Oct.31	Jan.31	Apr.30	Full Fiscal Year
2017	.36	.49	.44	.23	1.54
2018	.41	.52	.47	.33	1.73
2019	.39	.59	.48	.27	1.72
2020	.40	.50	**.50**	**.35**	**1.75**
2021	**.42**	**.58**	**.52**	**.38**	**1.90**

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Apr.31	Jul.30	Oct.30	Jan.31	Full Year
2017	.146	.146	.146	.157	.59
2018	.157	.157	.158	.166	.64
2019	.166	.166	.166	.174	.67
2020	.174	.174	.174	.179	.67
2021					

BUSINESS: Brown-Forman is engaged in the production and marketing of distilled spirits and wines. Major brands include *Jack Daniel's*, *Finlandia*, and *Korbel*. In the U.S., sells spirits either through wholesale distributors or directly to state governments in those states that control alcohol sales. Sold Hartmann luggage business, 5/07; Lenox tableware division, 9/05; minority stake in Glenmorangie PLC, 11/04. Acquired Slane Castle Irish Whiskey 6/15. Acquired Benriach 6/16. Non-U.S. sales represent 50% of total revenue. Has 4,800 employees. Off. & dir. own about 6.3% of 'A' and 2.7% of 'B' shares (6/20 Proxy). CEO: Lawson Whiting. Inc.: DE. Address: 850 Dixie Highway Louisville, KY 40201-1080. Telephone: 502-585-1100. Internet: www.brown-forman.com.

Brown-Forman's latest financial results reflect ongoing challenges. The company reported sales and earnings decreases of almost 1% and 15%, respectively, in the fiscal 2020 second quarter (year ends April 30, 2021). The shortfall was mainly attributed to COVID-19-related challenges. Like its industry peers, demand in high traffic channels, including bars and restaurants, is lower, a scenario that continued to weigh on a significant portion of the business. The Travel Retail (duty free) segment also struggled, as travel has declined drastically since the onset of the virus last year.

We are optimistic that full-year results in 2020 will edge higher, and next year should be even better. Indeed, the company's ability to pivot in times of strife should help offset weak market conditions. There are several expansion catalysts that ought to drive slight top- and bottom-line advances in fiscal 2020, and more-meaningful single-digit sales and earnings progress in fiscal 2021. First, consumer interest in premium offerings is expected to persist for the foreseeable future. Demand for high-end offerings, including *Woodford Reserve* and *Gentleman Jack*, have provided a notable benefit. Also, the ready-to-drink category that comprises drinks in the *Jack Daniel's* line, such as the newly launched *Jack Daniel's Country Cocktails* and convenient tequila drinks like *New Mix in Mexico*, have experienced an increase in demand. Brown-Forman also intends to acquire New Zealand-based Part Time Rangers, manufacturers of ready-to-drink vodka beverages such as Passionfruit Apple Vodka, which combines vodka with sparkling water and fruit flavors. Additionally, a rise in e-commerce orders ought to support growth.

Investors seem to be waiting on the sidelines though, as the stock has traded in unremarkable fashion over the past three months. A recent surge in COVID-19 cases and the new strain of the virus create uncertainty, and traders are proceeding with caution. Those considering taking up a position here should wait for a better entry point, since short- and long-term capital gains potential is unexciting at this juncture.

Nira Maharaj *January 15, 2021*

(A) Excludes excise taxes. Fiscal yr. ends April 30th of foll. cal. year. (B) Dil. earnings. Excls. nonrec. gain (loss): '04, 2¢; '05, 4¢; '06, 3¢, '09, (3¢), '10, 14¢, '12, 3¢, '15, 70¢; '17, (6¢). May not sum due to rounding. Next earnings report due early March. (C) Div'ds paid early April, July, Oct., and Jan. ■ Co. Div'd reinvestment plan available. Special dividend of $1.00 paid on 4/2/18. (D) Incl. intangibles. In '19: $1391.0 mill., $2.90/sh. (E) In mills., adj for splits.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	85
Earnings Predictability	100

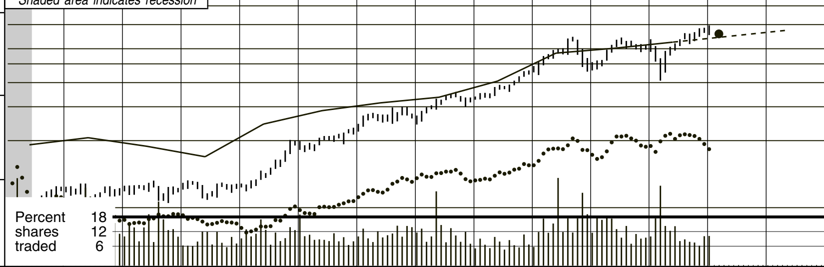
BROADRIDGE FIN'L NYSE-BR

RECENT PRICE **143.09** | P/E RATIO **26.3** (Trailing: 25.9; Median: 22.0) | RELATIVE P/E RATIO **1.23** | DIV'D YLD **1.6%** | VALUE LINE **431**

TIMELINESS **2** Lowered 1/8/21
SAFETY **2** New 2/26/16
TECHNICAL **1** Raised 2/19/21
BETA .85 (1.00 = Market)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	24.0	24.8	24.9	40.4	46.8	60.1	71.7	92.4	138.2	137.0	154.2	158.4	
Low:	18.5	19.0	19.8	21.8	34.9	44.6	48.6	65.2	87.5	92.4	81.9	141.3	

LEGENDS
—— 19.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range 2024 | 2025 | 2026: 320, 200, 160, 120, 100, 80, 60, 40, 18

18-Month Target Price Range
Low-High: $120-$231 | Midpoint (% to Mid): $176 (25%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	225	(+55%)	13%
Low	165	(+15%)	5%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	318	325	317
to Sell	345	318	322
Hld's(000)	97909	99313	98280

Percent shares traded: 18, 12, 6

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	20.8	26.6
3 yr.	54.2	29.4
5 yr.	188.2	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
--	--	15.53	15.91	15.47	17.10	17.52	18.46	20.43	21.41	22.79	24.49	35.56	37.23	38.16	39.35	**41.30**	**43.50**	Revenues per sh A	**50.45**
--	--	1.70	1.74	2.01	2.18	1.97	1.74	2.57	3.02	3.31	3.54	4.29	6.00	6.35	6.82	**7.35**	**7.90**	"Cash Flow" per sh	**9.75**
--	--	1.42	1.36	1.58	1.62	1.34	.98	1.69	2.12	2.32	2.53	2.70	4.19	4.66	5.03	**5.50**	**6.00**	Earnings per sh AB	**7.55**
--	--	.06	.24	.28	.56	.60	.64	.72	.84	1.08	1.20	1.32	1.46	1.94	2.16	**2.30**	**2.50**	Div'ds Decl'd per sh C	**2.85**
--	--	.23	.29	.19	.33	.24	.27	.32	.34	.43	.49	.73	.66	.44	.54	**.65**	**.65**	Cap'l Spending per sh	**.80**
--	--	3.81	5.31	6.53	6.25	6.45	6.82	6.86	8.05	7.85	8.84	8.62	9.41	9.86	11.70	**14.35**	**14.80**	Book Value per sh D	**21.75**
--	--	139.30	140.40	139.30	129.20	123.70	124.80	119.00	119.50	118.20	118.30	116.50	116.30	114.30	115.10	**115.00**	**115.00**	Common Shs Outst'g E	**115.00**
--	--	14.1	14.8	10.3	13.0	16.4	22.8	14.0	16.8	20.4	22.4	25.3	22.4	24.4	23.9	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	**26.0**
--	--	.75	.89	.69	.83	1.03	1.45	.79	.88	1.03	1.18	1.27	1.21	1.30	1.22			Relative P/E Ratio	**1.45**
--	--	.3%	1.2%	1.7%	2.7%	2.7%	2.9%	3.0%	2.4%	2.3%	2.1%	1.9%	1.6%	1.7%	1.8%			Avg Ann'l Div'd Yield	**1.5%**

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
2166.9	2303.5	2430.8	2558.0	2694.2	2897.0	4142.6	4329.9	4362.2	4529.0	**4750**	**5000**	Revenues ($mill)	**5800**
16.2%	16.5%	17.8%	20.3%	21.3%	18.0%	17.0%	18.8%	22.0%	19.2%	**21.0%**	**22.5%**	Operating Margin	**23.0%**
72.3	92.0	93.4	97.4	104.3	111.0	173.1	193.3	172.6	196.7	**200**	**210**	Depreciation ($mill)	**250**
171.8	125.0	212.1	263.0	287.1	307.5	326.8	504.1	553.5	588.5	**645**	**700**	Net Profit ($mill)	**870**
36.3%	37.8%	34.4%	33.5%	34.6%	34.4%	33.0%	21.9%	21.1%	20.8%	**19.0%**	**20.0%**	Income Tax Rate	**20.0%**
7.9%	5.4%	8.7%	10.3%	10.7%	10.6%	7.9%	11.6%	12.7%	13.0%	**13.6%**	**14.0%**	Net Profit Margin	**15.0%**
d31.3	367.1	337.5	396.2	352.5	596.1	244.7	213.8	239.7	d13.0	**400**	**500**	Working Cap'l ($mill)	**800**
124.3	524.4	524.5	524.1	689.4	897.6	1102.1	1053.4	1470.4	1387.6	**1775**	**1600**	Long-Term Debt ($mill)	**1000**
797.3	850.5	816.0	961.7	927.8	1045.5	1003.8	1094.3	1127.5	1346.5	**1650**	**1700**	Shr. Equity ($mill)	**2500**
19.0%	9.6%	16.3%	18.5%	18.5%	16.6%	16.5%	24.4%	22.2%	22.6%	**19.0%**	**21.0%**	Return on Total Cap'l	**25.0%**
21.5%	14.7%	26.0%	27.3%	30.9%	29.4%	32.6%	46.1%	49.1%	43.7%	**39.0%**	**41.0%**	Return on Shr. Equity	**35.0%**
12.2%	5.5%	15.5%	17.3%	17.8%	16.2%	17.4%	30.9%	30.4%	25.8%	**22.5%**	**23.5%**	Retained to Com Eq	**21.5%**
44%	62%	40%	37%	43%	45%	47%	33%	38%	41%	**42%**	**42%**	All Div'ds to Net Prof	**38%**

CAPITAL STRUCTURE as of 12/31/20
Total Debt $1770.6 mill. **Due in 5 Yrs** $538 mill.
LT Debt $1770.6 mill. **LT Interest** $60.0 mill.

(Total interest coverage: 15.0x)
(55% of Cap'l)

Leases, Uncapitalized Annual rentals $40.7 mill.
Pfd Stock None

Common Stock 115,798,817 shs.
as of 1/26/21

MARKET CAP: $16.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2019	2020	12/31/20
Cash Assets	273.2	476.6	365.6
Receivables	664.0	711.3	625.0
Inventories	--	--	--
Other	105.1	140.1	157.9
Current Assets	1042.3	1328.0	1148.5
Accts Payable	711.7	829.9	719.0
Debt Due	--	399.9	--
Other	90.9	111.2	118.9
Current Liab.	802.6	1341.0	837.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	9.0%	12.0%	5.0%
"Cash Flow"	12.5%	16.5%	9.0%
Earnings	12.0%	18.0%	10.5%
Dividends	18.0%	16.0%	10.5%
Book Value	5.5%	6.5%	9.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	924.8	1012.8	1071.9	1320.4	4329.9
2019	972.8	953.4	1224.8	1211.2	4362.2
2020	948.6	968.6	1249.9	1361.9	4529.0
2021	1017.4	1054.9	**1290**	**1387.7**	**4750**
2022	**1070**	**1110**	**1355**	**1465**	**5000**

Fiscal Year Ends	EARNINGS PER SHARE AB Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	.54	.79	1.00	1.86	4.19
2019	.79	.56	1.59	1.72	4.66
2020	.68	.53	1.67	2.15	5.03
2021	.98	.73	**1.75**	**2.12**	**5.50**
2022	**.85**	**.85**	**1.95**	**2.35**	**6.00**

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.33	.33	.365	.365	1.43
2018	.365	.365	.485	.485	1.70
2019	.485	.485	.540	.540	2.05
2020	.540	.540	.575	.575	2.23
2021					

BUSINESS: Broadridge Financial Solutions, Inc. is a leading provider of investor communication services, as well as technology-related solutions for the financial services industry. The bulk of its customers are in the United States, Canada, and the United Kingdom. On behalf of its clients, Broadridge processes and distributes proxy materials, regulatory reports, sales & educational content, newsletters, trade confirmations, and account statements. Incorporated: DE. Has about 11,000 employees. President & CEO: Timothy Gokey. Officers/directors own 2.0% of the common stock; Vanguard, 12.5%; BlackRock Inc., 9.0%; Janus, 5.5%. (10/20 proxy). Address: 1981 Marcus Avenue, Lake Success, NY 11042. Telephone: (516) 472-5400. Internet: www.broadridge.com

Broadridge Financial Solutions recorded solid results for the December quarter. The company's primary performance measure, year-over-year recurring revenue growth, came in at 7% for the period, putting it on track to reach the high end of its 3% to 6% goal for the year. New customers drove the bulk of that results, and remained the biggest driver of both segments. Renewal rates have also been strong, putting the company in a good position leading up to the 2021 proxy season. Meanwhile, the operating margin increased 150 basis points and adjusted earnings per share rose 38%.

The Investor Communications business is benefiting from some long-term trends. The unit increased its top line by 7% in the quarter, thanks partly to strong record growth of 24%. Activity has been healthy across virtually all its broker dealer clients, particularly the online variety. The business is reportedly benefiting from widespread introduction of commission-free trading for retail investors, and the corresponding increase in ownership of individual shares. In the second half of the fiscal year, management is calling for low double-digit growth across stock records. The three-year objective assumes that rate moderates to the mid-single digit range. Elsewhere, BR is seeing strong demand for virtual shareholder meetings due to the pandemic.

The Global Technology and Operations business is also performing well. The unit recorded top-line growth of 8% in the quarter, thanks largely to higher trading volumes and new customers. Much of the progress is coming from retail investors. However, due to an influx in trading volume related to the initial spread of the pandemic, comparisons for both the third and fourth quarters are quite difficult.

These timely shares may interest momentum investors. The company should continue to invest in technology, products, and people as clients transition to digital communication methods. Broadridge's three-year growth objectives include 7%-9% recurring revenue growth and an 8%-12% adjusted earnings advance, which we view as achievable. Still, much of that already appears reflected in the stock price at the moment.

Kevin Downing *February 19, 2021*

(A) Fiscal years end June 30th.
(B) Fully diluted earnings. Excludes discontinued ops: '12, ($0.01); '11, ($0.02); '10, ($0.26). Next earnings report due in early May. May not sum due to rounding.
(C) Dividends historically paid early March, June, Sept., and December.
(D) Includes intangibles. In 2020: $2.3 bill. or $19.62/sh.
(E) In millions.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	95
Earnings Predictability	85

BRADY CORP. 'A' NYSE-BRC

RECENT PRICE 50.68 | P/E RATIO 19.9 (Trailing: 24.7 Median: 19.0) | RELATIVE P/E RATIO 0.93 | DIV'D YLD 1.7% | VALUE LINE

TIMELINESS 4 Lowered 12/4/20
SAFETY 3 New 1/26/07
TECHNICAL 5 Lowered 1/8/21
BETA 1.00 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$34-$75	$55 (10%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+60%)	13%
Low	50	(Nil)	2%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	70	74	82
to Sell	110	105	93
Hld's(000)	40746	40162	39902

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	33.1	35.4	38.7	34.9	36.4	31.8	29.0	39.6	40.5	47.3	59.1	58.2	
Low:	14.4	24.2	24.4	24.7	28.4	21.0	18.5	20.3	31.7	35.0	42.2	33.0	

Target Price Range
2023 | 2024 | 2025

% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-21.3	15.7
3 yr.	19.3	23.5
5 yr.	86.1	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
13.94	16.55	18.96	25.18	28.33	23.01	23.93	25.21	25.69	22.11	23.90	22.86	22.19	21.68	22.57	21.90	20.80	*20.95*	Sales per sh A	*22.80*
1.48	2.20	2.59	3.12	3.59	2.76	2.78	3.09	1.96	2.85	2.42	2.05	2.23	2.39	2.65	2.93	2.61	*2.90*	"Cash Flow" per sh	*3.80*
1.07	1.64	2.07	2.10	2.41	1.71	1.76	2.17	1.07	1.93	1.53	1.27	1.56	1.84	2.12	2.46	2.11	*2.55*	Earnings per sh ABC	*3.25*
.42	.44	.52	.56	.60	.68	.70	.72	.74	.76	.78	.80	.81	.82	.83	.85	.87	*.90*	Div'ds Decl'd per sh BD■	*1.10*
.31	.44	.73	.96	.49	.46	.50	.39	.47	.69	.85	.52	.34	.30	.42	.62	.52	*.50*	Cap'l Spending per sh	*.60*
8.37	10.08	13.89	16.46	19.01	18.11	19.10	21.76	19.58	15.95	14.30	11.47	11.95	13.63	14.46	16.05	16.60	*17.90*	Book Value per sh E	*23.25*
48.16	49.33	53.73	54.13	53.75	52.53	52.62	53.13	51.55	52.10	51.25	51.25	50.51	51.35	52.00	53.00	52.00	*53.00*	Common Shs Outst'g F	*55.00*
18.2	17.7	17.0	16.9	14.5	14.7	16.8	14.9	27.8	16.6	19.0	20.2	16.2	19.6	17.7	18.3	24.0		Avg Ann'l P/E Ratio	*20.0*
.96	.94	.92	.90	.87	.98	1.07	.93	1.77	.93	1.00	1.02	.85	.99	.96	.97	1.18		Relative P/E Ratio	*1.10*
2.2%	1.5%	1.5%	1.6%	1.7%	2.7%	2.4%	2.2%	2.5%	2.4%	2.7%	3.1%	3.2%	2.3%	2.2%	1.9%	1.7%		Avg Ann'l Div'd Yield	*1.7%*

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
1259.1	1339.6	1324.3	1152.1	1225.0	1171.7	1120.6	1113.3	1173.9	1160.6	1081.3	*1110*	Sales ($mill) A	*1260*
15.7%	16.4%	15.1%	16.9%	13.6%	11.6%	13.4%	14.2%	15.2%	16.0%	14.9%	*17.0%*	Operating Margin	*19.0%*
53.0	48.8	44.0	48.7	44.6	39.5	32.4	27.3	25.4	23.8	23.4	*25.0*	Depreciation ($mill)	*30.0*
93.4	115.3	57.3	99.9	79.5	65.5	80.1	95.6	112.2	131.3	112.4	*130*	Net Profit ($mill)	*180*
25.1%	24.7%	58.6%	24.7%	28.0%	23.5%	26.7%	24.5%	26.2%	20.3%	20.1%	*20.0%*	Income Tax Rate	*20.0%*
7.4%	8.6%	4.3%	8.7%	6.5%	5.6%	7.1%	8.6%	9.6%	11.3%	10.4%	*11.7%*	Net Profit Margin	*14.3%*
375.2	456.4	383.9	189.0	171.8	199.3	240.7	220.6	280.4	331.3	323.6	*330*	Working Cap'l ($mill)	*400*
382.9	331.9	254.9	201.2	159.3	200.8	212.0	104.5	52.6	- -	- -	*Nil*	Long-Term Debt ($mill)	*30.0*
1005.0	1156.2	1009.4	830.8	733.1	587.7	603.6	700.1	752.1	850.8	863.1	*950*	Shr. Equity ($mill) E	*1300*
7.4%	8.4%	5.3%	10.5%	9.7%	9.0%	10.3%	12.2%	14.1%	15.6%	13.1%	*13.5%*	Return on Total Cap'l	*13.5%*
9.3%	10.0%	5.7%	12.0%	10.8%	11.1%	13.3%	13.7%	14.9%	15.4%	13.0%	*13.5%*	Return on Shr. Equity	*14.0%*
5.6%	6.7%	1.8%	7.3%	5.3%	4.2%	6.5%	7.7%	9.2%	10.2%	7.7%	*8.5%*	Retained to Com Eq	*9.5%*
39%	33%	68%	39%	51%	63%	51%	44%	38%	34%	41%	*36%*	All Div'ds to Net Prof	*33%*

CAPITAL STRUCTURE as of 10/31/20
Total Debt Nil. **Due in 5 Yrs** Nil.
LT Debt Nil. **LT Interest** Nil.
(Total interest coverage: NMF)
(0% of Capital)
Leases, Uncapitalized Annual rentals $16.7 mill.
No Defined Pension Benefit Plan
Preferred Stock None
Common Stock 52,014,228 shs.
48,475,600 Class A shares and 3,538,628 Class B voting shares, all of which are held by trusts controlled by the Brady family. Class B stock is the only voting stock.
MARKET CAP: $2.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	10/31/20
Cash Assets	279.1	217.6	256.3
Receivables	158.1	146.2	156.8
Inventory (LIFO)	120.0	135.7	120.2
Other	16.1	9.9	11.5
Current Assets	573.3	509.4	544.8
Accts Payable	64.8	62.5	62.9
Debt Due	50.2	- -	- -
Other	127.0	123.3	142.1
Current Liab.	242.0	185.8	205.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '23-'25
Sales	-1.5%	-1.0%	*1.0%*
"Cash Flow"	-1.0%	2.0%	*7.0%*
Earnings	1.5%	7.0%	*8.0%*
Dividends	2.5%	1.5%	*5.5%*
Book Value	-2.0%	2.5%	*8.0%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Oct.31	Jan.31	Apr.30	Jul.31	Full Fiscal Year
2017	280.2	268.0	275.9	289.2	1113.3
2018	290.2	287.8	298.4	297.5	1173.9
2019	293.2	282.4	289.7	295.3	1160.6
2020	287.0	276.7	265.9	251.7	1081.3
2021	277.2	*270*	*280*	*282.8*	*1110*

Fiscal Year Ends	EARNINGS PER SHARE ABC Oct.31	Jan.31	Apr.30	Jul.31	Full Fiscal Year
2017	.44	.49	.43	.48	1.84
2018	.49	.48	.49	.66	2.12
2019	.58	.55	.65	.68	2.46
2020	.70	.62	.26	.53	2.11
2021	.64	*.60*	*.65*	*.66*	*2.55*

Cal-endar	QUARTERLY DIVIDENDS PAID BD■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.205	.205	.205	.208	.82
2018	.208	.208	.208	.213	.84
2019	.213	.213	.213	.218	.86
2020	.218	.218	.218	.22	.87
2021					

BUSINESS: Brady Corporation engages in the manufacture and marketing of identification solutions and specialty materials worldwide. Its products help customers increase safety, security, performance, and productivity and include high-performance labels and signs, safety devices, printing systems and software, and precision die-cut materials. Brady serves customers in electronics, telecommunications, manufacturing, electrical, construction, education, and a variety of other industries. Employs about 5,400. Officers & directors own 5.5% of Class A nonvoting common (9/20 Form 10-K). President & CEO: J. Michael Nauman. Incorporated: WI. Address: 6555 West Good Hope Road, Milwaukee, WI 53223. Telephone: 414-358-6600. Internet: www.bradyid.com.

Brady's fiscal first-quarter (ended October 31st) performance reflected an improved cost structure. Over the last few months, facility closures associated with COVID-19 have left demand for the company's ID Solutions rather weak. Work-from-home activity has softened the need for labeling systems, product ID, and personal identification, and organic sales have fallen in the high single-digit vicinity in response to these headwinds. The Workplace Safety division has been able to pick up some of the slack, owing to the distribution of social-distancing floor markers, personal hygiene signs, and temporary barriers. But, with sales still falling some 3% in the fiscal first quarter, investments in capacity-enhancing machinery, a stronger online presence, and factory automation showed their worth. Brady lost only 40 basis points on the gross margin and beat our $0.60 share-net estimate by nearly a nickel. The company will need to continue to lean on these efficiency measures moving forward, especially given the reinstatement of certain lockdown protocols taking place around the globe.

Demand for COVID-19-related products is beginning to taper. The sale of these offerings has represented somewhat of a saving grace for Brady over the last six months. But, with most businesses and municipalities now equipped with the signage and fixtures necessary to come into compliance with government-imposed restrictions, they are likely to act as less of a safety net moving forward. This combines with ongoing uncertainty surrounding the timetable necessary to get many businesses open again. All told, we expect the top line to take only a modest step forward in fiscal 2021, against what should have been a relatively easy comparison.

The Timeliness rank of Brady stock has been lowered a notch, to 4 (Below Average). Investments in new product development, IT, and facility automation ought to continue amid the challenging operating environment. Solid operating cash flow should also keep dividend payments on the rise. However, now that the stock has recovered some 20% in value dating back to our October report, we think most investors would do well to defer commitments here.

Robert J. Scrudato *January 8, 2021*

(A) Fiscal years end July 31st. (B) Egs. and dividends per Class A nonvoting common shares only. (C) GAAP egs. thru '06. Excludes nonrecurring charges: '07, 10¢; '08, 27¢; '09, 38¢; '10, 21¢; '11, 13¢; '12, 25¢; '13, $4.68; '14, $2.42; '15, $1.21; '18, 40¢. Next egs. report due late February. (D) Dividends historically paid in Jan., Apr., July, and Oct. ■ Dividend reinvestment plan available. (E) Includes intangibles. In '20: $438.4 million, $8.24/sh. (F) In millions. Includes Class B Voting shares.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	40
Earnings Predictability	75

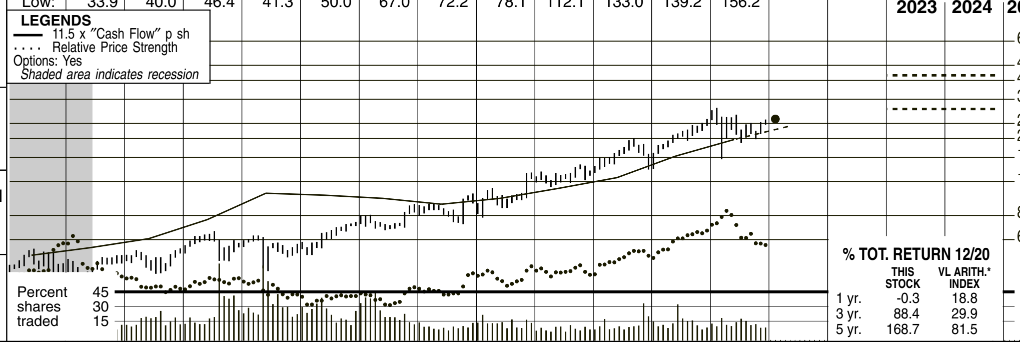
CACI INT'L INC. NYSE-CACI

RECENT PRICE 253.09 | P/E RATIO 16.9 (Trailing: 18.6 Median: 16.0) | RELATIVE P/E RATIO 0.78 | DIV'D YLD Nil | VALUE LINE

TIMELINESS 3 Lowered 12/18/20
SAFETY 3 New 5/31/02
TECHNICAL 3 Lowered 2/5/21
BETA .95 (1.00 = Market)

High:	49.9	54.1	66.5	63.1	74.3	91.8	104.1	133.7	147.3	200.9	252.7	288.6
Low:	33.9	40.0	46.4	41.3	50.0	67.0	72.2	78.1	112.1	133.0	139.2	156.2

LEGENDS
—— 11.5 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range 2023 | 2024 | 2025

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$185-$399	$292 (15%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	425	(+70%)	14%
Low	285	(+15%)	3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	177	187	169
to Sell	202	205	225
Hld's(000)	22213	25406	21451

Percent shares traded 45 30 15

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-0.3	18.8
3 yr.	88.4	29.9
5 yr.	168.7	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
39.32	54.11	57.33	64.65	80.11	91.09	104.11	118.49	153.20	158.56	151.68	137.01	153.93	178.02	180.86	200.42	227.95	243.30	Revenues per sh A	278.85
2.84	3.91	3.86	3.92	4.33	4.74	5.27	6.63	9.07	8.86	8.53	7.95	8.53	9.62	10.93	14.13	17.22	20.35	"Cash Flow" per sh	25.75
2.13	2.79	2.72E	2.51	2.72	3.14	3.47	4.61	5.96	6.35	5.38	5.17	5.76	6.53	7.84	10.46	12.61	14.95	Earnings per sh AB	19.75
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Nil	Div'ds Decl'd per sh	Nil
.30	.29	.31	.26	.45	.41	.74	.48	.74	.66	.65	.72	.86	1.77	1.68	1.93	2.88	2.75	Cap'l Spending per sh	3.05
17.10	20.41	24.34	27.15	30.38	33.14	38.78	43.37	47.16	51.89	57.74	61.20	66.08	73.32	85.28	95.31	106.05	122.55	Book Value per sh C	179.80
29.14	29.99	30.62	29.98	30.22	29.97	30.25	30.20	24.64	23.22	23.50	24.18	24.32	24.46	24.70	24.88	25.09	25.30	Common Shs Outst'g D	26.00
20.5	20.2	22.4	20.9	17.4	13.6	13.6	11.5	9.3	8.7	13.2	15.8	15.9	17.5	18.2	17.2	18.5		Avg Ann'l P/E Ratio	18.0
1.08	1.08	1.21	1.11	1.05	.91	.87	.72	.59	.49	.69	.80	.83	.88	.98	.92	.91		Relative P/E Ratio	1.00
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		Avg Ann'l Div'd Yield	Nil

CAPITAL STRUCTURE as of 9/30/20
Total Debt $1614.3 mill. **Due in 5 Yrs** $1614 mill.
LT Debt $1567.4 mill. **LT Interest** $56.1 mill.
(Total interest coverage: 8.2x)
(36% of Cap'l)

Leases, Uncapitalized Annual rentals $78.3 mill.

No Defined Benefit Pension Plan

Common Stock 25,218,802 shs.
as of 10/15/20

MARKET CAP: $6.4 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
3149.1	3577.8	3774.5	3682.0	3564.6	3313.5	3744.1	4354.6	4467.9	4986.3	5720.0	6155	Revenues ($mill) A	7250
7.9%	8.6%	9.4%	8.8%	9.0%	9.1%	8.8%	8.5%	9.2%	9.3%	9.9%	11.0%	Operating Margin	12.0%
53.0	56.1	56.0	54.1	65.2	66.1	64.8	71.8	72.2	85.9	110.7	130	Depreciation ($mill)	150
106.5	144.2	167.5	151.7	135.3	126.2	142.8	163.7	197.9	265.6	321.5	385	Net Profit ($mill)	520
36.3%	36.4%	39.0%	37.7%	38.0%	37.4%	36.1%	34.2%	33.7%	19.0%	20.0%	22.5%	Income Tax Rate	22.5%
3.4%	4.0%	4.4%	4.1%	3.8%	3.8%	3.8%	3.8%	4.4%	5.3%	5.6%	6.3%	Net Profit Margin	7.2%
182.4	344.9	200.9	d14.5	313.3	276.8	356.6	353.2	392.2	339.8	316.7	675	Working Cap'l ($mill)	2450
252.5	402.4	532.0	300.8	1238.7	1029.3	1402.1	1177.6	1015.4	1618.1	1357.5	1575	Long-Term Debt ($mill)	1575
1173.2	1309.6	1162.0	1204.9	1356.9	1480.1	1607.2	1793.6	2106.8	2371.3	2661.2	3100	Shr. Equity ($mill)	4675
8.4%	9.1%	10.6%	10.9%	5.9%	5.7%	5.4%	6.3%	7.0%	7.3%	8.7%	8.5%	Return on Total Cap'l	8.5%
9.1%	11.0%	14.4%	12.6%	10.0%	8.5%	8.9%	9.1%	9.4%	11.2%	12.1%	12.5%	Return on Shr. Equity	11.0%
9.1%	11.0%	14.4%	12.6%	10.0%	8.5%	8.9%	9.1%	9.4%	11.2%	12.1%	12.5%	Retained to Com Eq	11.0%
--	--	--	--	--	--	--	--	--	--	--	Nil	All Div'ds to Net Prof	Nil

CURRENT POSITION ($MILL.)	2019	2020	9/30/20
Cash Assets	72.0	107.2	124.9
Receivables	869.8	841.2	820.2
Other	89.7	137.5	155.8
Current Assets	1031.5	1085.9	1100.9
Accts Payable	118.9	90.0	79.3
Debt Due	46.9	46.9	46.9
Other	525.9	632.3	627.2
Current Liab.	691.7	769.2	753.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '23-'25
Revenues	8.5%	6.5%	6.5%
"Cash Flow"	11.5%	11.0%	13.0%
Earnings	12.5%	13.0%	14.0%
Dividends	--	--	Nil
Book Value	11.0%	11.0%	13.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2017	1073.3	1057.5	1086.4	1137.4	4354.6
2018	1085.8	1087.9	1124.1	1170.1	4467.9
2019	1165.9	1181.6	1265.0	1373.8	4986.3
2020	1363.4	1395.5	1465.6	1495.5	5720.0
2021	1459.5	1495	1575	1625.5	6155

Fiscal Year Ends	EARNINGS PER SHARE A B Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2017	1.47	1.69	1.61	1.76	6.53
2018	1.67	2.00	2.33	1.84	7.84
2019	3.10	2.71	2.69	1.96	10.46
2020	2.66	3.11	3.16	3.68	12.61
2021	3.67	3.60	3.75	3.93	14.95

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017					
2018	NO CASH DIVIDENDS BEING PAID				
2019					
2020					
2021					

BUSINESS: CACI International Inc is a provider of Expertise and Technology to Enterprise and Mission customers, on both a domestic and international basis, supporting national security missions and government modernization/transformation in the intelligence, defense, and federal civilian sectors. Fiscal 2020 revenue by customer type: Department of Defense (70%), Federal Civilian Agencies (26%) and Commercial and other (4%). Has about 22,900 employees. The Vanguard Group, Inc. owns 10.6% of common stock; Blackrock, Inc., 9.3%; Dimensional Fund Advisors LP, 5.1%; officers and directors, 1.6% (10/20 proxy). Pres. & CEO: John S. Mengucci. Inc.: DE. Addr.: 1100 North Glebe Rd., Arlington, VA 22201. Tel.: 703-841-7800. Internet: www.caci.com.

CACI International raised its guidance for fiscal 2021 (ends June 30th). The improved outlook for the provider of expertise and technology reflects the solid operating performance in the fiscal first quarter. Revenues of $1.46 billion and earnings of $3.67 a share increased 7% and 38% year over year, respectively. Continued execution against the company's growing backlog also prompted the upward revision. For the full year, revenues are now forecasted to land between $6.05 billion and $6.25 billion ($6.0 billion-$6.2 billion previously), with organic growth of 6.3% at the midpoint (5.5% previously). In addition to higher revenues, profitability ought to be driven by favorable fixed-price contract performance, lower indirect costs, and reduced interest expense. All told, earnings per share are targeted to be in the range of $14.47-$15.25, up from the previous expectation of $13.50-$14.28. For our part, we have upped our respective top- and bottom-line estimates by $25 million and $0.85 a share, to $6.16 billion (+8% year over year) and $14.95 (+19%). (Of note, the company was scheduled to report its fiscal second-quarter results shortly after we rolled the presses on this Issue, and CACI may well update its guidance.)

Enhanced business development ought to continue to drive strong contract awards and backlog. For the trailing 12 months ended September 30th, contract awards were $9.4 billion and the book-to-bill ratio was 1.6x. Moreover, the total and funded backlogs were $21.9 billion (+13% year over year) and $3.4 billion (+4%), respectively. Its forward indicators were also positive. CACI had a pipeline of submitted bids of $9.5 billion and $16.4 billion in bids expected to be submitted in the next two quarters (70% for new business). However, there was one caveat. Fiscal first-quarter bookings were down 54%, to $1.8 billion.

We like these shares. Although neutrally ranked, the stock offers above-average capital appreciation potential over the 2023-2025 period. The company's strong cash flow and borrowing capacity also add to our optimism here. In fact, management stated that free cash flow is projected to be approximately $530 million in fiscal 2021.

Michelle Jensen *February 5, 2021*

(A) Fiscal year ends June 30th.
(B) Diluted earnings. Includes stock option expense starting in 2006. Excludes nonrecurring gains/(losses): '18, $4.09. May not sum to total due to rounding. Q3 FY'21 earnings report due early May.
(C) Includes intangibles. At 6/30/20: $3.8 billion, or $151.99/share.
(D) In millions.
(E) Stock option expense reduced F'06 profits by $0.22 a share.

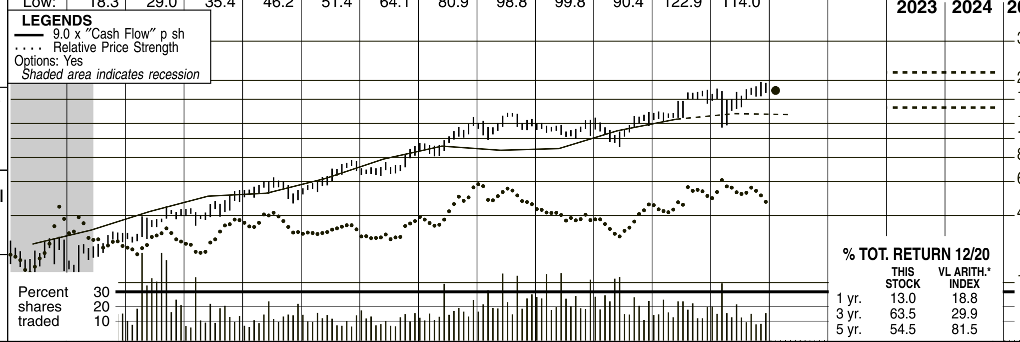
Company's Financial Strength	B+
Stock's Price Stability	80
Price Growth Persistence	75
Earnings Predictability	85

CASEY'S GEN'L STRS NDQ-CASY

RECENT PRICE **177.44** | P/E RATIO **23.5** (Trailing: 20.1 Median: 20.0) | RELATIVE P/E RATIO **1.11** | DIV'D YLD **0.8%** | VALUE LINE

TIMELINESS 3 Lowered 1/24/20
SAFETY 3
TECHNICAL 3 Lowered 1/8/21
BETA .85 (1.00 = Market)

High:	33.1	44.7	54.2	63.0	77.6	91.4	129.5	136.2	125.4	137.1	179.2	196.6	
Low:	18.3	29.0	35.4	46.2	51.4	64.1	80.9	98.8	99.8	90.4	122.9	114.0	



18-Month Target Price Range
Low-High Midpoint (% to Mid)
$108-$225 $167 (-5%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	220	(+25%)	7%
Low	145	(-20%)	-4%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	175	178	160
to Sell	192	190	187
Hld's(000)	32419	32519	31441

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	13.0	18.8
3 yr.	63.5	29.9
5 yr.	54.5	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
56.00	69.79	79.79	95.15	92.20	91.06	148.43	183.21	189.06	203.60	199.74	182.36	193.64	227.56	255.13	249.26	*229.75*	*259.45*	Sales per sh A	*275.00*
1.89	2.39	2.46	3.01	3.17	3.74	4.66	5.59	5.80	6.90	8.72	10.16	9.68	9.87	12.23	13.99	*14.95*	*14.80*	"Cash Flow" per sh	*15.85*
.85	1.24	1.20	1.67	1.82	2.31	2.22	3.07	2.86	3.46	4.68	5.73	4.48	3.73	5.51	7.10	*8.10*	*7.90*	Earnings per sh A B	*8.25*
.20	.18	.20	.26	.29	.32	.46	.60	.66	.71	.80	.86	.96	1.04	1.13	1.25	1.28	*1.28*	Div'ds Decl'd per sh C	*1.60*
9.35	10.39	11.31	12.76	14.18	16.19	10.64	13.27	15.70	18.69	22.51	27.74	30.71	34.47	38.43	44.64	*50.25*	*55.40*	Book Value per sh	*55.00*
50.19	50.37	50.59	50.73	50.84	50.93	37.97	38.14	38.35	38.51	38.89	39.06	38.77	36.87	36.66	36.81	*37.00*	*37.00*	Common Shs Outst'g D	*40.00*
20.8	17.9	20.0	16.0	13.8	12.9	17.8	15.6	19.4	19.6	17.0	18.6	26.8	29.8	22.2	21.3	*18.5*		Avg Ann'l P/E Ratio	*22.0*
1.10	.95	1.08	.85	.83	.86	1.13	.98	1.23	1.10	.89	.94	1.41	1.50	1.17	1.18	*.95*		Relative P/E Ratio	*1.20*
1.1%	.8%	.8%	1.0%	1.2%	1.1%	1.2%	1.2%	1.2%	1.0%	1.0%	.8%	.8%	.9%	.9%	.8%	.9%		Avg Ann'l Div'd Yield	*1.1%*

CAPITAL STRUCTURE as of 10/31/20
Total Debt $1364.2 mill. **Due in 5 Yrs** $785.0 mill.
LT Debt $1361.9 mill. **LT Interest** $45.0 mill.
Incl. $23.8 mill. capitalized leases
(LT interest earned: 25.0x; total interest coverage: 12.1x) (42% of Cap'l)

Leases, Uncapitalized Annual rentals $1.8 mill.
No Defined Benefit Pension Plan

Pfd Stock None
Common Stock 36,935,747 shs.

MARKET CAP: $6.6 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
5635.2	6987.8	7250.8	7840.3	7767.2	7122.1	7506.6	8391.1	9352.9	9175.3	*8500*	*9600*	Sales ($mill) A	*11000*
15.6%	14.4%	14.9%	15.7%	18.5%	22.7%	22.4%	21.1%	20.9%	23.4%	*26.0%*	*24.0%*	Gross Margin	*22.0%*
4.9%	4.5%	4.4%	4.8%	6.2%	7.9%	6.8%	5.8%	5.4%	6.5%	*7.0%*	*5.5%*	Operating Margin	*5.5%*
1637	1699	1749	1808	1878	1931	1978	2073	2146	2207	*2225*	*2250*	Number of Stores E	*2500*
94.6	116.8	110.6	134.5	183.0	226.0	177.5	143.0	203.9	263.8	*300*	*290*	Net Profit ($mill)	*330*
37.4%	36.4%	36.8%	34.9%	35.7%	35.2%	34.2%	33.3%	22.6%	22.9%	*23.0%*	*23.0%*	Income Tax Rate	*23.0%*
1.7%	1.7%	1.5%	1.7%	2.4%	3.2%	2.4%	1.7%	2.2%	2.9%	*3.5%*	*3.0%*	Net Profit Margin	*3.0%*
d.6	d27.3	d125.0	15.2	d59.6	d61.7	d95.9	d111.1	d180.3	d676.1	*d250*	*d225*	Working Cap'l ($mill)	*d125*
678.7	667.9	653.1	853.6	838.2	822.9	907.4	1291.7	1283.3	714.5	*1360*	*1450*	Long-Term Debt ($mill)	*1600*
403.9	506.0	602.3	719.9	875.2	1083.5	1190.6	1271.1	1408.8	1643.2	*1860*	*2050*	Shr. Equity ($mill)	*2200*
10.0%	11.4%	10.2%	9.8%	11.9%	12.9%	9.4%	6.6%	8.6%	12.3%	*10.0%*	*9.0%*	Return on Total Cap'l	*9.0%*
23.4%	23.1%	18.4%	18.7%	20.9%	20.9%	14.9%	11.2%	14.5%	16.1%	*16.0%*	*14.0%*	Return on Shr. Equity	*15.0%*
18.4%	18.6%	14.3%	14.9%	17.5%	17.8%	11.8%	8.2%	11.4%	13.1%	*13.5%*	*12.0%*	Retained to Com Eq	*12.5%*
22%	20%	22%	20%	16%	15%	21%	27%	21%	18%	*16%*	*16%*	All Div'ds to Net Prof	*19%*

CURRENT POSITION ($MILL.)	2018	2019	10/31/20
Cash Assets	63.3	78.3	404.7
Receivables	37.9	48.5	56.1
Inventory (LIFO)	273.0	236.0	249.8
Other	36.4	24.5	18.2
Current Assets	410.6	387.3	728.8
Accts Payable	335.2	184.8	323.7
Debt Due	92.2	690.3	2.3
Other	163.5	188.3	236.0
Current Liab.	590.9	1063.4	562.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '23-'25
Sales	9.5%	3.0%	3.0%
"Cash Flow"	14.0%	13.0%	6.0%
Earnings	13.0%	11.5%	9.0%
Dividends	16.0%	11.0%	6.5%
Book Value	10.5%	18.5%	7.0%

Fiscal Year Begins	QUARTERLY SALES ($ mill.) A Jul.31	Oct.31	Jan.31	Apr.30	Full Fiscal Year
2017	2093.8	2153.7	2054.6	2089.0	8391.1
2018	2588.4	2538.0	2048.1	2178.4	9352.9
2019	2626.6	2487.6	2248.2	1812.9	9175.3
2020	2105.0	2215.9	*2019.1*	*2160*	*8500*
2021	*2400*	*2450*	*2350*	*2400*	*9600*

Fiscal Year Begins	EARNINGS PER SHARE A B Jul.31	Oct.31	Jan.31	Apr.30	Full Fiscal Year
2017	1.46	1.28	.48	.51	3.73
2018	1.90	1.80	1.13	.68	5.51
2019	2.31	2.21	.91	1.67	7.10
2020	3.24	3.00	*.96*	*.90*	*8.10*
2021	*2.70*	*2.40*	*1.15*	*1.65*	*7.90*

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.24	.24	.26	.26	1.00
2018	.26	.26	.29	.29	1.10
2019	.29	.29	.32	.32	1.22
2020	.32	.32	.32	.32	1.28
2021					

BUSINESS: Casey's General Stores operates convenience stores in sixteen Midwestern states, primarily in Iowa, Missouri, and Illinois. Stores sell gasoline and a broad selection of food (including freshly prepared pizza, donuts, hamburgers, etc.), beer and other beverages, and non-food items. As of 4/30/20, Casey's had 2,207 company-owned locations (incl. land for most). In fiscal 2019, gasoline accounted for 60% of net sales. Average retail sales/store were $4.2 mill. in 2019, up from $4.4 mill. in 2018. Has 17,282 full-time employees. Off. & Dir. own less than 1% of common stock outstanding (7/20 Proxy). Chair.: H. Lynn Horak. Pres. & CEO: Darren M. Rebelez. Incorporated: IA. Address: One Convenience Blvd., Ankeny, IA 50021. Tel.: 515-965-6100. Internet: www.caseys.com.

At the midpoint of fiscal 2020, operating results for Casey's General Stores have been a mixed bag. (Year ends April 30, 2021.) During the first two quarters, sales declined nearly 16% from the same span in fiscal 2019, to a combined $4.32 billion. The gross margin expanded significantly, from 22.0% to 29.1%, owing to a substantial drop in the cost of goods sold. All told, earnings jumped 38% during the first six months of fiscal 2020, to a total of $6.24 per share.

Performance across different product categories has been hit or miss. Revenues in the Fuel (53% of total sales) and Prepared Food & Fountain (13%) segments regressed 28% and 6%, respectively, in the first half of the year, from the likewise stretch in fiscal 2019. On the plus side, sales in the Grocery & Other Merchandise (34%) category increased 8% through the October period.

The company ought to have the financial wherewithall to continue investing in the store base. Total debt stood at $1.36 billion at the end of October, an increase of 6% from the same point in fiscal 2019. The ratio of debt-to-total capital expanded from last year's reading of 31%, but remained decent at 42%. Capital investments have been more modest thus far in fiscal 2020, at $158.8 million, compared with $242.2 million a year ago.

We have lifted our bottom-line estimates for this fiscal year and next, while maintaining our sales forecasts. We've added $0.85 to our share-net target for fiscal 2020, to $8.10, largely due to Casey's better-than-expected first-half performance. Although we have added $0.40 to our bottom-line call for fiscal 2021, we expect margins to revert to more-normal levels next year, with earnings likely declining to $7.90 per share.

Shares of Casey's General Stores do not stand out, at present. The stock is ranked to only mirror the broader market in the coming six to 12 months (Timeliness: 3), sapping the appeal for short-term investors. In addition, total return potential to mid-decade is limited at the recent quotation. Finally, although the payout is well covered, at 16% of our fiscal 2021 share-net estimate, the dividend yield falls well short of the *Value Line* median.

Sharif Abdou *January 15, 2021*

(A) Fiscal year ends April 30th of the following calendar year. Sales figures exclude royalty income and the revenues from franchised stores.
(B) Diluted egs. Excludes nonrecurring gain/(loss): '04, (9¢); '17, $4.61. Next earnings report due early March. (C) Dividends historically paid early February, May, August, and November.
(D) In millions.
(E) Includes only company-owned stores.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	70
Earnings Predictability	65

CADENCE DESIGN NDQ-CDNS

RECENT PRICE 135.90 | P/E RATIO 48.4 (Trailing: 54.4; Median: 20.0) | RELATIVE P/E RATIO 2.23 | DIV'D YLD Nil | VALUE LINE

TIMELINESS 2 Lowered 1/22/21
SAFETY 2 Raised 6/26/20
TECHNICAL 3 Raised 2/5/21
BETA .90 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	8.2	8.7	11.7	13.8	16.0	19.5	23.3	28.0	45.6	47.4	75.3	136.8
Low:	3.0	5.4	8.1	9.7	12.3	13.6	16.5	18.3	25.2	35.5	41.4	51.4

Target Price Range 2023 | 2024 | 2025

LEGENDS
— 27.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$102-$198	$150 (10%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	130	(-5%)	-1%
Low	95	(-30%)	-8%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	235	295	342
to Sell	310	259	261
Hld's(000)	244187	240540	237397

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	96.7	18.8
3 yr.	226.2	29.9
5 yr.	555.6	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
4.41	4.73	5.40	5.88	4.03	3.17	3.50	4.22	4.73	5.07	5.42	5.50	6.53	6.89	7.64	8.35	*9.50*	*10.25*	Revenues per sh A	*13.25*
1.02	1.20	1.05	1.55	d6.69	d.21	.80	.60	.99	1.06	1.17	1.28	1.48	1.60	2.11	2.46	*3.00*	*3.15*	"Cash Flow" per sh	*4.00*
.66	.83	.46	1.01	d7.29	d.58	.48	.27	.77	.86	.94	1.09	1.21	1.40	1.87	2.20	*2.70*	*2.85*	Earnings per sh	*3.75*
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	*Nil*	Div'ds Decl'd per sh	*Nil*
.23	.26	.25	.30	.38	.15	.14	.12	.13	.16	.14	.14	.19	.21	.22	.27	*.30*	*.30*	Cap'l Spending per sh	*.30*
6.26	6.57	6.18	7.57	.40	.40	1.04	1.51	3.26	4.01	4.57	4.45	2.67	3.51	4.60	7.51	*9.20*	*10.60*	Book Value per sh C	*17.00*
271.56	280.96	274.91	274.69	257.86	268.65	267.12	272.68	280.64	288.13	291.58	309.39	278.10	282.07	280.02	279.86	*280.00*	*278.00*	Common Shs Outst'g D	*275.00*
21.4	18.1	38.0	20.3	--	--	14.4	36.7	15.5	16.2	17.6	18.3	19.7	25.3	22.8	29.3	*35.0*		Avg Ann'l P/E Ratio	*30.0*
1.13	.96	2.05	1.08	--	--	.92	2.30	.99	.91	.93	.92	1.03	1.27	1.23	1.59	*1.75*		Relative P/E Ratio	*1.65*
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		Avg Ann'l Div'd Yield	*Nil*

CAPITAL STRUCTURE as of 9/26/20
Total Debt $696.6 mill. **Due in 5 Yrs** $700 mill.
LT Debt $346.6 mill. **LT Interest** $15.5 mill.
(13% of Cap'l)

Leases, Uncapitalized: Annual rentals $29.3 mill.

No Defined Benefit Pension Plan

Common Stock 278,931,000 shares

MARKET CAP: $37.9 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
936.0	1149.8	1326.4	1460.1	1580.9	1702.1	1816.1	1943.0	2138.0	2336.3	*2655*	*2850*	Revenues ($mill) A	*3650*
10.6%	19.9%	27.3%	27.9%	28.8%	29.9%	29.1%	30.5%	33.3%	35.1%	*37.5%*	*36.5%*	Operating Margin	*36.5%*
88.3	91.6	60.7	54.2	54.7	53.9	59.1	59.0	65.4	69.7	*80.0*	*85.0*	Depreciation ($mill)	*100*
126.5	72.2	216.7	252.1	287.0	340.9	351.2	392.6	525.5	617.6	*755*	*790*	Net Profit ($mill)	*1025*
--	24.3%	26.0%	26.0%	26.0%	23.0%	23.0%	23.0%	16.0%	16.0%	*16.0%*	*16.0%*	Income Tax Rate	*16.0%*
13.5%	6.3%	16.3%	17.3%	18.2%	20.0%	19.3%	20.2%	24.6%	26.4%	*28.4%*	*27.7%*	Net Profit Margin	*28.0%*
181.8	48.6	173.9	72.9	458.6	428.5	116.4	337.6	242.1	496.9	*350*	*300*	Working Cap'l ($mill)	*350*
406.4	131.9	--	--	348.7	348.8	643.5	644.4	345.3	346.0	*350*	*350*	Long-Term Debt ($mill)	*350*
276.7	411.1	915.2	1156.1	1333.6	1376.1	741.8	989.2	1288.4	2102.9	*2570*	*2950*	Shr. Equity ($mill) C	*4650*
20.9%	17.0%	24.2%	22.5%	17.5%	20.4%	26.2%	24.8%	32.9%	25.6%	*26.0%*	*24.0%*	Return on Total Cap'l	*20.5%*
45.7%	17.6%	23.7%	21.8%	21.5%	24.8%	47.4%	39.7%	40.8%	29.4%	*29.5%*	*27.0%*	Return on Shr. Equity	*22.0%*
45.7%	17.6%	23.7%	21.8%	21.5%	24.8%	47.4%	39.7%	40.8%	29.4%	*29.5%*	*27.0%*	Retained to Com Eq	*22.0%*
--	--	--	--	--	--	--	--	--	--	--	*Nil*	All Div'ds to Net Prof	*Nil*

CURRENT POSITION ($MILL.)	2018	2019	9/26/20
Cash Assets	533.3	705.2	1306.6
Receivables	297.1	304.5	300.4
Inventory (FIFO)	28.2	55.8	48.0
Other	92.5	103.8	81.5
Current Assets	951.1	1169.3	1736.5
Accts Payable	256.5	316.9	290.9
Debt Due	100.0	--	350.0
Deferred Revenue	352.5	355.5	
Current Liab.	709.0	672.4	1117.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	5.5%	8.5%	*9.5%*
"Cash Flow"	--	14.0%	*11.5%*
Earnings	--	16.5%	*13.0%*
Dividends	--	--	*Nil*
Book Value	6.5%	5.5%	*22.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Fiscal Year
2017	476.9	479.0	485.4	501.7	1943.0
2018	517.3	518.4	532.4	569.9	2138.0
2019	576.7	580.4	579.6	599.6	2336.3
2020	618.0	638.4	666.6	*732.0*	*2655*
2021	*670*	*700*	*730*	*750*	*2850*

Fiscal Year Ends	EARNINGS PER SHARE ABE Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Fiscal Year
2017	.32	.34	.35	.39	1.40
2018	.40	.45	.49	.52	1.87
2019	.54	.57	.54	.54	2.20
2020	.60	.66	.70	*.74*	*2.70*
2021	*.67*	*.70*	*.73*	*.75*	*2.85*

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	NO CASH DIVIDENDS BEING PAID				
2018					
2019					
2020					
2021					

BUSINESS: Cadence Design Systems, Inc. is a leading worldwide supplier of electronic design automation (EDA) software for integrated circuit and systems design and verification, used principally in the semiconductor industry. The company's software tools and solutions enable engineers to design, analyze, place and route, and test integrated circuits, circuit boards, multichip modules, and other electronic systems. R&D: 40.1% of 2019 revenue. Employed about 8,100 (12/28/19). Off. & dir. own 2.6% of common stock; The Vanguard Group, 11.9%; BlackRock, Inc., 9.5%; MFS Company, 8.7% (3/20 Proxy). Chrmn: John B. Shoven, Ph.D.; Pres. & CEO: Lip-Bu Tan. Inc.: DE. Addr.: 2655 Seely Avenue, San Jose, CA 95134. Tel.: (408) 943-1234. Internet: www.cadence.com.

Cadence Design Systems likely finished 2020 on a strong note. Despite the challenges posed by COVID-19, the company posted good financial results for the first nine months of last year. The ongoing potential from the 5G communication protocol, artificial intelligence, and hyperscale computing were factors in this regard, and they probably continued playing an important part in the company's financial performance in the December period. In addition, sales activity from China was likely a positive for the fourth quarter, following the better-than-expected results recorded in the third.

We look for 2021 to be another good one. The factors mentioned above should continue supporting the company's growth this year. On point, applications arising from the 5G protocol, artificial intelligence, and hyperscale computing take advantage of the latest advances in semiconductor technology and, hence, underpin the demand for Cadence's electronic design automation (EDA) products and services. Meanwhile, our sense is the company may continue benefiting from a somewhat leaner expense structure this year, as remote and distributed work environments are likely to remain in place for at least the first half. Nonetheless, we expect the advantage to diminish some for the year as a whole, since Cadence and many other employers are likely to move to a structure that incorporates both remote and in-office workplaces as the challenges arising from COVID-19 should abate with the broad distribution of vaccines.

What about Cadence stock? The trends that underlie the company's current prospects are likely to remain in place for some time yet. In addition, Cadence has shown its ability to stay abreast of the technological advances in its targeted markets, helping to maintain a strong position in the EDA arena. To these points, our projections suggest that Cadence's revenue, earnings, and cash flow seem set to progress at quite favorable compound average growth rates over the next three to five years, as indicated in the nearby Annual Rates presentation. That said, timely CDNS shares are currently trading at a generous valuation, in our view. New commitments should be made with care.

Charles Clark *February 5, 2021*

(A) Fiscal year ends Saturday closest to 12/31.
(B) Diluted earnings; non-GAAP from 2012. Excluded items: '04, d41¢; '05, d67¢; '12, 80¢; '13, d30¢; '14, d42¢; '15, d28¢; '16, d53¢; '17, d67¢; '18, d64¢ ; '19, 1.32.
Next earnings report due February 22nd.
(C) Including intangibles. In '19: $661.9 mill., $2.35 a share. (D) In millions.
(E) Quarters may not sum to annual figure, due to rounding or changes in shares outstanding.

Company's Financial Strength	A++
Stock's Price Stability	85
Price Growth Persistence	95
Earnings Predictability	100

CERNER CORP. NDQ-CERN

RECENT PRICE 70.91 | P/E RATIO 23.0 (Trailing: 25.0 Median: 30.0) | RELATIVE P/E RATIO 1.07 | DIV'D YLD 1.2% | VALUE LINE

TIMELINESS 3 Lowered 9/18/20
SAFETY 2 Raised 3/13/15
TECHNICAL 1 Raised 3/5/21
BETA .90 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$61-$115	$88 (25%)

2024-26 PROJECTIONS

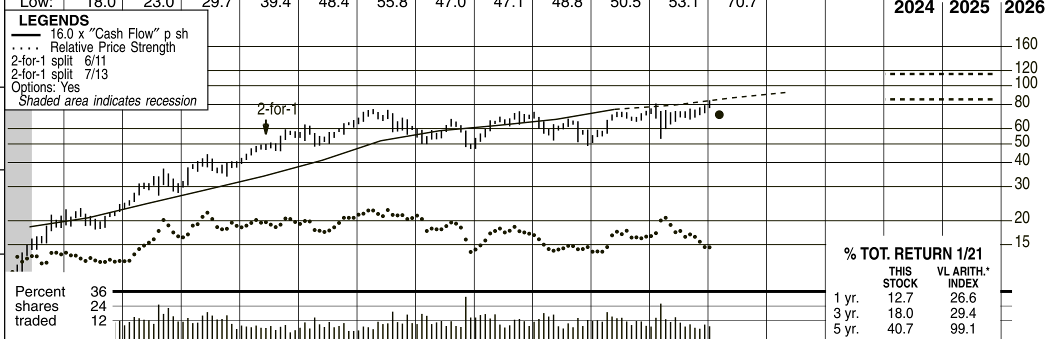
	Price	Gain	Ann'l Total Return
High	115	(+60%)	14%
Low	85	(+20%)	6%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	363	344	321
to Sell	355	355	348
Hld's(000)	253393	256152	256401

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	24.4	37.2	44.2	59.4	66.4	75.7	67.5	73.9	73.4	74.1	80.9	84.2
Low:	18.0	23.0	29.7	39.4	48.4	55.8	47.0	47.1	48.8	50.5	53.1	70.7

LEGENDS
—— 16.0 x "Cash Flow" p sh
.... Relative Price Strength
2-for-1 split 6/11
2-for-1 split 7/13
Options: Yes
Shaded area indicates recession



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	12.7	26.6
3 yr.	18.0	29.4
5 yr.	40.7	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
3.70	4.39	4.74	5.08	5.06	5.56	6.50	7.74	8.47	9.94	13.02	14.55	15.47	16.55	18.31	**18.00**	**19.50**	**20.50**	Revenues per sh	**23.50**
.64	.72	.87	1.06	1.16	1.29	1.53	1.80	2.12	2.57	3.24	3.65	3.90	4.19	4.71	**4.95**	**5.40**	**5.80**	"Cash Flow" per sh	**6.50**
.27	.31	.38	.52	.58	.70	.88	1.13	1.32	1.65	2.11	2.30	2.38	2.45	2.69	2.84	**3.15**	**3.50**	Earnings per sh B	**4.25**
--	--	--	--	--	--	--	--	--	--	--	--	--	--	.36	.72	**.88**	**.96**	Div'ds Decl'd per sh E	**1.14**
.32	.42	.56	.33	.40	.31	.31	.53	1.03	.81	1.07	1.39	1.09	1.38	1.52	**.95**	**1.25**	**1.25**	Cap'l Spending per sh	**1.25**
2.42	2.93	3.53	4.04	4.79	5.72	6.81	8.23	9.21	10.42	11.38	11.92	14.39	15.20	13.89	**14.65**	**15.65**	**17.90**	Book Value per sh	**21.25**
314.06	313.57	320.59	324.17	330.26	332.96	339.13	344.18	343.82	342.33	339.96	329.64	332.46	324.31	310.91	**306.00**	**300.00**	**300.00**	Common Shs Outst'g D	**300.00**
32.1	35.1	36.2	21.1	25.7	30.0	33.5	33.1	37.3	34.8	31.5	24.6	26.6	25.0	24.6	25.1	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**23.5**
1.71	1.90	1.92	1.27	1.71	1.91	2.10	2.11	2.10	1.83	1.59	1.29	1.34	1.35	1.31	1.29			Relative P/E Ratio	**1.30**
--	--	--	--	--	--	--	--	--	--	--	--	--	--	.5%	1.0%			Avg Ann'l Div'd Yield	**1.1%**

CAPITAL STRUCTURE as of 12/31/20
Total Debt $1336.1 mill. **Due in 5 Yrs** $825.0 mill.
LT Debt $1336.1 mill. **LT Interest** $41.5 mill.
(23% of Cap'l)

Leases, Uncap'l 12/19 Annual rentals $33.9 mill.
No Defined Benefit Pension Plan
Pfd Stock None

Common Stock 306,589,898 shs.
as 10/21/20
MARKET CAP: $21.7 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
2203.2	2665.4	2910.7	3402.7	4425.3	4796.5	5142.3	5366.3	5692.6	5505.8	**5850**	**6150**	Revenues ($mill)	**7100**
30.5%	29.8%	32.5%	33.6%	32.4%	31.9%	31.6%	28.9%	29.1%	31.6%	**32.0%**	**33.0%**	Operating Margin	**33.0%**
212.6	222.6	263.5	302.4	360.7	413.7	491.8	540.2	603.0	641.8	**650**	**675**	Depreciation ($mill)	**700**
306.6	397.2	466.4	576.4	740.8	790.4	805.0	818.5	862.1	878.9	**965**	**1065**	Net Profit ($mill)	**1275**
34.7%	32.4%	32.8%	32.4%	31.1%	30.2%	30.4%	21.1%	19.9%	20.0%	**21.5%**	**21.5%**	Income Tax Rate	**21.5%**
13.9%	14.9%	16.0%	16.9%	16.7%	16.5%	15.7%	15.3%	15.1%	16.0%	**16.5%**	**17.3%**	Net Profit Margin	**18.0%**
1063.6	1210.4	1121.3	1714.5	1049.9	774.0	1590.6	1356.1	1069.1	1482.4	**1450**	**1500**	Working Cap'l ($mill)	**1500**
86.8	136.6	111.7	62.9	563.4	537.6	515.1	438.8	1038.4	1336.1	**1500**	**1500**	Long-Term Debt ($mill)	**1500**
2310.7	2833.7	3167.7	3566.0	3870.4	3927.9	4785.3	4928.4	4317.3	4482.6	**4700**	**5375**	Shr. Equity ($mill)	**6400**
12.9%	13.5%	14.3%	15.9%	16.9%	17.8%	15.3%	15.3%	16.2%	**15.5%**	**16.0%**	**16.0%**	Return on Total Cap'l	**16.5%**
13.3%	14.0%	14.7%	16.2%	19.1%	20.1%	16.8%	16.6%	20.0%	19.6%	**20.5%**	**20.0%**	Return on Shr. Equity	**20.0%**
13.3%	14.0%	14.7%	16.2%	19.1%	20.1%	16.8%	16.6%	17.3%	14.7%	**15.0%**	**14.5%**	Retained to Com Eq	**14.5%**
--	--	--	--	--	--	--	--	13%	25%	**27%**	**27%**	All Div'ds to Net Prof	**27%**

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	775.4	541.8	1058.1
Receivables	1172.6	1139.6	1168.7
Inventory (FIFO)	25.0	23.2	23.0
Other	345.8	392.0	401.2
Current Assets	2318.8	2096.6	2651.0
Accts Payable	293.5	273.4	235.8
Debt Due	4.9	--	--
Deferred Revenue	399.2	360.0	393.3
Other	265.1	394.0	539.5
Current Liab.	962.7	1027.4	1168.6

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	13.0%	14.0%	5.0%
"Cash Flow"	15.5%	14.5%	6.0%
Earnings	17.5%	13.0%	8.0%
Dividends	--	--	38.0%
Book Value	13.5%	9.5%	5.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) A Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	1292.9	1367.7	1340.0	1365.7	5366.3
2019	1389.9	1431.1	1429.4	1442.2	5692.6
2020	1411.8	1330.3	1368.7	1395.0	5505.8
2021	*1400*	*1450*	*1475*	*1525*	*5850*
2022	*1500*	*1525*	*1550*	*1575*	*6150*

Cal-endar	EARNINGS PER SHARE ABC Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	.58	.62	.63	.63	2.45
2019	.61	.66	.66	.75	2.69
2020	.71	.63	.72	.78	2.84
2021	*.74*	*.76*	*.80*	*.85*	*3.15*
2022	*.80*	*.85*	*.90*	*.95*	*3.50*

Cal-endar	QUARTERLY DIVIDENDS PAID E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	--	--	--	--	--
2018	--	--	--	--	--
2019	--	--	.18	.18	.36
2020	.18	.18	.18	.18	.72
2021	.22				

BUSINESS: Cerner Corp. designs, develops, markets, installs, and supports clinical and management information systems. Cerner's systems are designed and developed using a single, unified information architecture: *Cerner Millennium*. Cerner's software and systems are focused on the clinical side of healthcare and are targeted at hospitals and integrated delivery networks. R&D expense: 13.2% of '20 revenues. Contract backlog: $5.6 billion (12/31/20). Employed about 27,400 (12/19). Stock owners: BlackRock, Inc., 10.7%; The Vanguard Group, 7.5% (4/20 proxy). Chairman & CEO: Brent Shafer; CFO: Mark Erceg. Incorporated: DE. Address: 2800 Rockcreek Pkwy., North Kansas City, MO 64117. Telephone: (816) 201-1024. Internet: www.cerner.com.

Cerner Corporation finished 2020 as expected. This was satisfying, in our view, given the challenges COVID-19 posed to both the company and its customers (hospitals and large delivery systems) through most of the year. For 2020 taken as a whole, revenue and contracting activity compared unfavorably with 2019, but this can largely be traced to the pandemic and previous decisions to exit certain lower-margined businesses (e.g., RevWorks). On the other hand, share earnings showed improvement on a non-GAAP basis. Cerner's ongoing streamlining and business transformation program was an important factor here, and the vendor of clinical information systems (CIS) saw its operating margin expand nicely on a non-GAAP basis last year as a result.

Our estimates for 2021 have been updated. We have added $50 million to revenues, which will benefit from recent acquisition Kantar Health and the growing presence of the company's federal business (Department of Defense, Veterans Affairs, and the U.S. Coast Guard). That said, we have reduced our earnings target $0.10 a share. Although Cerner's operating margin should widen again in 2021, we are now taking a more conservative view in this regard. Meanwhile, leadership seems intent on remaining active repurchasing shares, which will work to support earnings this year. Taking a broader view of 2021, investors will be watching the company's progress in transitioning away from its core CIS business and into the broad area of data-as-service (clinical and life-science). The success of these efforts, along with its federal business, will likely set the stage for the next two to three years. To be clear, Cerner is not stepping away from its CIS business, rather it is using its long-standing relationships to gain entrance into growing markets.

What about Cerner stock? The shares traded down in the wake of the company's December-period earnings report, as many investors had likely expected a more upbeat forecast for 2021. Still, assuming the company makes progress in its transition as a data service provider this year, revenue and earnings should advance nicely over time. A growing dividend will add to a patient investor's total return.

Charles Clark *March 5, 2021*

(A) 2020 forward, years end at calendar year end; prior to 2020, fiscal years ended on the Saturday closest to December 31st.
(B) Diluted earnings; non-GAAP EPS from 2014. Excl. items: '05, 1¢; '06, 5¢;'08, 10¢; '13, d19¢; '14, d15¢; '15, d57¢; '16, d45¢; '17, 19¢; '18, d56¢; '19, d$1.03; '20, d32¢. Next earnings report due late April.
(C) Quarters may not sum to annual figure, due to rounding or to changes in diluted shares outstanding. **(D)** In millions, adjusted for stock splits. **(E)** Initial dividend declared 5/30/19.

Company's Financial Strength	A+
Stock's Price Stability	90
Price Growth Persistence	60
Earnings Predictability	95

CSW INDUSTRIALS NYSE-CSWI

RECENT PRICE 124.86 | P/E RATIO 36.8 (Trailing: 37.3 Median: NMF) | RELATIVE P/E RATIO 1.70 | DIV'D YLD 0.4% | VALUE LINE

TIMELINESS 2 Raised 11/13/20
SAFETY 2 Raised 7/31/20
TECHNICAL 3 Raised 11/6/20
BETA .85 (1.00 = Market)

High:	40.0	39.3	50.0	57.2	78.3	117.3				Target Price Range		
Low:	30.3	27.8	34.1	41.5	46.9	50.1				2023	2024	2025

LEGENDS
.... Relative Price Strength
Options: No
Shaded area indicates recession

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$53-$128	$91 (-30%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	160	(+30%)	7%
Low	120	(-5%)	Nil

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	65	64	47
to Sell	102	87	98
Hld's(000)	10874	11033	11100

Percent shares traded 15 10 5

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	46.4	18.8
3 yr.	146.8	29.9
5 yr.	201.1	81.5

On September 30, 2015, Capital Southwest spun off its industrial subdiaries to form a company called CSW Industrials. On November 15, 2015, the company became an independent publicly-traded entity when it issued 15 million shares to the public at $35.20 a share. The underwriting syndicate included BoFA Merril Lynch, Wells Fargo, and Citibank. The stock trades on the NASDAQ under the symbol CSWI.

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
--	--	--	--	--	20.42	20.64	20.55	23.28	26.17	**25.65**	**24.50**	Revenues per sh	**24.40**
--	--	--	--	--	2.53	1.86	3.00	3.98	4.12	**4.35**	**4.85**	"Cash Flow" per sh	**5.80**
--	--	--	--	--	1.62	.87	2.09	2.96	3.02	**3.25**	**3.95**	Earnings per sh A	**5.00**
--	--	--	--	--	--	--	--	--	.41	**.54**	**.62**	Div'ds Decl'd per sh	**.88**
--	--	--	--	--	.71	.59	.35	.50	.78	**.80**	**.95**	Cap'l Spending per sh	**1.10**
--	--	--	--	--	16.48	17.19	16.74	17.53	18.77	**20.65**	**18.55**	Book Value per sh	**18.40**
--	--	--	--	--	15.66	15.85	15.88	15.04	14.74	**15.00**	**20.00**	Common Shs Outst'g B	**25.00**
--	--	--	--	--	21.1	39.0	20.4	17.3	22.8	Bold figures are		Avg Ann'l P/E Ratio	**28.0**
--	--	--	--	--	1.06	2.05	1.03	.93	1.21	Value Line		Relative P/E Ratio	**1.55**
--	--	--	--	--	--	--	--	--	.8%	estimates		Avg Ann'l Div'd Yield	**.6%**
--	--	--	--	--	319.8	327.1	326.2	350.2	385.9	**385**	**490**	Revenues ($mill)	**610**
--	--	--	--	--	19.3%	13.0%	20.1%	21.2%	17.4%	**18.0%**	**21.5%**	Operating Margin	**27.5%**
--	--	--	--	--	14.2	15.8	14.9	13.8	14.8	**16.0**	**17.0**	Depreciation ($mill)	**20.0**
--	--	--	--	--	25.5	13.7	32.7	46.1	45.9	**49.0**	**80.0**	Net Profit ($mill)	**125**
--	--	--	--	--	42.4%	46.4%	32.3%	25.0%	20.4%	**21.0%**	**23.0%**	Income Tax Rate	**23.0%**
--	--	--	--	--	8.0%	4.2%	10.0%	13.2%	11.9%	**12.7%**	**16.1%**	Net Profit Margin	**20.5%**
--	--	--	--	--	123.9	108.6	82.7	102.1	90.9	**115**	**120**	Working Cap'l ($mill)	**150**
--	--	--	--	--	89.1	72.6	23.5	30.9	10.3	**10.0**	**15.0**	Long-Term Debt ($mill)	**30.0**
--	--	--	--	--	258.0	272.4	265.8	263.7	276.7	**310**	**335**	Shr. Equity ($mill)	**460**
--	--	--	--	--	7.8%	4.4%	11.7%	15.9%	16.2%	**16.0%**	**23.0%**	Return on Total Cap'l	**24.5%**
--	--	--	--	--	9.9%	5.0%	12.3%	17.5%	16.6%	**16.0%**	**24.0%**	Return on Shr. Equity	**27.0%**
--	--	--	--	--	9.9%	5.0%	12.3%	17.5%	13.6%	**13.0%**	**18.0%**	Retained to Com Eq	**22.5%**
--	--	--	--	--	--	--	--	--	18%	**17%**	**16%**	All Div'ds to Net Prof	**18%**

CAPITAL STRUCTURE as of 9/30/20
Total Debt $10.7 mill. **Due in 5 Yrs** $.6 mill
LT Debt $10.1 mill. **LT Interest** $.7 mill.
(Total interest coverage 3.1x) (3% of Cap'l)

Leases, Uncapitalized Annual rentals $.3 mill.
No Defined Benefit Pension Plan
Pfd Stock None
Common Stock 14,803,364 shs.
as of 10/28/20

MARKET CAP: $1.8 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2017	2018	9/30/20
Cash Assets	11.7	26.7	47.3
Receivables	63.4	66.1	70.1
Inventory	43.0	51.4	52.1
Other	9.5	7.1	5.4
Current Assets	127.6	151.3	174.9
Accts Payable	16.8	19.0	20.7
Debt Due	.6	.6	.6
Other	27.5	29.6	36.1
Current Liab.	44.9	49.2	57.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	--	--	3.5%
"Cash Flow"	--	--	6.5%
Earnings	--	--	8.5%
Dividends	--	--	26.0%
Book Value	--	--	.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Jun.30	Sep.30	Dec.31	Mar.31	Full Year
2017	89.3	84.4	69.0	83.5	326.2
2018	89.6	91.6	77.5	91.5	350.2
2019	102.3	101.3	83.7	98.6	385.9
2020	91.0	104.9	**85.0**	**104.1**	**385**
2021	**125**	**135**	**110**	**120**	**490**

Cal-endar	EARNINGS PER SHARE A Jun.30	Sep.30	Dec.31	Mar.31	Full Year
2017	.30	.36	.03	.18	.87
2018	.66	.58	.17	.68	2.09
2019	1.00	.58	.48	.96	3.02
2020	.81	1.10	**.55**	**.79**	**3.25**
2021	**.95**	**1.20**	**.80**	**1.00**	**3.95**

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	--	--	--	--	--
2018	--	--	--	--	--
2019	--	.135	.135	.135	.41
2020	.135	.135	.135	.135	.54
2021					

BUSINESS: CSW Industrials, Inc., is a diversified industrial holding company. It has two business segments: Industrial Products (58% of sales and 61% of operating income), and Specialty Chemicals (42%, and 39%). CSW Industrials serves the following markets; HVAC, refrigeration, coatings and sealants, railroad, industrial, plumbing, building safety, energy, mining, and specialty lubricants. CSW has about 730 employees. Incorp. DE. Off. & Dir. own .9% of stock; Joseph Armes, 1.6%; T. Rowe Price, 9.5%, Wells Fargo, 8.3%; BlackRock, 7.9%; Janus Henderson Group, 5.3%; Newport Trust Co., 5.2% (8/20 Proxy). C.E.O.: Joseph B. Armes. Address: 5420 Lyndon B. Johnson Freeway, Suite 500, Dallas, TX 75240. Tel.: (214) 884-3777. Internet: www. cswindustrials.com.

In our late-October report, we stated that CSW Industrials needed to jump-start its top line. On December 15th, the company did just that. It bought TRUaire for $360 million. Truaire likely generated sales of $108 muillion in 2020, and is expected to post revenue of about $125 million in 2021. This would certainly boost CSW's top line. TRUaire will enhance CSWI's HVAC and refrigeration business, and its e-commerce proficiency should reduce CSWI's costs. To acquire TRUaire CSW used $284 million in cash, and the remaining $76 million in stock.

The acquisition, along with better-than-expected fiscal second-quarter results, has pushed the stock up significantly (fiscal quarter ended September 30th). Indeed, the equity's price is up 15% since late October. Strong demand for the company's HVAC and refrigeration equipment/services from an increased number of people working from home, as well as warmer-than-normal temperatures produced the good results. Plumbing inventory restocking also helped. In the fiscal third quarter, the lag effect of lower bookings resulted in reduced mining, industrial, and construction sales. Still, we expect HVAC/R sales to remain strong, particularly with a couple of months' worth of the TRUaire business. For the full fiscal year (ending March 31st), we look for sales and share earnings of $385 million and $3.25, respectively.

CSW Industrials is operating well within its means. It has negligible debt, and appears to want to keep it that way by using cash and stock to consummate acquisitions. The company provides a wide variety of products to numerous different markets, and is therefore considered a high-quality defensive industrial player. Its acquisition strategy is also conservative and well considered. We look for further add-on purchases to occur once TRUaire is amalgamated into the fold.

After its recent rise, this timely and good-quality stock looks pricy. Indeed, over the next few months, we wouldn't be surprised to see some kind of correction along with the general market averages. Still, for the long haul, we think it's worth holding on to. We were sorely tempted to raise our Target Price Range.

Jeremy J. Butler *January 29, 2021*

(A) Diluted earnings. Next earnings report due early February. Earnings may not sum due to change in shares outstanding. Fiscal year ends March 31st of following year.
(B) In millions.
(C) Quarterly dividend payment of $0.135 a share initiated in the second quarter of 2019. Dividends paid in mid Feb, May, August, and Nov.

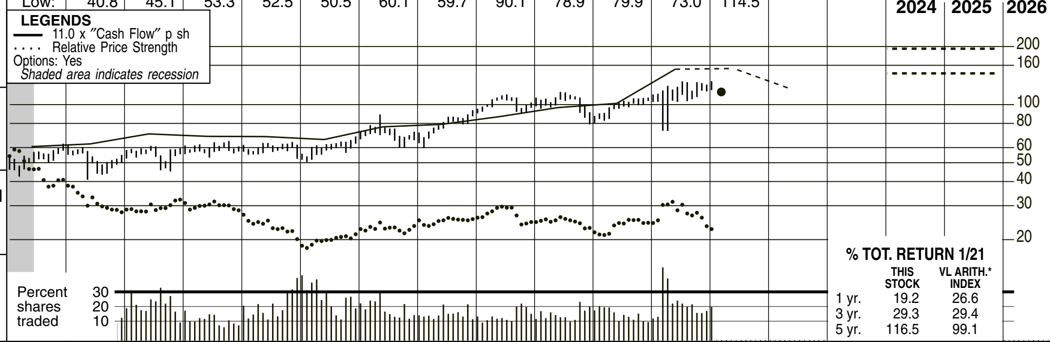
Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	85
Earnings Predictability	50

QUEST DIAGNOST. NYSE-DGX

RECENT PRICE **116.21** | P/E RATIO **8.7** (Trailing: 10.4 Median: 15.0) | RELATIVE P/E RATIO **0.41** | DIV'D YLD **2.1%** | **VALUE LINE**

TIMELINESS 3 Lowered 2/19/21
SAFETY 2 Raised 3/20/09
TECHNICAL 3 Lowered 2/12/21
BETA .85 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	61.7	61.2	64.9	64.1	68.5	89.0	93.6	113.0	116.5	108.9	131.8	134.7
Low:	40.8	45.1	53.3	52.5	50.5	60.1	59.7	90.1	78.9	79.9	73.0	114.5



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$97-$216	$157 (35%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	195	(+70%)	15%
Low	145	(+25%)	8%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	353	333	332
to Sell	336	374	343
Hld's(000)	119634	117700	116446

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	19.2	26.6
3 yr.	29.3	29.4
5 yr.	116.5	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
27.73	32.32	34.55	38.04	41.67	43.05	47.71	46.63	49.63	51.63	52.40	54.85	57.10	55.79	58.09	70.95	*71.55*	*61.10*	Revenues per sh	*91.15*
3.64	4.32	4.08	4.75	5.52	5.70	6.42	6.23	6.22	6.01	6.99	7.19	7.90	8.79	9.22	14.20	*14.00*	*10.90*	"Cash Flow" per sh	*15.75*
2.66	3.22	2.84	3.27	3.88	4.05	4.53	4.36	4.00	4.10	4.77	5.15	5.67	6.31	6.56	11.18	*11.15*	*7.90*	Earnings per sh A	*12.00*
.36	.40	.40	.40	.40	.40	.47	.81	1.20	1.32	1.52	1.65	1.80	1.95	2.12	2.21	*2.42*	*2.57*	Div'ds Decl'd per sh B	*3.20*
1.13	1.00	1.13	1.12	.93	1.20	1.03	1.15	1.60	2.14	1.84	2.14	1.87	2.84	3.01	3.14	*3.15*	*3.00*	Cap'l Spending per sh	*3.30*
13.92	15.57	17.13	18.92	22.30	23.57	23.46	26.29	27.42	29.87	32.76	33.78	36.45	38.64	42.41	50.82	*53.75*	*55.95*	Book Value per sh C	*73.05*
198.46	193.95	194.04	190.57	178.92	171.16	157.42	158.33	144.00	144.00	143.00	137.00	135.00	135.00	133.00	133.00	*134.00*	*134.00*	Common Shs Outst'g D	*130.00*
19.0	17.1	18.6	15.1	13.7	13.0	12.2	13.6	14.8	14.5	14.8	15.2	17.7	16.2	14.9	10.0	*Bold figures are*		Avg Ann'l P/E Ratio	*14.0*
1.01	.92	.99	.91	.91	.83	.77	.87	.83	.76	.75	.80	.89	.88	.79	.51	*Value Line*		Relative P/E Ratio	*.80*
.7%	.7%	.8%	.8%	.8%	.8%	.9%	1.4%	2.0%	2.2%	2.2%	2.1%	1.8%	1.9%	2.2%	2.0%	*estimates*		Avg Ann'l Div'd Yield	*1.9%*

CAPITAL STRUCTURE as of 12/31/20
Total Debt $4156 mill. **Due in 5 Yrs** $2000 mill.
LT Debt $4013 mill. **LT Interest** $220 mill.
(37% of Cap'l)

Leases, Uncapitalized: Ann'l rentals $200.0 mill.
No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 134,765,984 shares

MARKET CAP: $15.7 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
7510.5	7382.6	7146.0	7435.0	7493.0	7515.0	7709.0	7531.0	7726.0	9437.0	*9590*	*8200*	Revenues ($mill)	*11850*
21.4%	21.7%	19.6%	17.4%	18.4%	19.8%	18.6%	20.4%	19.7%	25.9%	*24.0%*	*20.2%*	Operating Margin	*25.0%*
281.1	286.6	283.0	314.0	304.0	249.0	270.0	309.0	329.0	361.0	*380*	*400*	Depreciation ($mill)	*485*
728.7	700.2	612.0	551.0	695.0	736.0	796.0	878.0	897.0	1528.0	*1495*	*1060*	Net Profit ($mill)	*1560*
35.6%	37.8%	37.2%	30.9%	34.3%	36.4%	21.1%	17.0%	21.8%	23.5%	*23.0%*	*23.0%*	Income Tax Rate	*25.0%*
9.7%	9.5%	8.6%	7.4%	9.3%	9.8%	10.3%	11.7%	11.6%	16.2%	*15.6%*	*12.9%*	Net Profit Margin	*13.1%*
d159.9	513.4	251.0	d106.0	328.0	550.0	249.0	d95.0	500.0	1282.0	*1350*	*1450*	Working Cap'l ($mill)	*2000*
3370.5	3354.2	3120.0	3244.0	3492.0	3728.0	3748.0	3429.0	3966.0	4013.0	*3800*	*3600*	Long-Term Debt ($mill)	*3000*
3692.9	4163.0	3948.0	4301.0	4684.0	4628.0	4921.0	5216.0	5641.0	6759.0	*7200*	*7500*	Shr. Equity ($mill)	*9500*
11.4%	10.4%	9.8%	8.4%	9.4%	9.7%	10.0%	11.0%	10.1%	14.9%	*14.5%*	*10.5%*	Return on Total Cap'l	*13.0%*
19.7%	16.8%	15.5%	12.8%	14.8%	15.9%	16.2%	16.8%	15.9%	22.6%	*20.5%*	*14.0%*	Return on Shr. Equity	*16.5%*
18.0%	14.2%	10.8%	8.5%	10.3%	11.1%	11.2%	11.7%	10.8%	18.2%	*16.5%*	*9.5%*	Retained to Com Eq	*12.0%*
9%	15%	30%	34%	31%	30%	31%	30%	32%	19%	*22%*	*33%*	All Div'ds to Net Prof	*27%*

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	135	1192	1158
Receivables	1012	1063	1520
Inventory (FIFO)	99	123	223
Other	144	112	157
Current Assets	1390	2490	3058
Payables & Other	1021	1041	1633
Debt Due	464	949	143
Current Liab.	1485	1990	1776

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	4.0%	4.0%	*7.0%*
"Cash Flow"	7.5%	11.0%	*9.0%*
Earnings	8.0%	13.5%	*10.0%*
Dividends	18.0%	9.0%	*7.5%*
Book Value	7.5%	8.0%	*9.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2018	1884	1919	1889	1839	7531
2019	1891	1953	1956	1926	7726
2020	1822	1827	2786	3002	9437
2021	*2690*	*2440*	*2230*	*2230*	*9590*
2022	*2000*	*2075*	*2075*	*2050*	*8200*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2018	1.52	1.75	1.68	1.36	6.31
2019	1.40	1.73	1.76	1.67	6.56
2020	.94	1.42	4.31	4.48	11.18
2021	*3.80*	*2.90*	*2.25*	*2.20*	*11.15*
2022	*1.75*	*2.05*	*2.05*	*2.05*	*7.90*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.45	.45	.45	.45	1.80
2018	.45	.50	.50	.50	1.95
2019	.53	.53	.53	.53	2.12
2020	.53	.56	.56	.56	2.21
2021	.56	.62			

BUSINESS: Quest Diagnostics provides diagnostic testing, information, and services to patients, physicians, hospitals, insurers, employers, government agencies, and other commercial clinical labs. It operates a network of more than 2,200 patient-service centers and principal labs, and approximately 3,200 phlebotomists in physicians offices. Offers routine tests, anatomic pathology services, and central laboratory testing performed with clinical research trials. Employs 43,000. Vanguard owns 11.4% of common; BlackRock, 9.2%; offs. & dirs. own less than 1.0% (4/20 proxy). Chairman and CEO: Stephen Rusckowski. Incorporated: DE. Address: 500 Plaza Drive, Secaucus, New Jersey 07094. Telephone: 973-520-2700. Internet: www.questdiagnostics.com.

Quest Diagnostics set an annual revenue record in 2020 on high demand for COVID-19 testing. Make no mistake, the coronavirus pandemic dramatically disrupted DGX's normal operations, but all the while the company was ramping up its capacity to test for the virus. This led to a huge sequential jump in revenues during the September interim, followed by a top-line figure north of $3 billion in the final quarter of the year. The much larger revenue base led to a boom in profits as well, culminating in share net of $11.15 for 2020 as a whole. This figure was up sharply from the $6.56 posted in the previous campaign.

Our current call for 2021 displays a small gain on the top line and flat year-over-year earnings. Clearly, comparisons are going to be tough, especially in the back half of the year. Still, we are not out of the woods yet as far as the coronavirus pandemic goes. Yes, the vaccine rollout is in full swing, but spread levels remain elevated in numerous parts of the country and new variants further cloud the situation. President Biden recently stated a goal of full U.S. vaccination by the end of the summer. If so, COVID-19 testing levels will fall off sharply as the year progresses. Regardless, when factoring in antibody testing and a return to more normalized doctor's visits, we think revenues can grow some. Share net, on the other hand, will probably only come in around the same $11.15 put up last year.

For 2022, we think the company will return to more normalized levels of testing demand. At this time, the great hope is that the pandemic will be securely in the rearview mirror. With that we look to 2019 as more of a baseline and project off those pre-coronavirus figures. In that vein we look for the top line to retreat to about $8.2 billion resulting in profits of just under $8.00 a share.

These good-quality shares are a neutrally ranked selection at this juncture. We think DGX will perform on par with the broader market indices in the coming year. Conversely, its total return potential out to 2024-2026 is worthwhile, aided by a recent increase in the quarterly payout (starts with the June interim).

Erik M. Manning *March 5, 2021*

(A) Diluted earnings. Excludes nonrecurring: '04, d4¢; '06, d28¢; '07, d$1.10; '08, d1¢; '11, d$1.61; '12, d8¢; '13, $1.58; '17, 17¢; '18, $1.02; '19, 43¢; '20, 71¢. Excludes disc. operations gain: '19, 15¢. Quarterly figures may not sum due to rounding. Next earnings report due late April.
(B) Dividends historically paid mid-January, April, July, October.
(C) Includes intangibles. In '20: $8.04 billion, $60.45/sh.
(D) In millions.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	65
Earnings Predictability	100

LAUDER (ESTEE) COS. NYSE-EL

RECENT PRICE **293.95** | P/E RATIO **48.1** (Trailing: 67.3; Median: 26.0) | RELATIVE P/E RATIO **2.24** | DIV'D YLD **0.8%** | VALUE LINE

TIMELINESS 1 Raised 1/22/21
SAFETY 2 Raised 1/4/02
TECHNICAL 3 Lowered 2/26/21
BETA .95 (1.00 = Market)

High:	40.7	60.4	65.6	75.8	78.0	91.7	97.5	130.4	158.8	208.3	267.2	298.3
Low:	23.8	39.8	49.8	59.9	63.6	70.4	75.3	76.3	121.6	121.5	137.0	232.0

18-Month Target Price Range

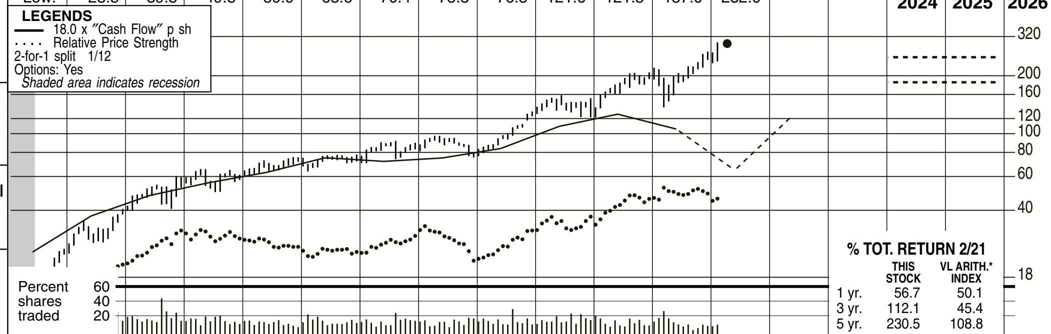
Low-High	Midpoint (% to Mid)
$191-$365	$278 (-5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	250	(-15%)	-3%
Low	185	(-35%)	-10%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	439	440	514
to Sell	473	435	406
Hld's(000)	200370	198807	199947



% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	56.7	50.1
3 yr.	112.1	45.4
5 yr.	230.5	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
14.34	15.26	18.11	20.32	18.62	19.80	22.59	25.09	26.28	28.77	28.76	30.62	32.12	37.27	41.16	39.65	*44.40*	*49.45*	Sales per sh A	*63.30*
1.43	1.45	1.69	1.86	1.35	2.08	2.66	3.09	3.50	4.17	4.00	4.16	4.65	6.06	7.02	5.88	*7.70*	*8.30*	"Cash Flow" per sh	*10.60*
.95	.96	1.08	1.20	.71	1.38	1.85	2.27	2.58	3.06	2.82	2.96	3.35	4.51	5.34	4.12	*5.95*	*6.55*	Earnings per sh A	*8.75*
.20	.20	.25	.28	.28	.28	.38	.53	1.08	.78	.92	1.14	1.32	1.48	1.67	1.39	*2.12*	*2.32*	Div'ds Decl'd per sh E	*2.68*
.52	.62	.80	.92	.71	.69	.90	1.09	1.19	1.34	1.26	1.43	1.37	1.71	2.06	1.73	*1.60*	*1.70*	Cap'l Spending per sh	*1.80*
3.83	3.83	3.09	4.25	4.17	4.95	6.74	7.06	8.48	10.11	9.72	9.71	11.91	12.77	12.15	10.91	*15.10*	*15.45*	Book Value per sh B	*14.30*
441.98	423.56	388.54	389.22	393.40	393.67	389.93	387.20	387.41	381.31	374.88	367.76	368.10	367.15	361.10	360.53	*358.00*	*356.00*	Common Shs Outst'g C	*350.00*
22.8	19.2	19.9	18.4	24.3	18.1	21.6	24.1	24.2	23.2	27.9	29.7	25.9	28.2	27.7	45.9	*Bold figures are*		Avg Ann'l P/E Ratio	*25.0*
1.21	1.04	1.06	1.11	1.62	1.15	1.35	1.53	1.36	1.22	1.40	1.56	1.30	1.52	1.48	2.35	*Value Line*		Relative P/E Ratio	*1.40*
.9%	1.1%	1.2%	1.2%	1.6%	1.1%	.9%	1.0%	1.7%	1.1%	1.2%	1.3%	1.5%	1.2%	1.1%	.7%	*estimates*		Avg Ann'l Div'd Yield	*1.3%*

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
8810.0	9713.6	10182	10969	10780	11262	11824	13683	14863	14294	*15895*	*17600*	Sales ($mill)	*22150*
16.7%	17.2%	18.6%	20.2%	18.7%	18.0%	18.2%	20.4%	21.5%	19.0%	*19.0%*	*19.0%*	Operating Margin	*19.5%*
294.4	295.8	336.9	384.6	409.3	414.7	464.0	531.0	557.0	611.0	*620*	*620*	Depreciation ($mill)	*640*
741.7	900.9	1019.8	1204.1	1088.9	1114.6	1249.0	1695.0	1977.0	1510.0	*2130*	*2330*	Net Profit ($mill)	*3065*
33.1%	31.5%	30.6%	32.0%	29.9%	27.9%	22.3%	22.3%	21.5%	23.2%	*23.0%*	*23.0%*	Income Tax Rate	*23.0%*
8.4%	9.3%	10.0%	11.0%	10.1%	9.9%	10.6%	12.4%	13.3%	10.6%	*13.4%*	*13.2%*	Net Profit Margin	*13.8%*
1743.2	1729.3	2362.6	2768.5	2332.9	1544.6	2141.0	2858.0	2607.0	3713.0	*4500*	*4700*	Working Cap'l ($mill)	*4500*
1080.1	1069.1	1326.0	1324.7	1607.5	1910.0	3383.0	3361.0	2896.0	4914.0	*4800*	*4600*	Long-Term Debt ($mill)	*3800*
2629.4	2733.2	3286.9	3854.9	3643.2	3571.9	4384.0	4688.0	4386.0	3935.0	*5400*	*5500*	Shr. Equity ($mill)	*5800*
20.8%	24.5%	22.7%	23.7%	21.3%	21.0%	16.7%	21.8%	28.0%	17.9%	*21.0%*	*23.0%*	Return on Total Cap'l	*32.0%*
28.2%	33.0%	31.0%	31.2%	29.9%	31.2%	28.5%	36.2%	45.1%	38.4%	*39.0%*	*42.5%*	Return on Shr. Equity	*53.0%*
22.6%	25.5%	18.3%	23.4%	20.3%	19.4%	17.4%	24.5%	31.2%	25.6%	*27.0%*	*31.0%*	Retained to Com Eq	*45.0%*
20%	23%	41%	25%	32%	38%	39%	32%	31%	33%	*36%*	*35%*	All Div'ds to Net Prof	*31%*

CAPITAL STRUCTURE as of 12/31/20
Total Debt $5383.0 mill. **Due in 5 Yrs** $2776.0 mill.
LT Debt $4913.0 mill. **LT Interest** $172.0 mill.
(48% of Cap'l)
Leases, Uncapitalized Annual rentals $436.0 mill.
Pension Assets-6/20 $1541.0 mill.
Oblig. $1718.0 mill
Pfd Stock None
Common Stock 362,759,496 shs.
as of 1/29/21
(Class A: 229,736,467 shs.;
Class B: 133,023,029 shs., have 10 votes and are conv. into Cl. A shs. on a share-for-share basis.)
MARKET CAP: $106.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2019	2020	12/31/20
Cash Assets	2987	5022	5545
Receivables	1831	1194	1972
Inventory (FIFO)	2006	2062	2116
Other	388	614	658
Current Assets	7212	8892	10291
Accts Payable	1490	1177	1299
Debt Due	516	1222	470
Other	2599	2780	3651
Current Liab.	4605	5179	5420

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Sales	7.0%	7.0%	*8.0%*
"Cash Flow"	13.5%	10.0%	*9.0%*
Earnings	15.5%	10.5%	*11.0%*
Dividends	18.5%	10.5%	*10.0%*
Book Value	10.5%	5.0%	*3.0%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A D Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	3274	3744	3370	3295	13683
2019	3524	4005	3744	3590	14863
2020	3895	4624	3345	2430	14294
2021	3562	4853	*3880*	*3600*	*15895*
2022	*3945*	*5370*	*4300*	*3985*	*17600*

Fiscal Year Ends	EARNINGS PER SHARE A D Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	1.21	1.52	1.17	.61	4.51
2019	1.41	1.74	1.55	.64	5.34
2020	1.67	2.11	.85	d.53	4.12
2021	1.44	2.61	*1.30*	*.60*	*5.95*
2022	*1.60*	*2.85*	*1.45*	*.65*	*6.55*

Cal-endar	QUARTERLY DIVIDENDS PAID E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.34	.34	.34	.38	1.40
2018	.38	.38	.38	.43	1.57
2019	.43	.43	.43	.48	1.77
2020	.48	--	.48	.53	1.49
2021	.53				

BUSINESS: The Estee Lauder Companies Inc. makes and markets skin care, makeup, fragrance, and hair care products worldwide. Brand names include *Estee Lauder*, *Clinique*, *Aramis*, *Prescriptives*, *Origins*, *M.A.C.*, *Bobbi Brown essentials*, and *Aveda*. EL is the global licensee for *Tommy Hilfiger* fragrances and cosmetics. Sells mostly through upscale dept. stores and perfumeries, specialty retailers, and pharmacies. Int'l. bus.: 66% of '20 op. inc., 73% of sales. Sales by product: makeup, 34.0%; skin care, 52.0%; frag., 12.0%; hair care, 2.0%; Has about 48,000 employees. Off. & dir. control 30.0% of voting stock (10/20 Proxy). Chairman: William P. Lauder. CEO: Fabrizio Freda. Inc.: DE. Addr.: 767 Fifth Ave., NY, NY 10153. Tel.: 212-572-4200. Internet: www.elcompanies.com.

Estee Lauder has been active on the acquisition trail. In late February, the company announced that it had entered into an agreement to increase its investment in Canadian-based DECIEM Beauty Group Inc. from about 29% to approximately 76%. DECIEM's portfolio is comprised of six brands, including The Ordinary, a skin care brand with impressive community and referral-driven buzz. The roughly $1 billion transaction, which is subject to the typical regulatory approvals, is slated to close in the fiscal fourth quarter (year ends June 30th). Lauder has also agreed to purchase the remaining interests after a three-year period, and the purchase price for this portion of the business will be determined based on the future performance of DECIEM.

Meanwhile, the company is coming back with a vengeance. During the latter half of fiscal 2020, Lauder's fortunes were tempered by temporary retail store closures and lower foot traffic in open stores as a result of the COVID-19 pandemic. However, the company has rebounded rapidly, posting a hefty 24% year-over-year jump in fiscal second-quarter share net, on an impressive 10% top-line improvement. And since the good times seem sustainable, we have upped our fiscal 2021 earnings estimate by $0.75, to $5.95 a share, and we have initiated a fiscal 2022 earnings call of $6.55 a share.

And investors certainly seem enthused. EL stock is once again testing new highs, after jumping roughly 17% in value since our December review, versus a 7.7% uptick in the S&P 500 Index over the same period.

Momentum-seeking accounts would do well to consider staking a position here. To wit, based on recent price and earnings momentum, EL stock has moved up two notches in Timeliness since our December review and it is now pegged to best the broader market over the year ahead.

However, more patient investors should wait on the sidelines for a more alluring entry point. Given the aforementioned jump in its value, this issue is now trading above the top end of our 3- to 5-year Target Price Range, thereby eliminating its capital-appreciation potential over that time frame.

Kenneth A. Nugent *March 12, 2021*

(A) Diluted earnings. Fiscal year ends June 30th. Excl. non-rec. losses: '06, ($0.15); '09, ($0.31); '10, ($0.38); disc. ops, '06, ($0.43); '11, ($0.21); '16, ($0.03). Next earnings report due May 3rd. (B) Includes intangibles. In '20: $3,739.0 mill., $10.36/share. (C) In millions, adjusted for stock split. (D) Year-end sales or earnings may not tally due to rounding. (E) Dividend paid in fourth quarter through 2012, quarterly thereafter. Div'd suspended on May 1st, 2020, reinstated on Aug. 20th, 2020.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	80
Earnings Predictability	75

EXPONENT, INC. NYSE-EXPO

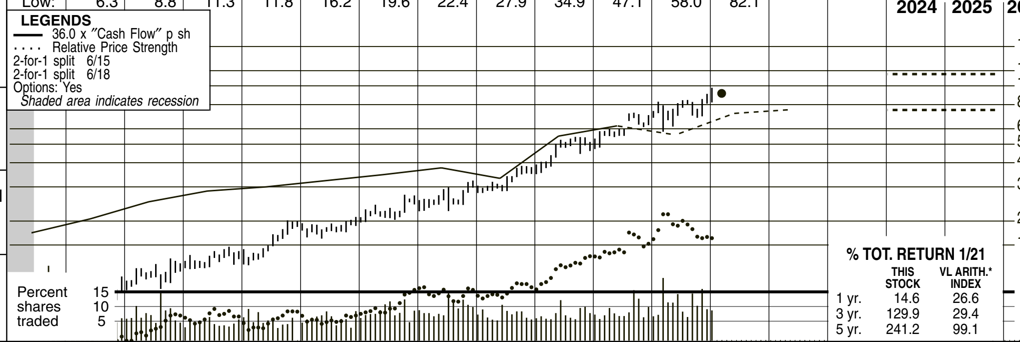
RECENT PRICE **91.55** | P/E RATIO **NMF** (Trailing: 64.0 Median: 27.0) | RELATIVE P/E RATIO **NMF** | DIV'D YLD **0.9%** | VALUE LINE **437**

TIMELINESS 3 Lowered 6/12/20
SAFETY 3 New 2/21/20
TECHNICAL 3 Raised 1/29/21
BETA .90 (1.00 = Market)

High:	10.3	12.8	14.7	20.1	21.0	27.4	32.4	38.6	54.6	72.7	91.0	97.8
Low:	6.3	8.8	11.3	11.8	16.2	19.6	22.4	27.9	34.9	47.1	58.0	82.1

Target Price Range 2024 | 2025 | 2026

LEGENDS
—— 36.0 x "Cash Flow" p sh
.... Relative Price Strength
2-for-1 split 6/15
2-for-1 split 6/18
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$63-$128	$96 (5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	115	(+25%)	7%
Low	75	(-20%)	-3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	128	135	151
to Sell	139	134	141
Hld's(000)	46164	46504	46668

Percent shares traded 15 10 5

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	14.6	26.6
3 yr.	129.9	29.4
5 yr.	241.2	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
2.40	2.86	3.57	4.18	4.15	3.96	4.64	5.05	5.36	5.92	6.08	6.15	6.75	7.37	8.06	*7.40*	*7.55*	*7.90*	Revenues per sh	*9.90*
.27	.30	.42	.50	.48	.57	.70	.79	.83	.90	.97	1.05	.92	1.53	1.72	*1.55*	*2.00*	*2.10*	"Cash Flow" per sh	*2.85*
.20	.21	.31	.37	.37	.46	.56	.65	.69	.74	.80	.88	.77	1.33	1.53	1.55	*1.75*	*1.95*	Earnings per sh A	*2.65*
--	--	--	--	--	--	--	--	.15	.25	.30	.36	.42	.52	.64	.76	*.80*	*.90*	Div'ds Decl'd per sh D	*1.25*
.05	.05	.06	.10	.04	.04	.07	.09	.12	.10	.10	.28	.09	.32	.45	*.30*	*.30*	*.30*	Cap'l Spending per sh	*.40*
2.06	2.11	2.30	2.34	2.73	3.28	3.51	4.10	4.50	4.75	5.11	5.34	5.61	6.10	6.77	*6.65*	*6.90*	*7.20*	Book Value per sh B	*9.15*
64.77	58.85	57.44	54.76	54.95	55.98	53.20	52.82	52.26	51.48	51.44	51.19	51.54	51.50	51.76	*54.00*	*55.00*	*57.00*	Common Shs Outst'g C	*60.00*
16.7	19.7	18.6	20.9	18.0	17.0	19.0	19.5	22.8	25.2	28.3	30.1	42.1	34.8	40.0	*49.1*	Bold figures are		Avg Ann'l P/E Ratio	*36.0*
.89	1.06	.99	1.26	1.20	1.08	1.19	1.24	1.28	1.33	1.42	1.58	2.12	1.88	2.13	*2.48*	Value Line		Relative P/E Ratio	*2.00*
--	--	--	--	--	--	--	--	1.0%	1.3%	1.3%	1.4%	1.3%	1.1%	1.0%	1.0%	estimates		Avg Ann'l Div'd Yield	*1.3%*

CAPITAL STRUCTURE as of 10/2/20
Total Debt None

Leases, Uncapitalized: Annual rentals $6.9 mil.

No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 51,629,519 shares.
MARKET CAP: $4.7 billion (Mid Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
246.7	266.6	280.0	304.7	312.8	315.1	347.8	379.5	417.2	399.9	*415*	*450*	Revenues ($mill)	*595*
32.9%	32.2%	30.8%	36.3%	38.1%	26.6%	27.7%	25.8%	22.0%	*27.0%*	*30.0%*	*32.0%*	Operating Margin	*35.0%*
4.4	4.7	5.0	5.4	6.1	6.1	6.3	6.3	6.8	*5.0*	*10.0*	*10.0*	Depreciation ($mill)	*10.0*
32.7	37.2	38.6	40.7	43.6	47.5	41.3	72.3	82.5	82.6	*100*	*110*	Net Profit ($mill)	*160*
40.4%	39.7%	39.6%	40.1%	38.7%	31.3%	49.9%	22.6%	20.9%	*20.0%*	*20.0%*	*20.0%*	Income Tax Rate	*20.0%*
13.3%	14.0%	13.8%	13.4%	13.9%	15.1%	11.9%	19.0%	19.8%	20.6%	*24.1%*	*24.4%*	Net Profit Margin	*26.9%*
137.8	163.6	179.5	187.1	192.3	193.8	222.4	228.3	240.0	*240*	*250*	*270*	Working Cap'l ($mill)	*360*
--	.0	--	--	1.9	--	--	--	--	*Nil*	*Nil*	*Nil*	Long-Term Debt ($mill)	*Nil*
186.7	216.4	235.1	244.3	262.8	273.3	289.1	313.9	350.3	*360*	*380*	*410*	Shr. Equity ($mill)	*550*
17.5%	17.2%	16.4%	16.7%	16.5%	17.4%	14.3%	23.0%	23.5%	*22.0%*	*26.5%*	*27.0%*	Return on Total Cap'l	*29.0%*
17.5%	17.2%	16.4%	16.7%	16.6%	17.4%	14.3%	23.0%	23.5%	*22.0%*	*26.5%*	*27.0%*	Return on Shr. Equity	*29.0%*
17.5%	17.2%	13.1%	11.3%	10.6%	10.5%	6.7%	14.3%	14.0%	*11.0%*	*15.0%*	*14.0%*	Retained to Com Eq	*15.5%*
--	--	21%	32%	36%	40%	53%	38%	41%	50%	*44%*	*47%*	All Div'ds to Net Prof	*47%*

CURRENT POSITION ($MILL)

	2018	2019	10/2/20
Cash Assets	208.6	176.4	187.6
Receivables	105.8	120.1	110.0
Inventory	--	--	--
Other	12.2	67.5	31.0
Current Assets	326.6	364.0	328.6
Accts Payable	12.3	4.7	18.6
Debt Due	--	--	--
Other	86.0	119.3	77.8
Current Liab.	98.3	124.0	96.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	6.5%	6.5%	*4.5%*
"Cash Flow"	11.5%	10.5%	*11.0%*
Earnings	13.0%	12.0%	*12.0%*
Dividends	--	31.5%	*13.0%*
Book Value	9.5%	6.5%	*6.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Fiscal Year
2018	96.5	95.6	95.3	92.1	379.5
2019	99.0	106.5	101.5	110.1	417.2
2020	106.0	92.5	98.7	103.2	399.9
2021	*100*	*105*	*105*	*105*	*415*
2022	*110*	*110*	*115*	*115*	*450*

Fiscal Year Ends	EARNINGS PER SHARE AD Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Fiscal Year
2018	.37	.34	.32	.30	1.33
2019	.42	.39	.36	.36	1.53
2020	.49	.31	.34	.41	1.55
2021	*.40*	*.45*	*.45*	*.45*	*1.75*
2022	*.45*	*.50*	*.50*	*.50*	*1.95*

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.105	.105	.105	.105	.42
2018	.13	.13	.13	.13	.52
2019	.16	.16	.16	.16	.64
2020	.19	.19	.19	.19	.76
2021	.20				

BUSINESS: Exponent, Inc. is a science and engineering consulting company that provides solutions to complex problems. Its team of scientists, engineers, and business and regulatory consultants bring together more than 90 different technical disciplines to solve complicated issues facing industry and government. The company's services include: analysis of product development, product recall, regulatory compliance, and the discovery of potential problems related to products, people, property, and impending litigation. Has 1,122 employees. Officers & directors own 2.2% of common stock; BlackRock, 15.1%; Vanguard, 10.4% (4/20 Proxy). CEO: Paul R. Johnston Address: 149 Commonwealth Dr., Menlo Park, CA 94025. Tel.: (650) 326-9400. Internet: www.exponent.com.

Exponent delivered better-than-expected top- and bottom-line results in the fourth quarter. Total revenues decreased 6% on a year-over-year basis, to $103 million. However, the company was operating with one fewer week in the period than in the comparable 2019 interim. Additionally, the early 2020 divestiture of EXPO's German entity weighed modestly on the top line, but it still beat our sales estimate of $93 million. Meantime, Exponent recognized a tax benefit from share-based rewards amounting to $0.05 per share. But discounting this addition, it bested our share-net call by a nickel. The company continued to feel the impact of restrictions associated with the COVID-19 pandemic, as certain trial dates and human participant studies were deferred into future periods. This led to total utilization of 67.3% versus 69.5% in the year before.

Operating expenses ought to tick back upward in the near term. Exponent was able to cut down on a lot of day-to-day costs over the last year, including travel and meeting expenses that are typical for this type of business. And though pandemic-related restrictions may prevent the company from jumping back into the market with both feet, it does expect these costs to begin scaling up in the next few months. In the first quarter, specifically, general and administrative expenses are likely to roughly double, to $3.5 million.

The company hiked up its dividend some 5%. And while a $0.20-per-share quarterly distribution may fail to move the needle for most income-oriented investors at the recent price, those with a proclivity to seek value should note that the company has raised its payout in each of the last four years, and it continues to generate ample cash flow despite recent economic headwinds.

Neutrally ranked Exponent stock continues to trade at an expensive valuation, in our view. Shares of the company have advanced 15% in price dating back to our late-November report. And while opportunities for growth across the biomedical and biomechanical practices remain plentiful, we think most investors would do well to await a more attractive entry point before considering a position here.

Robert J. Scrudato *February 19, 2021*

(A) Diluted shares. May not sum due to rounding. Fiscal years end Friday closest to December 31st. Next earnings report late April.
(B) Incl. intang. In 2019, $8.6 mill., about $0.16/sh.
(C) In millions.
(D) Dividends historically paid in late March, June, September, and December.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	100
Earnings Predictability	70

FASTENAL COMPANY NDQ-FAST

RECENT PRICE 44.66 | P/E RATIO 30.0 (Trailing: 30.0; Median: 26.0) | RELATIVE P/E RATIO 1.40 | DIV'D YLD 2.5% | VALUE LINE 1138

TIMELINESS 2 Lowered 1/15/21
SAFETY 2 Raised 10/2/09
TECHNICAL 3 Lowered 3/12/21
BETA .90 (1.00 = Market)

High:	15.1	22.2	27.5	26.7	26.1	24.2	25.0	27.7	30.6	37.9	50.5	51.9
Low:	10.2	14.4	18.8	21.9	20.1	17.2	17.5	19.9	23.7	24.8	26.7	43.4

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$37-$72	$55 (20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(+65%)	15%
Low	55	(+25%)	7%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	400	396	426
to Sell	371	378	385
Hld's(000)	453045	443281	444228

% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	38.8	50.1
3 yr.	82.2	45.4
5 yr.	132.7	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
2.52	2.99	3.46	3.94	3.27	3.85	4.69	5.28	5.60	6.31	6.68	6.85	7.63	8.68	9.29	9.84	10.00	10.70	Sales per sh	11.65
.32	.38	.45	.54	.38	.52	.68	.80	.86	.96	1.04	1.04	1.22	1.55	1.63	1.76	1.85	2.00	"Cash Flow" per sh	3.15
.28	.33	.39	.48	.31	.45	.61	.71	.76	.84	.89	.87	1.01	1.31	1.38	1.49	1.50	1.65	Earnings per sh A	2.40
.08	.10	.11	.13	.18	.21	.33	.37	.40	.50	.56	.60	.64	.77	.86	1.00	1.12	1.24	Div'ds Decl'd per sh B	1.54
1.30	1.52	1.69	1.92	2.02	2.17	2.47	2.63	2.99	3.24	3.11	3.34	3.65	4.03	4.64	4.76	4.95	5.20	Book Value per sh	5.90
604.22	604.83	596.48	594.12	589.72	589.72	590.52	593.13	593.51	591.74	579.16	578.32	575.18	571.80	574.13	574.16	574.00	573.00	Common Shs Outst'g C	572.00
28.7	30.4	26.6	23.0	28.6	27.9	28.2	31.7	32.3	27.9	23.2	25.3	23.3	20.8	23.6	28.0	Bold figures are		Avg Ann'l P/E Ratio	27.0
1.53	1.64	1.41	1.38	1.90	1.77	1.77	2.02	1.81	1.47	1.17	1.33	1.17	1.12	1.26	1.45	Value Line		Relative P/E Ratio	1.50
1.0%	1.0%	1.1%	1.2%	2.0%	1.6%	1.9%	1.6%	1.6%	2.1%	2.7%	2.7%	2.7%	2.8%	2.6%	2.4%	estimates		Avg Ann'l Div'd Yield	2.4%

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
2766.9	3133.6	3326.1	3733.5	3869.2	3962.0	4390.5	4965.1	5333.7	5647.3	5750	6130	Sales ($mill)	6675
53.4%	53.2%	53.6%	52.8%	52.6%	52.2%	49.3%	51.0%	47.2%	45.5%	49.5%	50.0%	Gross Margin	52.0%
22.4%	23.2%	23.3%	23.0%	23.6%	22.7%	20.1%	22.8%	19.8%	20.2%	20.0%	20.5%	Operating Margin	22.0%
2585	2652	2687	2637	2622	2712	- -	- -	2114	2003	1880	1790	Number of Stores	1520
357.9	420.5	448.6	494.2	516.4	499.5	578.6	751.9	790.9	859.1	860	945	Net Profit ($mill)	1375
37.8%	37.6%	37.1%	37.2%	37.5%	36.8%	33.7%	23.8%	24.2%	24.2%	24.0%	24.0%	Income Tax Rate	21.0%
12.9%	13.4%	13.5%	13.2%	13.3%	12.6%	13.2%	15.1%	14.8%	15.2%	15.0%	15.4%	Net Profit Margin	20.6%
1048.3	1082.5	1168.7	1207.9	1291.6	1445.2	1584.7	1878.8	1912.5	1886.9	1900	1900	Working Cap'l ($mill)	1925
- -	- -	- -	- -	303.0	379.5	412.0	497.0	342.0	365.0	400	450	Long-Term Debt ($mill)	550
1459.0	1560.4	1772.7	1915.2	1801.3	1933.1	2096.9	2302.7	2665.6	2733.2	2850	2990	Shr. Equity ($mill)	3370
24.5%	27.0%	25.3%	25.8%	24.5%	21.7%	23.2%	27.1%	26.5%	27.9%	27.0%	28.0%	Return on Total Cap'l	37.0%
24.5%	27.0%	25.3%	25.8%	28.7%	25.8%	27.6%	32.7%	29.7%	31.4%	30.0%	31.5%	Return on Shr. Equity	41.0%
11.4%	12.9%	11.9%	10.3%	10.5%	7.9%	10.0%	13.5%	11.0%	10.4%	7.5%	8.0%	Retained to Com Eq	14.5%
54%	52%	53%	60%	63%	69%	64%	59%	63%	67%	75%	75%	All Div'ds to Net Prof	64%

CAPITAL STRUCTURE as of 12/31/20
Total Debt $405.0 mill. **Due in 5 Yrs** $40.0 mill.
LT Debt $365.0 mill. **LT Interest** $24.9 mill.
(12% of Cap'l)
Leases, Uncapitalized Annual rentals $58.3 mill.

No Defined Benefit Pension Plan

Preferred Stock None

Common Stock 574,317,178 shs.
as of 1/29/21

MARKET CAP: $25.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	167.2	174.9	245.7
Receivables	714.3	741.8	769.4
Inventory (FIFO)	1278.7	1366.4	1337.5
Other	156.0	174.1	147.0
Current Assets	2316.2	2457.2	2499.6
Accts Payable	193.6	192.8	207.0
Debt Due	3.0	3.0	40.0
Other	240.8	348.9	365.7
Current Liab.	437.4	544.7	612.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Sales	9.5%	8.5%	6.0%
"Cash Flow"	13.0%	11.5%	8.5%
Earnings	13.0%	11.0%	8.0%
Dividends	17.5%	12.5%	9.0%
Book Value	8.0%	7.5%	4.5%

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1185.8	1267.9	1279.8	1231.6	4965.1
2019	1309.3	1368.4	1379.1	1276.9	5333.7
2020	1367.0	1509.0	1413.3	1358.0	5647.3
2021	1420	1420	1450	1460	5750
2022	1480	1500	1550	1600	6130

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.30	.37	.35	.29	1.31
2019	.34	.36	.37	.31	1.38
2020	.35	.42	.38	.34	1.49
2021	.35	.40	.40	.35	1.50
2022	.40	.40	.45	.40	1.65

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.16	.16	.16	.16	.64
2018	.185	.185	.20	.20	.77
2019	.215	.215	.215	.215	.86
2020	.25	.25	.25	.25	1.00
2021	.28				

BUSINESS: Fastenal Company sells and delivers industrial and construction supplies through stores in the U.S., Puerto Rico, Canada, Mexico, Singapore, China, and the Netherlands. Sells threaded fasteners; tools and equipment; cutting tool blades and abrasives; components and accessories for hydraulics, pneumatics, plumbing and HVAC; metals; and janitorial, welding, safety and electrical supplies. At 12/31/20 it had 2,003 stores, 1,265 Onsite locations, 94,033 vending machines, and 18,253 employees. Off. & dir. own less than 1% of stock; Vanguard, 11.6%; BlackRock, 8.1%; BONY Mellon, 5.9% (2/21 proxy). Chrmn.: Willard D. Oberton. Pres. & CEO: Daniel L. Florness. Inc.: MN. Addr.: 2001 Theurer Boulevard, Winona, MN 55987. Tel.: 507-454-5374. Web: www.fastenal.com.

Fastenal reported higher fourth-quarter sales and share earnings. Sales rose 6.4% to $1.358 billion, and share net was up 9.6% to $0.34. Sales rose due to greater demand for personal protective gear and sanitizer products. Profits were up for the same reason, along with lower costs as a result of more vending machines opening closer to customers' work locations.

Why has Fastenal's stock price consistently commanded a premium price/earnings (P/E) multiple? There has never been a year in Fastenal's long and storied history when its average annual relative P/E ratio hasn't comfortably exceeded 1.00. Much of this is due to the fact that the company's earnings are easily divined (note the Earnings Predictability ratio of 95), and its top line has consistently trended higher. Fastenal has an enviable business model, whereby demand for its products is universal and highly diversified (both geographically and product-wise). As such, results rarely waiver in either good or bad economies. Case in point is the way the company performed in 2020 when, despite a massive disruption to the global economy due to the coronavirus, Fastenal's quarterly top and bottom lines rose year over year.

We see no reason why this trend shouldn't continue. Indeed, margins will likely widen further as the number of lower-cost online locations and vending machines increases, and the number of higher-cost brick-and-mortar locations declines. Over the years, Fastenal has built up a very loyal and established contractor customer base, one that Home Depot and Lowe's have found hard to emulate, let alone improve upon. Moreover, even if the coronavirus and its mutations prevent the global economy from improving quickly, Fastenal's socially-distanced vending machine and Onsite operations should continue to perform well.

This timely issue has above-average long-term total return potential. Although our page omits capital spending per share, Fastenal posted $0.29 in capex in 2020 and will likely spend $0.35 a share in 2021. Projected cash flow should easily cover this outlay as well as an increasing dividend.

Jeremy J. Butler *March 19, 2021*

(A) Basic earnings. Excludes non-recurring gains/(losses): '08, ($0.03). Next earnings report due mid-April. May not sum due to rounding.
(B) Dividends historically paid in late February, May, August, and November. Switched from semi-annual dividend to quarterly dividend in April, 2011. Special dividends paid: $0.27 on 12/15/08, $0.42 on 12/6/10, $0.50 on 12/21/12, $0.40 on 12/22/20.
(C) In millions, adjusted for splits.

Company's Financial Strength	A+
Stock's Price Stability	80
Price Growth Persistence	45
Earnings Predictability	95

GENTEX CORP. NDQ-GNTX

RECENT PRICE 36.10 | P/E RATIO 17.4 (Trailing: 25.1 Median: 16.0) | RELATIVE P/E RATIO 0.81 | DIV'D YLD 1.3% | VALUE LINE

TIMELINESS 3 Lowered 10/2/20
SAFETY 3 New 7/10/98
TECHNICAL 3 Raised 12/4/20
BETA .95 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$26-$47	$37 (0%)

2024-26 PROJECTIONS

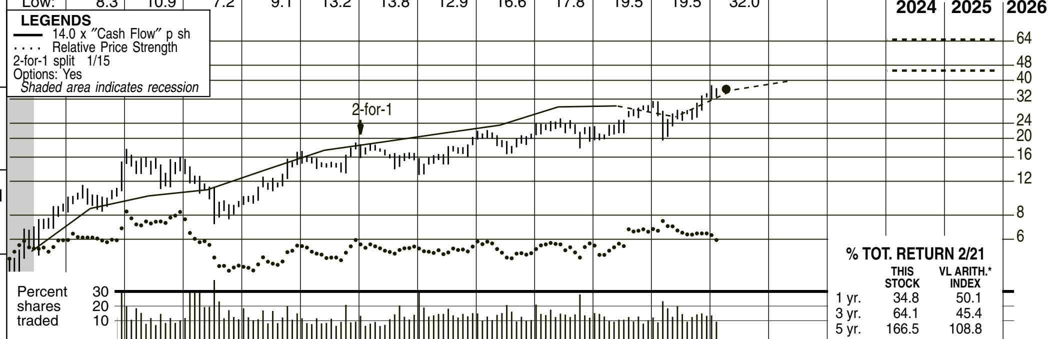
	Price	Gain	Ann'l Total Return
High	65	(+80%)	17%
Low	45	(+25%)	7%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	225	195	253
to Sell	230	232	208
Hld's(000)	204144	199911	199703

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	15.2	17.7	15.7	17.1	19.1	18.8	20.4	22.1	25.4	29.7	34.3	37.8
Low:	8.3	10.9	7.2	9.1	13.2	13.8	12.9	16.6	17.8	19.5	19.5	32.0

LEGENDS
—— 14.0 x "Cash Flow" p sh
. . . . Relative Price Strength
2-for-1 split 1/15
Options: Yes
Shaded area indicates recession



% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	34.8	50.1
3 yr.	64.1	45.4
5 yr.	166.5	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
1.72	2.01	2.26	2.27	1.97	2.87	3.55	3.84	4.02	4.66	5.30	5.84	6.40	7.07	7.40	6.90	8.35	9.25	Sales per sh	11.10
.43	.48	.53	.36	.37	.62	.72	.77	.98	1.24	1.37	1.52	1.67	2.08	2.11	1.85	2.55	2.85	"Cash Flow" per sh	3.70
.35	.37	.43	.22	.24	.49	.57	.60	.78	.98	1.08	1.19	1.28	1.62	1.68	1.44	2.05	2.30	Earnings per sh A	3.10
.18	.19	.20	.22	.22	.22	.24	.26	.28	.31	.34	.36	.39	.44	.46	.48	.50	.54	Div'ds Decl'd per sh B	.70
.17	.17	.19	.17	.08	.16	.42	.41	.19	.25	.34	.42	.37	.33	.34	.25	.35	.40	Cap'l Spending per sh	.45
2.70	2.47	2.79	2.54	2.66	3.14	3.56	3.92	4.56	5.32	5.91	6.64	7.31	7.18	7.71	8.05	8.60	9.20	Book Value per sh	11.55
312.09	284.95	289.51	275.27	276.68	284.58	288.14	286.15	291.16	295.25	291.34	287.74	280.28	259.33	251.28	244.00	239.00	234.00	Common Shs Outst'g C	225.00
25.1	21.4	22.0	33.0	27.2	20.7	25.2	17.9	15.5	15.7	15.5	13.8	15.3	13.9	14.7	19.2	Bold figures are		Avg Ann'l P/E Ratio	18.0
1.34	1.16	1.17	1.99	1.81	1.32	1.58	1.14	.87	.83	.78	.72	.77	.75	.78	.98	Value Line		Relative P/E Ratio	1.00
2.0%	2.4%	2.1%	3.0%	3.4%	2.2%	1.7%	2.4%	2.3%	2.0%	2.0%	2.2%	2.0%	1.9%	1.9%	1.7%	estimates		Avg Ann'l Div'd Yield	1.5%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $25.0 mill. Due in 5 Yrs $25.0 mill.
LT Debt Nil LT Interest Nil

Leases, Uncapitalized $.7 mill.

No Defined Benefit Pension Plan

Pfd Stock None
Common Stock 245,056,522 shs.
as of 10/23/20

MARKET CAP: $8.8 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1023.8	1099.6	1171.9	1375.5	1543.6	1678.9	1794.9	1834.1	1858.9	1688.2	2000	2170	Sales ($mill)	2500
26.8%	26.3%	31.4%	34.7%	34.9%	35.8%	34.7%	33.3%	31.9%	30.0%	34.0%	34.5%	Operating Margin	37.0%
42.6	50.2	62.9	77.4	80.6	88.6	99.6	102.2	104.7	105	110	115	Depreciation ($mill)	135
164.7	171.5	222.9	288.6	318.5	347.6	369.3	437.9	424.7	351.7	495	550	Net Profit ($mill)	700
32.6%	32.7%	32.0%	30.5%	31.3%	31.9%	30.6%	16.1%	15.1%	17.0%	17.0%	18.0%	Income Tax Rate	21.0%
16.1%	15.6%	19.0%	21.0%	20.6%	20.7%	20.6%	23.9%	22.8%	20.8%	24.8%	25.3%	Net Profit Margin	28.0%
651.6	656.7	481.2	723.2	853.0	1005.1	940.9	681.7	778.5	800	830	870	Working Cap'l ($mill)	950
- -	- -	265.6	258.1	225.6	178.1	- -	- -	- -	Nil	Nil	Nil	Long-Term Debt ($mill)	Nil
1027.1	1121.0	1327.6	1571.4	1722.5	1910.4	2049.5	1861.8	1938.1	1963.9	2050	2150	Shr. Equity ($mill)	2600
16.0%	15.3%	14.0%	15.9%	16.6%	16.9%	18.0%	23.5%	21.9%	17.9%	24.0%	25.5%	Return on Total Cap'l	27.0%
16.0%	15.3%	16.8%	18.4%	18.5%	18.2%	18.0%	23.5%	21.9%	17.9%	24.0%	25.5%	Return on Shr. Equity	27.0%
9.5%	8.7%	10.8%	12.8%	12.9%	12.9%	12.7%	17.3%	15.9%	12.0%	18.0%	19.5%	Retained to Com Eq	20.5%
41%	43%	36%	30%	30%	29%	29%	27%	27%	35%	25%	24%	All Div'ds to Net Prof	24%

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	217.0	296.3	400.5
Receivables	213.5	235.4	268.5
Inventory (FIFO)	225.3	248.9	233.4
Other	195.1	169.7	72.9
Current Assets	850.9	950.3	975.3
Accts Payable	92.8	97.6	90.3
Debt Due	- -	- -	25.0
Other	76.4	74.2	121.2
Current Liab.	169.2	171.8	236.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	12.5%	11.0%	7.0%
"Cash Flow"	16.5%	14.5%	9.5%
Earnings	18.0%	14.5%	10.5%
Dividends	7.5%	8.5%	7.0%
Book Value	11.0%	10.0%	6.5%

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	465.4	455.0	460.3	453.4	1834.1
2019	468.6	468.7	477.8	443.8	1858.9
2020	453.8	229.9	474.6	529.9	1688.2
2021	490	500	500	510	2000
2022	530	540	550	550	2170

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.40	.40	.41	.41	1.62
2019	.40	.45	.44	.39	1.68
2020	.36	.02	.48	.58	1.44
2021	.50	.50	.50	.55	2.05
2022	.55	.55	.60	.60	2.30

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.09	.10	.10	.10	.39
2018	.11	.11	.11	.11	.44
2019	.11	.115	.115	.115	.455
2020	.115	.12	.12	.12	.475
2021	.12				

BUSINESS: Gentex Corporation manufactures automatic-dimming automotive rearview mirrors and electronics for the automotive industry. These mirrors use sensors to detect glare from trailing approaching vehicles and darken to protect the driver's vision. It also makes dimmable aircraft windows for the aviation industry. Sells to most of the major automakers (has 3 customers who each accounted for 10% or more of 2019 total sales). Also makes commercial fire protection products. Has approximately 5,875 employees. Vanguard owns 9.9% of common stock; BlackRock, 9.7%; officers and directors, less than 1.0% (3/20 proxy). Pres. and CEO: Steve Downing. Inc.: MI. Address: 600 N. Centennial Street, Zeeland, MI 49464. Telephone: 616-772-1800. Internet: www.gentex.com.

Gentex finished 2020 with strong results. Fourth-quarter sales of $530 million increased 19% compared to the previous-year tally, and were nearly $55 million higher than our estimate. The advance was driven by a 14% rise in auto-dimming mirror unit shipments, to 11.976 million. Demand for *Full Display Mirror* products was particularly robust, nearly doubling from the year-ago tally. Margins widened due to the higher volumes, the benefits from recent structural cost-savings initiatives, and a more favorable product mix. This allowed share net to jump 49% compared to last year's tally.

We are raising our 2021 top- and bottom-line estimates by $60 million and a dime per share, respectively, to $2.0 billion and $2.05. Management believes total light-vehicle production in its primary markets will increase 12% this year, to around 72.4 million units. The biggest increase will likely come from North America, where production is expected to jump 25%, followed by Europe at 14%. However, Gentex remains cautious about its business, given the ongoing concerns regarding the COVID-19 pandemic. Instability in its end markets, potential supply issues, and international trade concerns may hurt results in the near term. Nevertheless, management expects record sales for the year. We think earnings will advance at a strong clip, driven by the higher volumes and ongoing benefits from cost-containment initiatives. Continued stock repurchases should also boost share earnings.

We are introducing our 2022 top- and bottom-line estimates of $2.17 billion and $2.30 per share, respectively. Gentex noted that it anticipates a more modest level of growth in light-vehicle production next year, to the tune of around 3%. We also think any lingering issues regarding the coronavirus pandemic will largely be in the rearview mirror in 2022.

Shares of Gentex are ranked to track the broader market averages in the coming six to 12 months. The stock, which has a dividend yield moderately below the *Value Line* median, offers above-average price appreciation potential over the 3- to 5-year haul.

Iason Dalavagas *March 12, 2021*

(A) Diluted earnings. Quarterly earnings may not sum due to rounding. Next earnings report due in late April.
(B) Payments typically made in late January, April, July, and October.
(C) In millions, adjusted for stock split.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	70
Earnings Predictability	80

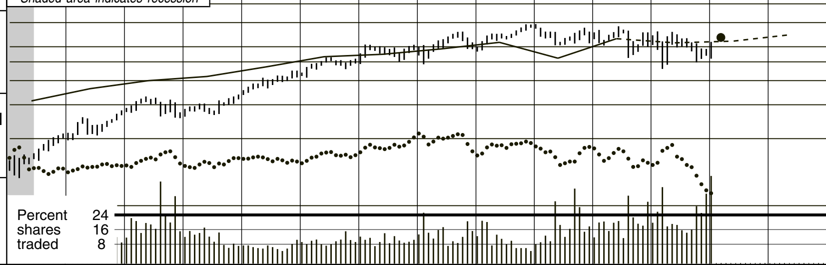
INT'L FLAVORS & FRAG. NYSE-IFF

RECENT PRICE 134.06 | P/E RATIO 22.6 (Trailing: 23.5 / Median: 20.0) | RELATIVE P/E RATIO 1.06 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS – Suspended 12/27/19
SAFETY 1 Raised 3/11/11
TECHNICAL – Suspended 12/27/19
BETA .95 (1.00 = Market)

High:	56.1	66.3	67.8	90.3	105.8	123.1	143.6	156.6	157.4	153.0	143.9	141.5
Low:	39.3	51.2	52.1	67.5	82.9	97.6	97.2	113.2	122.1	104.9	92.1	103.9

LEGENDS
—— 17.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range
2024 | 2025 | 2026
320, 200, 160, 120, 100, 80, 60, 40, 18

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$86-$185	$136 (0%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	225	(+70%)	16%
Low	180	(+35%)	10%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	259	237	207
to Sell	265	263	275
Hld's(000)	101592	101658	100599

Percent shares traded: 24, 16, 8

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-12.0	26.6
3 yr.	-19.7	29.4
5 yr.	7.2	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
21.97	23.43	28.10	30.38	29.39	32.68	34.45	34.57	36.28	38.24	37.78	39.34	43.05	37.31	48.13	47.95	45.10	48.65	Sales per sh	60.80
3.04	3.39	3.94	3.77	3.70	4.27	4.71	4.95	5.54	6.26	6.45	6.87	7.43	6.15	7.77	7.40	7.55	8.15	"Cash Flow" per sh	11.20
1.96	2.34	2.70	2.76	2.69	3.26	3.74	3.98	4.47	5.08	5.25	5.51	5.89	6.00	6.17	5.70	6.00	6.50	Earnings per sh A	9.20
.72	.74	.88	.96	1.00	1.04	1.16	1.30	1.46	1.72	2.06	2.40	2.66	2.84	2.96	3.04	3.12	3.22	Div'ds Decl'd per sh B ■	4.60
1.03	.65	.81	1.09	.84	1.32	1.58	1.55	1.65	1.77	1.26	1.60	1.63	1.60	2.21	1.80	2.00	2.25	Cap'l Spending per sh	3.00
10.09	10.12	7.62	7.29	9.71	12.45	13.65	15.30	17.98	18.80	19.87	20.53	21.33	56.58	58.22	59.45	78.45	82.35	Book Value per sh C	94.10
90.74	89.42	81.02	78.66	79.16	80.26	80.92	81.63	81.38	80.78	80.02	79.21	78.95	106.62	106.79	106.00	255.00	255.00	Common Shs Outst'g D	255.00
18.9	16.3	18.4	14.3	12.7	14.4	15.7	14.8	17.7	19.1	21.6	22.6	23.1	22.7	21.3	21.4	Bold figures are		Avg Ann'l P/E Ratio	22.0
1.01	.88	.98	.86	.85	.92	.98	.94	.99	1.01	1.09	1.19	1.16	1.23	1.13	1.10	Value Line		Relative P/E Ratio	1.20
1.9%	1.9%	1.8%	2.4%	2.9%	2.2%	2.0%	2.2%	1.8%	1.8%	1.8%	1.9%	2.0%	2.1%	2.3%	2.5%	estimates		Avg Ann'l Div'd Yield	2.3%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $4331.8 mill. **Due in 5 Yrs** $1490 mill.
LT Debt $3890.8 mill. **LT Interest** $195.0 mill.
(Interest coverage: 7.3x)
(39% of Capital)
Pension Assets-12/19 $1.6 bill. **Oblig.**$1.8 bill.

Pfd Stock None

Common Stock *255,000,000 shs.*E

MARKET CAP: $34.2 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
2788.0	2821.4	2952.9	3088.5	3023.2	3116.4	3398.7	3977.5	5140.1	5084.2	11500	12400	Sales ($mill)	15500
19.7%	20.0%	21.1%	22.4%	22.8%	23.9%	22.8%	23.3%	21.7%	21.0%	23.0%	24.0%	Operating Margin	25.5%
75.3	76.7	83.2	89.4	89.6	102.5	118.0	125.7	130.2	132.8	400	425	Depreciation ($mill)	500
306.2	327.5	368.0	416.3	426.6	441.4	468.3	529.6	699.6	649.1	1520	1650	Net Profit ($mill)	2350
27.1%	26.4%	25.7%	25.3%	24.2%	23.8%	20.7%	18.8%	19.5%	20.0%	22.0%	22.0%	Income Tax Rate	23.0%
11.0%	11.6%	12.5%	13.5%	14.1%	14.2%	13.8%	13.3%	13.6%	12.8%	13.2%	13.2%	Net Profit Margin	15.2%
752.6	949.9	1092.5	1191.2	713.8	710.7	1127.7	1813.6	1390.3	1156.1	1500	1180	Working Cap'l ($mill)	2000
778.2	881.1	932.7	934.2	937.8	1066.9	1632.2	4504.4	3997.4	3779.4	11000	10000	Long-Term Debt ($mill)	10000
1104.4	1248.8	1463.1	1518.6	1590.3	1626.2	1684.2	6033.0	6217.3	6300	20000	21000	Shr. Equity ($mill) C	24000
17.4%	16.4%	16.3%	17.9%	17.8%	17.4%	15.1%	5.7%	7.5%	7.0%	6.0%	6.0%	Return on Total Cap'l	7.0%
27.7%	26.2%	25.1%	27.4%	26.8%	27.1%	27.8%	8.8%	11.3%	10.5%	7.5%	8.0%	Return on Shr. Equity	10.0%
19.5%	15.7%	19.2%	18.6%	16.8%	15.8%	15.6%	5.0%	6.2%	5.0%	4.0%	4.0%	Retained to Com Eq	5.0%
29%	40%	24%	32%	37%	42%	44%	43%	45%	50%	52%	50%	All Div'ds to Net Prof	50%

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	634.9	606.8	469.8
Receivables	937.8	876.1	928.6
Inventory	1078.5	1123.1	1151.3
Other	290.7	336.5	396.5
Current Assets	2941.9	2942.5	2946.2
Accts Payable	471.4	510.4	505.3
Debt Due	48.6	385.0	441.0
Other	608.3	656.8	670.0
Current Liab.	1128.3	1552.2	1616.3

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	4.0%	3.5%	5.0%
"Cash Flow"	6.5%	5.0%	6.5%
Earnings	8.5%	6.0%	6.5%
Dividends	11.5%	13.5%	12.5%
Book Value	18.5%	21.0%	16.5%

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	930.9	920.0	907.5	1219.0	3977.5
2019	1297.4	1292.6	1266.3	1283.8	5140.1
2020	1347.3	1198.7	1268.1	1270.1	5084.2
2021	2800	2800	2950	2950	11500
2022	3050	3100	3100	3150	12400

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.69	1.66	1.54	1.22	6.00
2019	1.57	1.61	1.53	1.46	6.17
2020	1.62	1.36	1.40	1.32	5.70
2021	1.50	1.60	1.50	1.40	6.00
2022	1.60	1.70	1.60	1.60	6.50

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.64	.64	.64	.69	2.61
2018	.69	.69	.69	.73	2.80
2019	.73	.73	.73	.75	2.94
2020	.75	.75	.75	.77	3.02
2021	.77				

BUSINESS: International Flavors & Fragrances, Inc. is a leading manufacturer of flavor and fragrance chemicals sold to consumer products manufacturers worldwide. The company currently operates in two distinct business segments: Taste (accounts for about 61% of sales); Scent (about 39%). Its products are used in perfumes, cosmetics, soaps and detergents, prepared foods, beverages, dairy foods, pharmaceuticals, and confectionery and tobacco products. R&D spending accounted for approximately 7% of 2020 sales. Had about 13,600 employees as of 12/19. Off. and dir. own less than 1% of stock; 3 institutions own 41% (3/20 proxy). CEO: Andreas Fibig. Inc.: NY. Address: 521 W. 57th St., New York, NY 10019. Tele.: 212-765-5500. Internet: www.iff.com.

International Flavors & Fragrances (IFF) wrapped up 2020 with respectable results. The specialty chemical company posted sales of $1.27 billion, with earnings of $1.32 per share, for the fourth quarter. Although lower than last year's figures, this showing met our expectations. To its credit, IFF has done a good job weathering a challenging environment. Some business lines have done well during the coronavirus pandemic. For instance, demand remained strong for offerings in the personal care and sanitation categories, offsetting ongoing softness in the food services areas.

Meanwhile, IFF has completed the acquisition of DuPont's Nutrition & Biosciences business. The transaction, which closed in early February, will greatly transform the company. Looking ahead, IFF will be better positioned in a number of consumer areas (food and beverage, home, personal care, health and wellness). Reporting segments will probably be changed to reflect an expanded business. Furthermore, IFF will have stronger R&D capabilities with a much-larger product pipeline. Elsewhere, meaningful business and cost synergies should be attained over the next couple of years. Savings will result from streamlining the organization and from realizing manufacturing efficiencies. Andreas Fibig will remain as CEO of IFF, which should help ensure a smooth integration process.

We have altered our projections to account for the acquisition. For 2021, we currently think the top line will more than double, to $11.5 billion. Further, we look for earnings to come in at $6.00 per share, suggesting a 5% annual advance. The current dividend policy will most likely be maintained. It should be noted that due to the size of this transaction, and somewhat limited visibility, our forecasts should be viewed as tentative. A clearer picture should emerge when IFF reports its full first-quarter results.

These shares remain unranked due to closing of the acquisition. Our projections suggest that this issue holds good appreciation potential for the next 3 to 5 years. Much will depend on IFF's ability to integrate the purchase and gain market share in some new categories.

Adam Rosner *February 26, 2021*

(A) Excludes one-time gains/(losses): '05, (8¢); '06, 14¢; '07, 12¢; '08, 11¢; '09, 16¢; '10, 11¢; '11, 48¢; '12, (44¢); '13, (18¢); '14, (2¢); '15, (9¢); '16 (46¢).; '17 ($2.17); '18 ($2.21); '19 ($2.17); '20 ($2.50). Ex. disc.: '05, (2¢). Next egs rept. due early May. Egs. do not sum due to rounding and change in shares. (B) Div's. hist. paid in early Jan, April, July, and Oct. ■ Div. reinvestment plan available. (C) Includes intangibles. In 2019: $8439.5 million, $79.03 per share. (D) In millions. (E) Estimate based on terms of merger.

Company's Financial Strength	A+
Stock's Price Stability	80
Price Growth Persistence	70
Earnings Predictability	100

INGREDION INC. NYSE-INGR

RECENT PRICE **78.86** | P/E RATIO **12.8** (Trailing: 13.0, Median: 14.0) | RELATIVE P/E RATIO **0.61** | DIV'D YLD **3.3%** | VALUE LINE

TIMELINESS 4 Lowered 12/4/20
SAFETY 2 Raised 1/15/21
TECHNICAL 4 Lowered 12/25/20
BETA .90 (1.00 = Market)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	32.4	48.0	59.5	66.7	74.3	87.2	99.6	140.0	142.6	146.3	99.9	99.5
Low:	17.8	26.2	36.7	45.3	60.6	58.3	75.1	84.6	113.1	87.0	73.0	59.1

Target Price Range 2023 | 2024 | 2025

18-Month Target Price Range
Low-High Midpoint (% to Mid)
$61-$116 $89 (10%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	155	(+95%)	20%
Low	115	(+45%)	13%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	205	211	210
to Sell	213	202	212
Hld's(000)	57540	67475	57115

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-12.6	18.8
3 yr.	-38.8	29.9
5 yr.	-7.7	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
30.81	31.85	35.37	45.91	52.77	49.36	57.44	81.96	84.83	85.16	79.47	78.49	78.77	81.01	87.80	92.92	*87.85*	*88.90*	Sales per sh	*114.30*
2.65	2.65	3.21	4.37	5.28	3.79	5.31	7.60	8.39	7.94	8.17	8.42	9.97	10.72	11.18	9.97	*9.20*	*9.70*	"Cash Flow" per sh	*15.70*
1.25	1.19	1.63	2.59	3.52	2.02	3.24	4.68	5.57	5.05	5.18	5.63	7.05	7.67	6.92	6.61	*5.80*	*6.25*	Earnings per sh A	*10.00*
.25	.28	.32	.40	.51	.56	.56	.60	.86	1.40	1.68	1.71	1.85	2.10	2.43	2.51	2.53	*2.57*	Div'ds Decl'd per sh B	*3.20*
1.40	1.93	2.31	2.40	3.05	1.96	2.09	3.47	4.07	4.01	3.87	3.91	3.92	4.36	5.26	4.91	*4.50*	*4.70*	Cap'l Spending per sh	*6.30*
14.59	16.33	17.95	21.73	18.52	22.60	25.99	27.73	31.65	32.35	30.52	29.94	35.42	40.16	35.90	40.71	*42.40*	*43.70*	Book Value per sh D	*57.15*
74.09	74.09	74.09	73.87	74.74	74.39	76.02	75.88	77.00	74.31	71.32	71.62	72.41	72.00	66.53	66.82	*67.00*	*67.50*	Common Shs Outst'g C	*70.00*
17.7	20.1	18.8	15.4	10.6	13.1	11.1	10.7	10.0	13.4	14.3	15.2	16.9	16.1	16.4	13.0	*14.1*		Avg Ann'l P/E Ratio	*13.5*
.94	1.07	1.02	.82	.64	.87	.71	.67	.64	.75	.75	.77	.89	.81	.89	.71	*.71*		Relative P/E Ratio	*.75*
1.1%	1.2%	1.0%	1.0%	1.4%	2.1%	1.6%	1.2%	1.5%	2.1%	2.3%	2.0%	1.6%	1.7%	2.1%	2.9%	3.1%		Avg Ann'l Div'd Yield	*2.4%*
						4367.0	6219.0	6532.0	6328.0	5668.0	5621.0	5704.0	5832.0	5841.0	6209.0	*5885*	*6000*	Sales ($mill)	*8000*
						11.7%	12.8%	13.7%	12.5%	13.8%	15.7%	17.9%	18.4%	17.2%	14.8%	*13.5%*	*14.0%*	Operating Margin	*22.0%*
						155.0	211.0	211.0	194.0	195.0	194.0	196.0	209.0	247.0	220.0	*225*	*235*	Depreciation ($mill)	*400*
						249.0	366.0	435.0	396.0	388.0	409.3	525.8	563.0	497.0	446.0	*390*	*420*	Net Profit ($mill)	*700*
						36.0%	28.7%	27.8%	26.3%	30.2%	31.3%	33.2%	30.8%	26.9%	27.2%	*34.0%*	*34.0%*	Income Tax Rate	*35.0%*
						5.7%	5.9%	6.7%	6.3%	6.8%	7.3%	9.2%	9.7%	8.5%	7.2%	*6.6%*	*7.0%*	Net Profit Margin	*8.8%*
						862.0	1176.0	1427.0	1394.0	1423.0	1208.0	1274.0	1458.0	1192.0	1193.0	*1430*	*1360*	Working Cap'l ($mill)	*1400*
						1681.0	1801.0	1724.0	1717.0	1804.0	1819.0	1850.0	1744.0	1931.0	1766.0	*2120*	*2145*	Long-Term Debt ($mill)	*2200*
						1976.0	2104.0	2437.0	2404.0	2177.0	2144.0	2565.0	2891.0	2388.0	2720.0	*2840*	*2950*	Shr. Equity ($mill)	*4000*
						7.6%	10.3%	11.2%	10.4%	10.5%	11.1%	12.6%	12.9%	12.5%	10.8%	*9.0%*	*9.5%*	Return on Total Cap'l	*12.5%*
						12.6%	17.4%	17.8%	16.5%	17.8%	19.1%	20.5%	19.5%	20.8%	16.4%	*13.5%*	*14.0%*	Return on Shr. Equity	*17.5%*
						10.3%	15.0%	15.0%	11.8%	11.9%	13.2%	15.0%	13.8%	13.2%	10.0%	*8.0%*	*8.5%*	Retained to Com Eq	*12.0%*
						18%	14%	16%	28%	33%	31%	27%	29%	37%	39%	*43%*	*41%*	All Div'ds to Net Prof	*32%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $2177 mill. **Due in 5 Yrs** $1200 mill.
LT Debt $2115 mill. **LT Interest** $125 mill.
(44% of Cap'l)
Leases, Uncapitalized Annual rentals $49 mill.
Pension Assets-12/19 $639 mill. **Oblig.** $641 mill.
Preferred Stock None

Common Stock 66,990,288 shares
as of 10/31/20

Market Cap: $5.3 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	334	268	553
Receivables	951	977	913
Inventory (FIFO)	824	861	908
Other	29	54	56
Current Assets	2138	2160	2430
Accts Payable	452	504	893
Debt Due	169	82	62
Other	325	381	- -
Current Liab.	946	967	955

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	6.0%	1.0%	*4.5%*
"Cash Flow"	9.0%	5.5%	*7.0%*
Earnings	10.0%	6.0%	*6.0%*
Dividends	17.0%	12.5%	*5.5%*
Book Value	6.5%	4.5%	*6.5%*

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1453.0	1457.0	1485.0	1437.0	5832.0
2018	1469.0	1496.0	1450.0	1426.0	5841.0
2019	1536.0	1550.0	1574.0	1549.0	6209.0
2020	1543.0	1349.0	1502.0	*1491*	*5885*
2021	*1480*	*1500*	*1515*	*1505*	*6000*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.83	1.85	2.19	1.80	7.67
2018	1.94	1.66	1.70	1.61	6.92
2019	1.53	1.66	1.82	1.60	6.61
2020	1.59	1.10	1.59	*1.52*	*5.80*
2021	*1.50*	*1.53*	*1.65*	*1.57*	*6.25*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.50	.50	.50	.60	2.10
2018	.60	.60	.60	.625	2.43
2019	.625	.625	.625	.63	2.51
2020	.63	.63	.63	.64	2.53
2021	.64				

BUSINESS: Ingredion Incorporated (formerly Corn Products International) one of the world's largest corn refiners, produces high-quality food ingredients (high fructose, glucose, and maltose corn syrups) and industrial products (starches, enzymes, co-products) derived from the wet milling of corn and other starch-based materials. Geographic sales breakdown for 2019: North America (61.7%), South America (15.5%), Asia Pacific (13.3%), Europe, Middle East and Africa (9.5%). BlackRock owns 10.6% of common stock; The Vanguard Group, 9.6%; officers and directors, less than 1.0% (4/20 proxy). Chairman: Ilene S. Gordon. CEO: James P. Zallie. Inc.: DE. Address: 5 Westbrook Corporate Center, Westchester, Illinois 60154. Tel.: 708-551-2600. Internet: www.ingredion.com.

Ingredion had a difficult 2020. For the first quarter, share net of $1.59 was respectable, versus the year-ago total of $1.53. However, that figure plummeted almost 34%, to $1.10 a share, in the June period, reflecting the effects of government mandates to prevent the spread of the coronavirus. In fact, sales from the core North America unit suffered from much-lower away-from-home consumption in the U.S. and Canada, plus the shutdown of brewery customers in Mexico. The company's other divisions also struggled. Still, performance did improve on a sequential basis during the third quarter, given a relaxing of restrictions. But there was some uncertainty in the fourth period, since the number of infections started to rise. So, for the entire year, the bottom line may have fallen 12%, to $5.80 a share, compared to $6.61 in 2019. Concerning the new year, though, it seems that a partial recovery, perhaps to around $6.25 a share, is possible, as new vaccines to battle COVID-19 are now available. Cost-savings initiatives should also help.

We remain optimistic about corporate performance out to mid-decade. It is a leading provider of ingredients to some industries with promising growth potential, including food, beverage, and animal nutrition, with customers in more than 120 countries. Also, more innovations are quite plausible, supported by the large team of scientists. Another plus is partnerships. Finally, thanks to the solid balance sheet, the company should continue to strengthen its market positions through business combinations (see below for a couple of recent deals).

There has been activity on the acquisition front. Last November, Ingredion bought, for around $25 million, the remaining 80% interest it did not already own in Verdient Foods, a Canada-headquartered maker of pulse-based protein concentrates and flours from peas, lentils, and fava beans for human food applications. That transaction followed the $222 million purchase of a 75% stake in Bermuda-based PureCircle Limited, a top producer of stevia sweeteners.

The good-quality stock, though untimely, may draw total return-focused accounts with a long-term stance.

Frederick L. Harris, III January 15, 2021

(A) Diluted shares. Excludes nonrecurring gains/(losses): '09, ($1.58); '10, ($1.04); '11, $0.64; '12, ($0.09); '14, ($0.44); '15, ($0.10); '16, ($0.55); '17, ($0.59); '18, ($0.75); '19, ($0.49); Q1 '20, ($0.48); Q2, ($0.12); Q3, ($0.23). Quarters may not add due to rounding. Next earnings report due late Jan.
(B) Dividends historically paid in late January, April, July, and October.
(C) In millions.
(D) Includes intangibles. At 12/31/19: $1,238 mill., $18.53 per share.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	50
Earnings Predictability	85

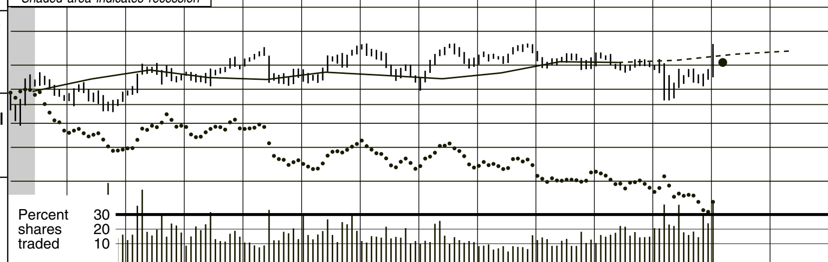
IRON MOUNTAIN NYSE-IRM

RECENT PRICE 33.09 | P/E RATIO 27.6 (Trailing: 29.8; Median: 28.0) | RELATIVE P/E RATIO 1.29 | DIV'D YLD 7.5% | VALUE LINE 391

TIMELINESS 1 Raised 2/12/21
SAFETY 3 New 9/14/01
TECHNICAL 4 Lowered 2/5/21
BETA .90 (1.00 = Market)

High:	26.2	32.9	35.5	39.7	40.4	41.5	41.5	41.5	37.9	37.3	34.5	41.3
Low:	18.3	22.3	24.9	25.0	25.7	26.0	23.6	32.3	30.2	29.3	21.0	27.7

LEGENDS
—— 10.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range 2024 | 2025 | 2026: 120, 100, 80, 64, 48, 32, 24, 20, 16, 12, 8

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$20-$41	$31 (-10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+80%)	25%
Low	40	(+20%)	13%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	272	280	305
to Sell	259	251	226
Hld's(000)	244813	241374	239325

Percent shares traded 30 20 10

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	16.0	26.6
3 yr.	20.7	29.4
5 yr.	73.1	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
9.66	10.84	12.49	13.90	13.60	14.36	16.08	15.82	15.81	14.86	14.23	13.32	13.58	14.76	14.84	14.25	14.90	15.50	Revenues per sh	16.00
1.40	1.56	1.84	2.01	2.34	2.72	3.03	2.76	2.70	2.95	2.84	2.72	2.92	3.34	3.31	3.40	3.65	3.80	"Cash Flow" per sh	4.15
.53	.59	.70	.72	.88	1.06	1.15	1.21	1.02	1.36	1.21	1.07	1.16	1.10	1.02	1.10	1.30	1.45	Earnings per sh A	1.80
- -	- -	- -	- -	- -	.34	.86	1.00	1.08	1.49	1.91	2.01	2.24	2.38	2.45	2.48	2.55	2.70	Div'ds Decl'd per sh E	2.80
1.27	1.76	1.77	1.76	1.41	1.27	1.12	1.27	1.50	1.73	1.37	1.25	1.21	1.61	2.41	1.85	1.85	1.90	Cap'l Spending per sh	2.00
6.37	7.16	8.22	8.20	9.66	8.98	6.65	6.05	5.47	5.01	2.41	7.34	8.12	6.58	5.10	3.80	4.15	4.30	Book Value per sh C	4.35
215.03	216.79	218.51	219.86	221.62	217.83	187.43	190.01	191.43	209.82	211.34	263.68	283.11	286.32	287.30	288.00	289.00	290.00	Common Shs Outst'g B	300.00
38.5	42.0	38.7	34.6	26.6	20.6	24.5	24.5	30.5	23.7	27.4	32.1	31.8	30.9	32.4	25.5	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	27.0
2.05	2.27	2.05	2.08	1.77	1.31	1.54	1.56	1.71	1.25	1.38	1.68	1.60	1.67	1.73	1.20			Relative P/E Ratio	1.50
- -	- -	- -	- -	- -	1.6%	3.1%	3.4%	3.5%	4.6%	5.8%	5.8%	6.1%	7.0%	7.4%	8.9%			Avg Ann'l Div'd Yield	6.5%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $9011.4 mill. **Due in 5 Yrs** $3900.0 mill.
LT Debt $8618.8 mill. **LT Interest** $400.0 mill.
(Total int. coverage: 1.8x) (90% of Cap'l)

Leases, Uncapitalized: Ann'l rentals $339.4 mill.
No Defined Benefit Pension Plan
Pfd Stock None
Common Stock 288,171,345 shs.
as of 10/30/20

MARKET CAP: $9.5 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
3014.7	3005.3	3025.9	3117.7	3008.0	3511.5	3845.6	4225.8	4262.6	4100	4300	4500	Revenues ($mill)	4800
31.0%	30.7%	29.7%	29.7%	25.5%	31.0%	30.6%	32.8%	33.7%	35.5%	36.0%	36.5%	Operating Margin	37.0%
325.8	316.3	322.0	353.1	345.5	452.3	522.4	639.5	658.2	660	675	680	Depreciation ($mill)	700
241.6	208.4	194.4	265.3	254.1	264.7	305.1	315.7	293.3	315	375	420	Net Profit ($mill)	540
31.5%	38.4%	38.9%	14.1%	- -	18.4%	19.5%	11.4%	18.3%	25.0%	25.0%	25.0%	Income Tax Rate	25.0%
8.0%	6.9%	6.4%	8.5%	8.4%	7.5%	7.9%	7.5%	6.9%	7.7%	8.7%	9.3%	Net Profit Margin	11.3%
65.5	119.1	d25.5	61.0	16.1	65.5	620.1	d254.6	d713.2	d655	d550	d350	Working Cap'l ($mill)	d250
3280.3	3732.1	4119.1	4611.4	4757.6	6078.2	6897.0	8016.4	8275.6	8600	8550	8400	Long-Term Debt ($mill)	8300
1245.7	1150.0	1047.3	1051.7	508.8	1936.5	2297.4	1884.2	1464.0	1100	1200	1250	Shr. Equity ($mill)	1300
7.5%	6.7%	6.2%	7.0%	7.3%	5.2%	5.2%	5.3%	5.2%	5.5%	6.0%	6.5%	Return on Total Cap'l	7.5%
19.4%	18.1%	18.6%	25.2%	49.9%	13.7%	13.3%	16.8%	20.0%	29.0%	31.5%	33.5%	Return on Shr. Equity	41.5%
5.5%	3.8%	NMF	1.5%	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	Retained to Com Eq	NMF
71%	79%	106%	94%	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	All Div'ds to Net Prof	NMF

CURRENT POSITION ($MILL.)

	2018	2019	9/30/20
Cash Assets	165.5	193.5	152.0
Receivables	846.9	850.7	791.9
Inventory	- -	- -	- -
Other	195.7	192.1	190.1
Current Assets	1208.1	1236.3	1134.0
Accts Payable	318.8	289.9	302.6
Debt Due	126.4	389.0	392.6
Other	1017.5	1270.6	1195.7
Current Liab.	1462.7	1949.5	1890.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	1.0%	-1.5%	1.5%
"Cash Flow"	4.5%	2.5%	4.0%
Earnings	3.5%	-2.0%	7.5%
Dividends	- -	14.5%	2.5%
Book Value	-2.5%	3.5%	-6.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1042.5	1060.8	1061.0	1061.5	4225.8
2019	1053.9	1066.9	1062.2	1079.6	4262.6
2020	1069.0	982.2	1036.6	1012.2	4100
2021	1080	1000	1100	1120	4300
2022	1100	1050	1150	1200	4500

Cal-endar	EARNINGS PER SHARE A D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.24	.33	.28	.25	1.10
2019	.17	.23	.32	.31	1.02
2020	.27	.22	.31	.30	1.10
2021	.30	.25	.35	.40	1.30
2022	.35	.30	.35	.45	1.45

Cal-endar	QUARTERLY DIVIDENDS PAID E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	- -	.550	.550	.550	2.24
2018	.588	.588	.588	.588	2.35
2019	.611	.611	.611	.611	2.44
2020	.619	.619	.619	.619	2.48
2021	.619				

BUSINESS: Iron Mountain Incorporated, the leading provider of records, documents, and information-management services, converted to a Real Estate Investment Trust in 2014. The company services more than 90,000 corporate clients, operating more than 1,450 facilities in 50 countries worldwide. Merged with Pierce Leahy Corp., 2/00. Since 1998, the company has acquired more than 45 records and information-management services providers. Sold digital storage business, 5/11. Has over 25,000 employees. The Vanguard Group owns 15.3% of common stock; Officers & Directors, 1.9% (4/20 Proxy). Chrmn: Al Verrecchia. CEO & Pres.: William Meaney. Inc.: DE. Add.: One Federal Street., Boston, MA 02111. Tel.: 617-535-4766. Internet: www.ironmountain.com.

Iron Mountain will likely experience some challenges this year, but improvement is under way. The company will probably face soft Service line revenues as activity in stored records stays weak. This side of the business has suffered partly from COVID-19, but mostly from shifting customer behavior (who are less likely to retrieve records for research and other purposes). On the bright side, the Storage Rental and the Global Data Center operations should gain traction in the coming months, as businesses reopen and entities look for cloud storage solutions amid the pandemic. Furthermore, Project Summit (IRM's ongoing transformational plan intended to simplify and streamline organizational structure) seems to be proceeding smoothly and is expected to generate approximately $375 million of adjusted EBITDA exiting 2021. All told, we foresee share net increasing 18% this year, to $1.30.

We are introducing our 2022 estimates. The top and bottom lines next year are expected to move forward, especially as the company realizes benefits from Project Summit. In all, we estimate revenues will grow at a single-digit clip to about $4.5 billion. Meanwhile, share earnings will likely advance to the $1.40-$1.50 range.

Iron Mountain's long-term business prospects appear promising. We note that the company has been expanding its presence in data centers, which have more attractive revenue potential. Also, this move is in line with the industry's adoption of digitalization. Indeed, the COVID-19 pandemic has catalyzed this process for many businesses. Therefore, we think Iron Mountain will likely benefit from strengthening its foothold in the data centers space. Furthermore, this arena is expected to grow at a double-digit pace in the near term, especially as various companies digitize their operations.

Shares of Iron Mountain are ranked to outperform the broader market averages. Moreover, management continues to reward shareholders. Although payout hikes have slowed, the dividend yield remains extremely attractive. Also, this stock has above-average long-term capital appreciation potential.

Emma Jalees *February 19, 2021*

(A) Diluted egs. Excl. extraordinary gains/(losses): '08, ($0.38); '09, $0.12; '10, ($1.24); '17, (55¢). Excludes losses from disc. ops.: '08, $0.17; '12, $0.07; '18, $0.17. Excl. nonrecurring gains: '12, $0.16. Next egs report due February 24th. **(B)** In millions. **(C)** Incl. intang. In '19, $5.878 bill., $20.46/sh. **(D)** Qtly figures may not sum due to rounding. **(E)** Div'd initiation 3/10. Reg. div'd paid around early Jan., Apr., Jul., and Oct. Special div'd of $4.06 paid 11/21/12 in stock (8.9%) or cash ($1.05); Special div'd of $3.62 paid 11/4/14.

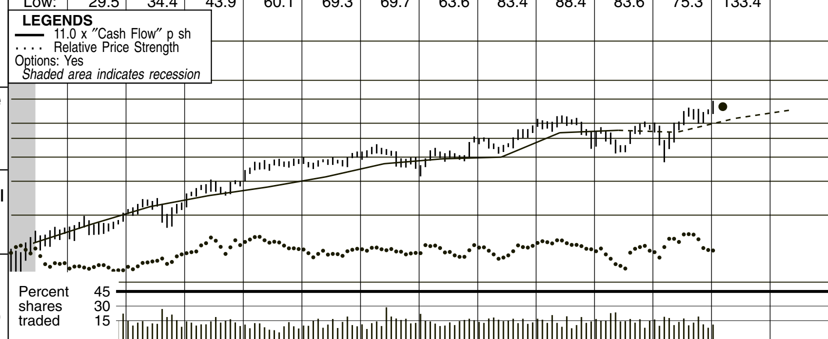
Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	15
Earnings Predictability	85

J.B. HUNT TRANSPORT NDQ-JBHT

RECENT PRICE 146.02 | P/E RATIO 24.6 (Trailing: 30.8; Median: 22.0) | RELATIVE P/E RATIO 1.15 | DIV'D YLD 0.8% | VALUE LINE 323

TIMELINESS 3 Lowered 2/19/21
SAFETY 1 Raised 2/19/21
TECHNICAL 3 Lowered 2/19/21
BETA .95 (1.00 = Market)

High:	41.2	49.1	61.2	78.6	85.5	93.5	102.4	116.8	131.7	122.3	144.3	156.7
Low:	29.5	34.4	43.9	60.1	69.3	69.7	63.6	83.4	88.4	83.6	75.3	133.4



18-Month Target Price Range
Low-High: $107-$203 Midpoint (% to Mid): $155 (5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	185	(+25%)	7%
Low	155	(+5%)	3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	185	203	232
to Sell	209	189	180
Hld's(000)	77861	77067	75892

Target Price Range 2024 2025 2026
320 200 160 120 100 80 60 40 18

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	25.6	26.6
3 yr.	14.3	29.4
5 yr.	93.9	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
20.34	23.02	28.02	29.60	25.18	31.22	38.71	43.01	47.63	52.89	54.30	58.90	65.51	79.25	86.29	91.21	**102.40**	**109.65**	Revenues per sh	**128.50**
2.52	2.79	3.33	3.21	2.61	3.27	4.03	4.59	5.08	5.74	6.73	7.13	7.29	9.75	10.01	9.78	**11.55**	**12.85**	"Cash Flow" per sh	**15.10**
1.38	1.44	1.52	1.57	1.10	1.56	2.11	2.59	2.87	3.16	3.66	3.81	3.75	5.64	5.21	4.74	**6.25**	**7.00**	Earnings per sh A	**8.10**
.24	.32	.36	.40	.44	.48	.52	.71	.45	.80	.84	.88	.92	.96	1.04	1.08	**1.12**	**1.22**	Div'ds Decl'd per sh B	**1.50**
1.86	3.34	2.92	2.41	2.78	2.16	4.30	3.74	4.21	6.94	6.36	5.74	4.80	9.16	8.04	**6.65**	**7.60**	**8.20**	Cap'l Spending per sh	**10.50**
5.31	5.26	2.76	4.20	5.06	4.72	4.85	6.74	8.64	10.33	11.41	12.70	16.76	19.33	21.34	**24.60**	**29.25**	**33.60**	Book Value per sh	**49.45**
153.81	144.56	124.57	126.06	127.24	121.49	116.93	117.53	117.24	116.58	113.95	111.31	109.75	108.71	106.21	105.65	**105.00**	**103.50**	Common Shs Outst'g C	**100.00**
15.0	15.6	18.0	19.9	25.8	22.5	20.4	21.2	25.2	24.2	22.2	21.6	26.0	20.7	20.0	25.1	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**21.0**
.80	.84	.96	1.20	1.72	1.43	1.28	1.35	1.42	1.27	1.12	1.13	1.31	1.12	1.07	1.29			Relative P/E Ratio	**1.15**
1.2%	1.4%	1.3%	1.3%	1.5%	1.4%	1.2%	1.3%	.6%	1.0%	1.0%	1.1%	.9%	.8%	1.0%	.9%			Avg Ann'l Div'd Yield	**1.0%**

CAPITAL STRUCTURE as of 9/30/20
Total Debt $1303.4 mill. **Due in 5 Yrs** $600.0 mill.
LT Debt $1303.4 mill. **LT Interest** $53.0 mill.
(Total interest coverage: 13.5X)
(34% of Cap'l)

No Defined Benefit Pension Plan
Leases, Uncapitalized Annual Rentals $44.9 mill.
Pfd Stock None

Common Stock 105,678,955 shs.

MARKET CAP: $15.4 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
4526.8	5055.0	5584.6	6165.4	6187.6	6555.5	7189.6	8614.9	9165.3	9636.6	**10750**	**11350**	Revenues ($mill)	**12850**
14.5%	15.0%	14.9%	15.0%	17.1%	16.5%	14.0%	14.5%	14.0%	12.9%	**13.5%**	**14.0%**	Operating Margin	**14.0%**
213.9	229.2	253.4	294.5	339.6	361.5	383.5	435.9	499.1	527.4	**550**	**600**	Depreciation ($mill)	**700**
257.0	310.4	342.4	374.8	427.2	432.1	416.3	623.6	564.0	506.0	**665**	**730**	Net Profit ($mill)	**810**
38.2%	38.5%	38.2%	38.0%	38.1%	37.9%	30.1%	19.5%	22.6%	24.0%	**24.5%**	**25.0%**	Income Tax Rate	**25.0%**
5.7%	6.1%	6.1%	6.1%	6.9%	6.6%	5.8%	7.2%	6.2%	5.2%	**6.2%**	**6.4%**	Net Profit Margin	**6.3%**
75.0	51.7	d32.1	109.0	327.0	372.6	416.9	150.6	445.5	734.8	**800**	**925**	Working Cap'l ($mill)	**1100**
699.2	585.3	458.4	683.5	1005.0	986.3	1085.6	898.4	1295.7	1305.4	**1250**	**1400**	Long-Term Debt ($mill)	**2200**
567.5	791.9	1012.5	1204.5	1300.4	1414.1	1839.3	2101.4	2267.0	2600.1	**3070**	**3475**	Shr. Equity ($mill)	**4945**
21.4%	23.5%	24.1%	20.6%	19.1%	18.5%	14.7%	21.5%	16.6%	**13.5%**	**16.0%**	**15.5%**	Return on Total Cap'l	**11.5%**
45.3%	39.2%	33.8%	31.1%	32.9%	30.6%	22.6%	29.7%	24.9%	19.5%	**21.5%**	**21.0%**	Return on Shr. Equity	**16.5%**
34.3%	28.7%	28.6%	23.3%	25.4%	23.6%	17.1%	24.7%	19.9%	15.0%	**17.5%**	**17.5%**	Retained to Com Eq	**13.5%**
24%	27%	15%	25%	23%	23%	24%	17%	20%	23%	**18%**	**17%**	All Div'ds to Net Prof	**18%**

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	7.6	35.0	318.5
Receivables	1051.7	1011.8	1121.8
Other	443.7	434.5	288.3
Current Assets	1503.0	1481.3	1728.6
Accts Payable	709.7	602.6	603.5
Debt Due	250.7	- -	- -
Other	391.9	433.2	491.9
Current Liab.	1352.3	1035.8	1095.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	11.0%	10.0%	6.5%
"Cash Flow"	11.5%	12.0%	6.5%
Earnings	13.5%	11.0%	6.5%
Dividends	9.5%	8.5%	7.0%
Book Value	17.0%	17.5%	13.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1948.2	2139.0	2209.8	2317.9	8614.9
2019	2089.6	2261.8	2363.7	2450.2	9165.3
2020	2280.8	2145.6	2472.5	2737.7	9636.6
2021	*2475*	*2625*	*2700*	*2950*	*10750*
2022	*2625*	*2775*	*2850*	*3100*	*11350*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.07	1.37	1.47	1.73	5.64
2019	1.09	1.37	1.40	1.35	5.21
2020	.98	1.14	1.18	1.44	4.74
2021	*1.30*	*1.55*	*1.65*	*1.75*	*6.25*
2022	*1.50*	*1.75*	*1.80*	*1.95*	*7.00*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.23	.23	.23	.23	.92
2018	.24	.24	.24	.24	.96
2019	.26	.26	.26	.26	1.04
2020	.27	.27	.27	.27	1.08
2021	.28				

BUSINESS: J.B. Hunt Transport Services, Inc. is a holding company for J.B. Hunt Transport, Inc., one of the largest irregular-route truckload carriers in the United States, transporting general merchandise throughout the continental U.S., Canada, and Mexico. Has truckload, intermodal, and dedicated contract operations. As of 12/31/19, owned 17,972 tractors and 124,861 trailers and containers. Labor costs: 23.7% of revenues. Has about 29,055 employees. Johnelle Hunt owns 17.3% of stock; T. Rowe Price Associates, 15.9%; Vanguard Group, 9.6%; off./dir., 3.5% (3/20 Proxy). Chairman: Kirk Thompson. CEO & President: John N. Roberts III. Inc.: AR. Address: 615 J.B. Hunt Corporate Drive, Lowell, Arkansas 72745-0130. Telephone: 479-820-0000. Internet: www.jbhunt.com.

J.B. Hunt Transport Services shares are garnering increased interest. Indeed, the stock has risen more than 15% since our late-November report and recently traded not too far off of its all-time high. Investors liked the stronger-than-expected conclusion to a challenging 2020, and the company's improving outlook for the current year (more below). In the December quarter, the top and bottom lines topped our estimates and the prior-year figures. Revenues climbed 12%, despite continued weakness in the largest segment, Intermodal. The performance of this unit continues to suffer rail congestion and services issues, including labor challenges in the rail and truck operations. This weakness was more than offset by revenues gains in the Dedicated Contract Services and Integrated Capacity Solutions (ICS) divisions. The former was helped by an additional 132 revenue-producing trucks during the quarter, while the company's JB Hunt 360 digital platform led to a 56% revenue advance in ICS and the unit turning a profit.

We are raising our 2021 share-earnings estimate by $0.25, to $6.25, and introducing a healthy $7.00 call for next year. These forecasts are based on the V-shaped recovery recently seen in the freight industry. The ongoing rebound in global trade and the continued increase in online shopping are fueling the need for freight shipping. The company's top-three segments saw increases in their total number of loads, led by respective gains of 9% and 13% in the Dedicated Contract Services and ICS units. Too, the expectation is that demand for freight services will increase later in the year, as COVID-19 vaccines reach a greater percentage of the U.S. population and economic output rises.

The stock's further run-up discounts a good deal of the earnings growth we envision to 2024-2026. That said, this high-quality issue still has a lot of appeal, especially for conservative investors, given its below-market Beta coefficient and high Price Stability score. J.B. Hunt is a well-run company that generates healthy annual cash flow, and its sales-to-assets ratio — which measures a company's efficiency — of 1.62 is well above the industry average that sits just north of 1.20.

William G. Ferguson *February 19, 2021*

(A) Based on diluted shares. Excludes net nonrecurring gains (losses): '05, (10¢); '07, 3¢; '08, (1¢); '09, (5¢); '17, $2.43; '18, ($1.21); '19, (44¢). Next earnings report due mid-April.
(B) Cash dividend reinstated April, 2004. Payment dates mid-February, May, August, and late November. Raised quarterly dividend by $0.01 a share and paid out normal Q1 outlay in Q4 of 2012. (C) In millions.

Company's Financial Strength	A+
Stock's Price Stability	90
Price Growth Persistence	90
Earnings Predictability	75

J&J SNACK FOODS NDQ-JJSF

RECENT PRICE **152.23** | P/E RATIO **NMF** (Trailing: NMF; Median: 28.0) | RELATIVE P/E RATIO **4.10** | DIV'D YLD **1.5%** | VALUE LINE

TIMELINESS 4 Lowered 4/17/20
SAFETY 1 Raised 4/20/18
TECHNICAL 5 Lowered 1/15/21
BETA .90 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$73-$195	$134 (-10%)

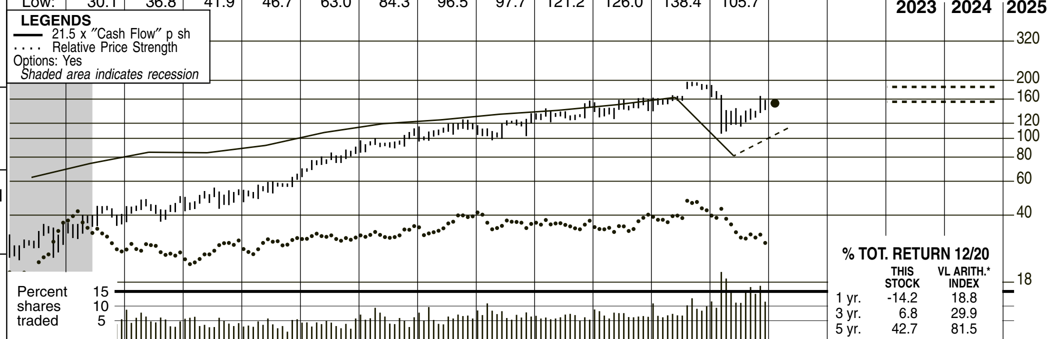
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	185	(+20%)	7%
Low	155	(Nil)	2%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	99	103	104
to Sell	107	103	102
Hld's(000)	14146	14239	14011

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	44.8	50.3	55.6	65.6	90.8	112.7	125.6	135.0	157.3	162.8	196.8	189.2
Low:	30.1	36.8	41.9	46.7	63.0	84.3	96.5	97.7	121.2	126.0	138.4	105.7



% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-14.2	18.8
3 yr.	6.8	29.9
5 yr.	42.7	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
23.13	25.02	27.88	30.42	33.57	35.25	37.68	39.73	44.24	46.46	49.26	52.27	53.18	58.09	60.69	62.79	54.02	*53.70*	Sales per sh A	*65.75*
2.60	2.74	2.91	3.13	2.92	3.45	3.94	3.93	4.28	4.99	5.54	5.81	6.22	6.52	6.95	7.59	3.77	*5.40*	"Cash Flow" per sh	*8.55*
1.24	1.40	1.57	1.69	1.47	2.21	2.59	2.58	2.86	3.41	3.82	3.73	4.05	4.21	4.46	5.00	.96	*2.75*	Earnings per sh A B	*5.65*
- -	.25	.30	.34	.37	.39	.43	.47	.52	.64	1.28	1.44	1.56	1.68	1.80	2.00	2.30	*2.40*	Div'ds Decl'd per sh C■	*3.00*
1.20	1.18	1.07	1.22	1.22	1.47	1.81	1.56	2.28	1.92	2.08	2.68	2.61	3.87	3.20	3.02	2.37	*2.35*	Cap'l Spending per sh	*2.90*
11.66	12.85	14.23	15.80	16.90	18.51	20.58	23.09	25.32	27.66	30.13	32.12	34.17	36.56	40.48	44.13	42.79	*42.70*	Book Value per sh D	*49.30*
18.01	18.27	18.47	18.70	18.75	18.53	18.49	18.73	18.78	18.68	18.67	18.68	18.67	18.66	18.75	18.90	18.92	*19.00*	Common Shs Outst'g E	*19.00*
16.2	17.7	20.0	22.5	20.6	16.1	16.2	18.3	18.7	20.9	23.8	28.8	27.9	30.7	32.0	32.3	NMF		Avg Ann'l P/E Ratio	*30.0*
.86	.94	1.08	1.19	1.24	1.07	1.03	1.15	1.19	1.17	1.25	1.45	1.46	1.54	1.73	1.75	NMF		Relative P/E Ratio	*1.65*
- -	1.0%	1.0%	.9%	1.2%	1.1%	1.0%	1.0%	1.0%	.9%	1.4%	1.3%	1.4%	1.3%	1.3%	1.2%	1.5%		Avg Ann'l Div'd Yield	*1.3%*

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
696.7	744.1	830.8	867.7	919.5	976.3	992.8	1084.2	1138.3	1186.5	1022.0	*1020*	Sales ($mill) A	*1250*
14.6%	13.7%	13.4%	14.5%	15.1%	15.3%	15.4%	14.8%	13.8%	14.0%	6.9%	*14.0%*	Operating Margin	*16.5%*
24.5	25.0	26.2	28.8	31.7	38.3	40.1	42.4	46.4	48.6	53.1	*50.0*	Depreciation ($mill)	*55.0*
48.4	48.5	54.1	64.4	71.8	70.2	76.0	79.2	83.9	94.8	18.3	*52.0*	Net Profit ($mill)	*110*
38.0%	37.0%	37.3%	36.1%	35.4%	37.3%	35.0%	35.2%	29.0%	25.1%	14.7%	*27.5%*	Income Tax Rate	*27.5%*
6.9%	6.5%	6.5%	7.4%	7.8%	7.2%	7.7%	7.3%	7.4%	8.0%	1.8%	*5.1%*	Net Profit Margin	*8.6%*
149.4	184.0	226.6	181.5	179.6	229.7	252.8	262.8	264.9	385.2	365.4	*385*	Working Cap'l ($mill)	*505*
.6	.5	.3	.1	.4	1.2	1.2	.9	.8	.7	.4	*.5*	Long-Term Debt ($mill)	*.5*
380.6	432.4	475.5	516.6	562.5	599.9	638.0	682.3	759.1	833.8	809.5	*810*	Shr. Equity ($mill)	*935*
12.7%	11.2%	11.4%	12.5%	12.8%	11.7%	11.9%	11.6%	11.0%	11.4%	2.3%	*6.5%*	Return on Total Cap'l	*11.5%*
12.7%	11.2%	11.4%	12.5%	12.8%	11.7%	11.9%	11.6%	11.1%	11.4%	2.3%	*6.5%*	Return on Shr. Equity	*11.5%*
10.7%	9.2%	9.4%	10.2%	9.0%	7.3%	7.4%	7.1%	6.7%	7.0%	NMF	*1.0%*	Retained to Com Eq	*5.5%*
16%	18%	18%	18%	29%	37%	38%	39%	39%	39%	NMF	*87%*	All Div'ds to Net Prof	*53%*

CAPITAL STRUCTURE as of 9/26/20
Total Debt $.7 mill. **Due in 5 Yrs** $.7 mill.
LT Debt $.4 mill. **LT Interest** $.02 mill.

Leases, Uncapitalized Annual rentals $14.8 mill.

No Defined Pension Benefit Plan
Pfd Stock None

Common Stock 18,953,680 shs.
11/19/20
MARKET CAP: $2.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/26/20
Cash Assets	132.5	243.5	247.0
Receivables	132.3	140.9	126.6
Inventory (FIFO)	112.9	116.2	108.9
Other	5.1	5.8	17.0
Current Assets	382.8	506.4	499.5
Accts Payable	69.6	72.0	73.1
Debt Due	.3	.3	.3
Other	48.0	48.9	60.7
Current Liab.	117.9	121.2	134.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	6.0%	5.5%	*2.0%*
"Cash Flow"	8.5%	7.5%	*7.0%*
Earnings	10.0%	6.5%	*10.0%*
Dividends	17.5%	17.5%	*8.0%*
Book Value	9.0%	8.0%	*3.0%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Dec.Per	Mar.Per	Jun.Per	Sep.Per	Full Fiscal Year
2017	225.6	246.5	295.4	316.7	1084.2
2018	265.2	266.1	306.3	300.7	1138.3
2019	271.6	276.3	326.7	311.9	1186.5
2020	282.9	272.0	214.6	252.5	1022.0
2021	*228*	*230*	*292*	*270*	*1020*

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.Per	Mar.Per	Jun.Per	Sep.Per	Full Fiscal Year
2017	.72	.85	1.34	1.29	4.21
2018	.88	.95	1.39	1.24	4.46
2019	.93	1.08	1.63	1.36	5.00
2020	.89	.38	d.67	.35	.96
2021	*.22*	*.27*	*1.02*	*1.24*	*2.75*

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.42	.42	.42	.42	1.68
2018	.45	.45	.45	.45	1.80
2019	.50	.50	.50	.50	2.00
2020	.575	.575	.575	.575	2.30
2021					

BUSINESS: J&J Snack Foods Corp. manufactures nutritional snack foods and distributes frozen carbonated and juice beverages mainly in the United States, Mexico and Canada. It sells to snack bars, food stands, fast food operators, stadiums, sports arenas, warehouse club stores, schools, colleges, movie theaters, and others. In addition, it sells various food products through a chain of specialty snack food retail outlets. Has 4,600 employees. Officers/directors own 21% of company; BlackRock Fund Advisors, 13%; The Vanguard Group, 9%; (12/20 proxy). Incorporated: New Jersey. Chrmn & CEO: Gerald B. Schreiber, Pres.: Dan Fachner. Address: 6000 Central Highway, Pennsauken, New Jersey 08109. Telephone: 856-665-9533. Internet: www.jjsnack.com.

J&J Snack Foods Corp. closed the books on a difficult year (fiscal 2021 ended September 26th). Sales and share earnings fell 19% and 74%, respectively, to $252.5 million and $0.35 during the final fiscal quarter. Strength across the Retail segment (+23%) was more than offset by decreases across both the mainstay Foodservice unit (-16%) and Frozen Beverages division (-26%), as COVID-19 protocols continued to limit the reopening of leisure events and venues that JJSF relies on for more than two-thirds of its business. That said, the Food Service unit got back some lost volume as some venues reopened, leading to sequential improvement. Still, the bottom line continued to feel the negative effects of distribution inefficiencies brought on by volume/mix changes as well as higher COVID-19-related costs. Consequently, management successfully closed a Midwest plant in order to reduce manufacturing overhead and distribution costs between $7 million to $8 million annually.

Prospects for fiscal 2021 remain cloudy. In fact, we expect sales to be roughly flat, year to year, while share net will likely more than double, to $2.75. On the positive side, the Retail segment will probably continue to be led by strong at-home consumption as COVID-19 cases are elevated. Too, a growing distribution base, particularly across the snack and novelty categories, is helping to drive sales. Elsewhere, though signs of progress have been slow, we anticipate the Foodservice and Frozen Beverages businesses to continue feeling the effects of an unprecedented drop in business, as distributors and large venues have been forced to shutdown operations. However, we believe that prospects may begin to improve in the second half of the fiscal year as COVID-19 pressures could taper. As both the Foodservice and Frozen Beverages units remain stuck in negative territory, we suspect cost control measures and product launches across the Retail unit will be necessary to contend with the impact from lost market share. Too, management expects to reap rewards of a new product sold in Costco that could add another $10 million-$25 million in sales.

The stock remains an unappealing choice for the short and long terms.

Oriatal J. Haiby *January 15, 2021*

(A) Fiscal year ends last Saturday in September. (B) Diluted earnings. Qrtly may not sum due to changes in share count. Excludes nonrecurring gain: 2011, $0.35; 2018, $1.05. Next earnings report due early Feb. (C) Dividends historically paid early January, April, July, and October. ■ Div'd reinvest. plan available. (D) Includes intangibles. At 9/26/20: $203.5 million, or $10.76 a share. (E) In millions.

Company's Financial Strength	A+
Stock's Price Stability	90
Price Growth Persistence	95
Earnings Predictability	65

J. HENRY & ASSOC. NDQ-JKHY

RECENT PRICE 152.50 | P/E RATIO 33.9 (Trailing: 39.2 Median: 25.0) | RELATIVE P/E RATIO 1.56 | DIV'D YLD 1.1% | VALUE LINE

TIMELINESS 3 Lowered 1/22/21
SAFETY 1 Raised 8/11/17
TECHNICAL 3 Lowered 12/11/20
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$122-$263	$193 (25%)

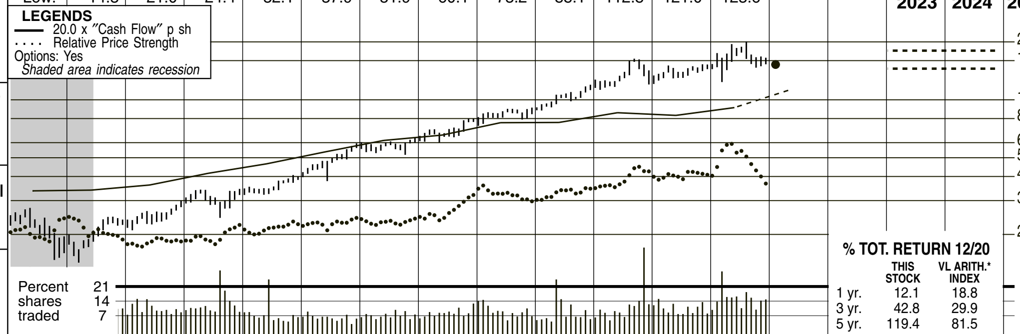
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	180	(+20%)	6%
Low	145	(-5%)	Nil

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	245	289	296
to Sell	298	267	274
Hld's(000)	68313	68198	67786

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	24.8	30.0	34.5	40.7	59.4	63.8	79.9	91.1	119.8	163.7	152.9	201.0
Low:	14.3	21.0	24.4	32.1	37.9	51.9	60.1	73.2	88.1	112.8	121.0	123.6



Target Price Range
2023 | 2024 | 2025

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	12.1	18.8
3 yr.	42.8	29.9
5 yr.	119.4	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
5.16	5.82	6.30	7.50	8.60	8.92	9.80	11.20	11.94	13.25	14.64	15.54	17.21	18.48	19.91	20.17	22.15	*23.20*	Revenues per sh A	*27.65*
.98	1.14	1.31	1.58	1.68	1.70	1.81	2.08	2.33	2.68	3.07	3.28	3.81	3.82	4.29	4.15	4.55	*5.70*	"Cash Flow" per sh	*7.65*
.68	.81	.96	1.14	1.17	1.22	1.38	1.59	1.78	2.04	2.36	2.59	3.12	3.14	3.65	3.52	3.86	*4.50*	Earnings per sh A	*6.05*
.15	.17	.20	.24	.28	.32	.36	.40	.44	.56	.84	.94	1.06	1.18	1.36	1.54	1.66	*1.80*	Div'ds Decl'd per sh B	*2.25*
.54	.63	.48	.38	.36	.38	.64	.37	.48	.54	.40	.67	.72	.54	.52	.70	.70	*.85*	Cap'l Spending per sh	*.85*
4.89	5.62	6.12	6.72	6.96	7.49	8.79	10.19	11.43	12.58	12.56	12.26	12.66	13.33	16.42	18.56	20.22	*21.50*	Book Value per sh D	*25.00*
90.52	92.05	93.96	89.10	86.40	83.61	85.40	86.36	86.03	85.24	82.64	80.85	78.70	77.42	77.17	76.99	76.63	*75.50*	Common Shs Outst'g C	*75.00*
28.0	23.5	20.8	19.5	21.5	15.3	17.0	18.1	18.0	20.1	23.3	24.1	24.8	29.1	31.5	39.7	40.0		Avg Ann'l P/E Ratio	*27.0*
1.48	1.25	1.12	1.04	1.29	1.02	1.08	1.14	1.15	1.13	1.23	1.21	1.30	1.46	1.70	2.11	1.97		Relative P/E Ratio	*1.40*
.8%	.9%	1.0%	1.1%	1.1%	1.7%	1.5%	1.4%	1.4%	1.4%	1.5%	1.5%	1.4%	1.3%	1.2%	1.1%	1.1%		Avg Ann'l Div'd Yield	*1.4%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt None

Leases, Uncapitalized: Annual rentals $13.4 mill.

No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 76,304,059 shs.

MARKET CAP: $11.6 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
836.6	966.9	1027.1	1129.4	1210.1	1256.2	1354.6	1431.1	1536.6	1552.7	1697.1	*1750*	Revenues ($mill) AE	*2075*
26.2%	26.7%	27.4%	28.1%	30.2%	29.6%	30.4%	29.2%	28.5%	25.4%	25.5%	*30.5%*	Operating Margin	*33.5%*
36.6	41.9	45.3	52.0	52.9	54.2	50.6	49.7	48.0	47.4	52.2	*90.0*	Depreciation ($mill)	*120*
117.9	137.5	155.0	176.6	201.1	211.2	248.9	245.8	283.1	271.9	296.7	*340*	Net Profit ($mill)	*455*
34.8%	33.8%	33.1%	32.0%	35.4%	33.3%	31.0%	33.0%	27.6%	21.7%	22.2%	*22.0%*	Income Tax Rate	*22.0%*
14.1%	14.2%	15.1%	15.6%	16.6%	16.8%	18.4%	17.2%	18.4%	17.5%	17.5%	*19.4%*	Net Profit Margin	*21.9%*
d53.9	d26.5	66.5	35.6	d44.4	49.9	d11.8	48.8	d19.4	99.5	174.4	*250*	Working Cap'l ($mill)	*350*
272.7	127.9	106.2	7.4	3.7	50.1	- -	50.0	50.0	- -	.2	*Nil*	Long-Term Debt ($mill)	*Nil*
750.4	879.8	983.1	1072.2	1038.2	991.5	996.2	1032.1	1266.8	1429.0	1549.7	*1625*	Shr. Equity ($mill)	*1875*
11.6%	14.0%	14.4%	16.7%	19.4%	20.4%	25.1%	22.8%	22.4%	19.1%	19.2%	*21.0%*	Return on Total Cap'l	*24.0%*
15.7%	15.6%	15.8%	16.5%	19.4%	21.3%	25.0%	23.8%	22.3%	19.0%	19.1%	*21.0%*	Return on Shr. Equity	*24.0%*
11.6%	11.7%	11.9%	12.0%	12.5%	13.6%	16.5%	14.9%	14.1%	10.7%	10.9%	*12.5%*	Retained to Com Eq	*15.0%*
26%	25%	25%	27%	35%	36%	34%	37%	37%	44%	43%	*40%*	All Div'ds to Net Prof	*37%*

CURRENT POSITION ($MILL.)	2019	2020	9/30/20
Cash Assets	96.6	213.3	195.3
Receivables	310.1	300.9	223.0
Other	162.8	155.0	156.2
Current Assets	569.5	669.2	574.5
Accts Payable	9.9	9.9	6.8
Debt Due	- -	- -	- -
Other	460.1	484.9	400.6
Current Liab.	470.0	494.8	407.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '23-'25
Revenues	8.5%	7.5%	*6.0%*
"Cash Flow"	9.5%	7.5%	*12.0%*
Earnings	11.5%	9.5%	*10.5%*
Dividends	17.0%	14.5%	*8.0%*
Book Value	9.0%	8.0%	*6.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) AE Sep. 30	Dec. 31	Mar. 31	Jun. 30	Full Fiscal Year
2017	345.0	348.6	353.8	383.7	1431.1
2018	359.9	374.8	384.7	417.2	1536.6
2019	392.5	386.3	380.4	393.5	1552.7
2020	438.0	419.1	429.4	410.6	1697.1
2021	451.8	*430*	*445*	*423.2*	*1750*

Fiscal Year Ends	EARNINGS PER SHARE A Sep. 30	Dec. 31	Mar. 31	Jun. 30	Full Fiscal Year
2017	.79	.75	.77	.83	3.14
2018	.82	.80	.93	1.10	3.65
2019	1.08	.88	.77	.79	3.52
2020	1.16	.94	.96	.80	3.86
2021	1.19	*1.06*	*1.10*	*1.15*	*4.50*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	June.30	Sept.30	Dec.31	Full Year
2017	.31	.31	.31	.31	1.24
2018	.37	.37	.37	.37	1.48
2019	.40	.40	.40	.40	1.60
2020	.43	.43	.43	.43	1.72
2021					

BUSINESS: Jack Henry & Associates Inc. provides integrated computer systems and services to banks and other financial institutions. It has developed several banking application software systems that it markets, along with computer hardware, to financial institutions. In addition, it performs data conversion, software installation, and software customization for the implementation of its systems. Acquired BancData Solutions, 4/00; Symitar Systems, 6/00; Transcend Systems, 3/02. It has a business partnership with SEDONA, an IBM Advanced Business Partner. Has about 6,717 employees. Off. & dir. own less than 1% of stock (10/20 Proxy). Chrmn.: John Prim. CEO: Dave Foss. Inc.: DE. Addr.: 663 Highway 60, P.O. Box 807, Monett, MO 65708. Tel.: 417-235-6652. Web: www.jackhenry.com.

Shares of Jack Henry have traded relatively rangebound over the past three months. The sideways move compares unfavorably to a respectable double-digit advance in the S&P 500 Index. That said, some consolidation below its recently etched high-water mark is healthy in our view, especially considering the stock's multiyear price ascent. On point, the equity has slipped two spots on our Timeliness ranking scale, to 3 (Average). Thus, it no longer stands out as a near-term selection.

The company started fiscal 2021 (year began July 1, 2020) on a positive note. Both revenues and earnings posted modest year-over-year improvements, which is noteworthy when taking into account the stark contrast between the current economic climate and the previous year's. Aiding Jack Henry's record September-period top-line haul was an uptick in data processing, hosting, and software usage fees. Meanwhile, the bottom line benefited from a lower tax rate and SG&A expenses.

We are boosting our current fiscal-year share-profit forecast by $0.15, to $4.50. Gross margins ought to improve over the coming quarters as the recent rise in COGS, which stemmed from higher card processing platform costs, is likely to subside. At the same time, the continuation of virtual activities and limited travel due to COVID-19 should support operating income growth.

Business prospects over the pull to 2023-2025 are promising. As the technological revolution gains steam, demand for cloud-based solutions from financial institutions ought to considerably accelerate. Banking, which was once a traditional peer-to-peer transaction, has become increasingly streamlined through online banking and mobile applications. Moreover, on the backend, operating system upgrades will likely be a necessity for many financial services providers going forward.

These high-quality shares lack investment appeal at the moment. Much of the growth we envision out to mid-decade appears to already be reflected in the recent quotation. While not presently on our recommendation list, interested buy-and-hold investors might want to keep Jack Henry on their radar should a meaningful price pullback ensue.

Nicholas P. Patrikis *February 5, 2021*

(A) Fiscal year ends June 30th. Diluted earnings per share. Next earnings report due mid-February. Quarterly earnings may not sum due to rounding.
(B) Dividends historically paid in early March, June, September, and December.
(C) In millions.
(D) Includes intangibles, as of fiscal '20: $716.3 million, $9.35/share.
(E) Adopted accounting standards update No. 2014-09 as of 7/1/18.

Company's Financial Strength	A+
Stock's Price Stability	95
Price Growth Persistence	100
Earnings Predictability	90

MANTECH INT'L NDQ-MANT

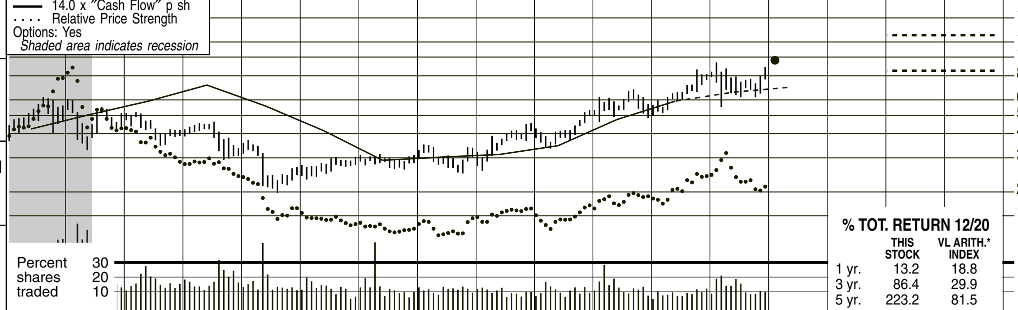
RECENT PRICE **96.44** | P/E RATIO **31.7** (Trailing: 30.3, Median: 20.0) | RELATIVE P/E RATIO **1.46** | DIV'D YLD **1.5%** | VALUE LINE

TIMELINESS	3	Lowered 12/18/20	
SAFETY	3	New 8/26/05	
TECHNICAL	4	Lowered 1/22/21	
BETA .85 (1.00 = Market)			

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	60.6	51.8	46.3	37.2	30.5	31.3	35.2	45.5	53.3	68.1	86.3	94.0
Low:	32.9	34.7	29.3	19.7	23.2	26.1	24.9	25.8	33.5	46.0	49.7	55.2

Target Price Range 2023 | 2024 | 2025

LEGENDS
— 14.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$64-$135	$100 (5%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	130	(+35%)	9%
Low	85	(-10%)	-1%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	126	117	103
to Sell	108	120	124
Hld's(000)	26603	26371	26263

Percent shares traded 30 / 20 / 10

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	13.2	18.8
3 yr.	86.4	29.9
5 yr.	223.2	81.5

ManTech International is a provider of information technology services to the U.S. government, mainly for the Department of Defense and the intelligence community. The company completed an IPO in February of 2002 and a secondary offering in December of that same year. Net proceeds were used to fund several acquisitions.

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
71.48	77.82	69.71	62.11	47.47	41.14	41.34	43.77	49.26	55.32	*62.15*	*64.90*	Revenues per sh	*80.00*
4.23	5.11	3.99	2.96	2.08	2.16	2.23	2.48	3.39	4.23	*4.70*	*5.00*	"Cash Flow" per sh	*6.45*
3.43	3.63	2.57	2.14	1.27	1.36	1.47	1.62	2.06	2.83	*2.90*	*3.20*	Earnings per sh A	*4.25*
- -	.84	.84	.84	.84	.84	.84	.84	1.00	1.08	1.28	*1.40*	Div'ds Decl'd per sh D	*1.88*
.28	1.48	.32	.30	.11	.14	.20	.79	.76	1.36	*1.85*	*1.95*	Cap'l Spending per sh	*2.40*
26.53	29.54	31.46	30.48	30.90	31.42	32.05	34.23	35.24	37.10	*39.00*	*41.45*	Book Value per sh C	*49.40*
36.43	36.88	37.04	37.19	37.37	37.68	38.74	39.23	39.76	40.18	*40.40*	*41.00*	Common Shs Outst'g B	*42.50*
12.7	10.8	10.5	12.8	23.0	22.2	24.5	25.4	27.5	23.0	*26.0*		Avg Ann'l P/E Ratio	*25.0*
.81	.68	.67	.72	1.21	1.12	1.29	1.28	1.49	1.24	*1.30*		Relative P/E Ratio	*1.40*
- -	2.1%	3.1%	3.1%	2.9%	2.8%	2.3%	2.0%	1.8%	1.7%	1.7%		Avg Ann'l Div'd Yield	*1.8%*
2604.0	2870.0	2582.3	2310.1	1774.0	1550.1	1601.6	1717.0	1958.6	2222.6	*2510*	*2660*	Revenues ($mill)	*3400*
9.4%	9.8%	8.7%	7.4%	7.1%	7.4%	7.6%	7.7%	8.4%	8.7%	*9.0%*	*9.5%*	Operating Margin	*10.0%*
28.9	55.2	52.7	30.5	30.4	30.3	30.2	33.8	52.6	55.9	*70.0*	*75.0*	Depreciation ($mill)	*95.0*
125.1	133.3	95.0	79.6	47.3	51.1	56.4	63.5	82.1	113.9	*120*	*130*	Net Profit ($mill)	*180*
38.2%	38.1%	38.7%	35.7%	39.9%	40.3%	37.5%	34.7%	25.8%	16.3%	*24.5%*	*24.5%*	Income Tax Rate	*24.5%*
4.8%	4.6%	3.7%	3.4%	2.7%	3.3%	3.5%	3.7%	4.2%	5.1%	*4.8%*	*4.9%*	Net Profit Margin	*5.3%*
282.5	300.4	358.0	453.6	195.4	189.3	229.6	138.9	196.7	154.7	*200*	*310*	Working Cap'l ($mill)	*680*
200.0	200.0	200.0	200.0	- -	- -	- -	31.0	7.5	36.5	*Nil*	*Nil*	Long-Term Debt ($mill)	*Nil*
966.3	1089.3	1165.2	1133.8	1154.8	1183.7	1241.7	1343.0	1401.2	1490.6	*1575*	*1700*	Shr. Equity ($mill)	*2100*
11.3%	11.0%	7.6%	6.6%	4.1%	4.3%	4.5%	4.7%	5.9%	7.5%	*7.5%*	*7.5%*	Return on Total Cap'l	*8.5%*
12.9%	12.2%	8.2%	7.0%	4.1%	4.3%	4.5%	4.7%	5.9%	7.6%	*7.5%*	*7.5%*	Return on Shr. Equity	*8.5%*
12.9%	9.4%	5.5%	4.3%	1.4%	1.7%	2.0%	2.3%	3.0%	4.7%	*4.5%*	*4.5%*	Retained to Com Eq	*5.0%*
- -	23%	33%	39%	66%	62%	57%	51%	48%	38%	*43%*	*44%*	All Div'ds to Net Prof	*44%*

CAPITAL STRUCTURE as of 9/30/20

Total Debt None

Leases, Uncapitalized Annual rentals $32.8 mill.

Pension Assets-12/19 None
Oblig. $.7 mill.

Common Stock 40,356,212 shs.
as of 11/4/20
Class A: 27,179,517 shs. (1 vote per sh.)
Class B: 13,176,695 shs. (10 votes per sh.)
MARKET CAP: $3.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	5.3	8.9	101.7
Receivables	405.4	399.0	382.9
Inventory	- -	- -	- -
Other	29.3	46.8	62.3
Current Assets	440.0	454.7	546.9
Accts Payable E	126.1	146.0	170.5
Debt Due	- -	- -	- -
Other	117.2	154.0	197.4
Current Liab.	243.3	300.0	367.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	- -	-3.5%	*8.5%*
"Cash Flow"	1.0%	2.5%	*11.5%*
Earnings	-1.5%	1.5%	*12.0%*
Dividends	- -	3.0%	*11.5%*
Book Value	6.5%	3.0%	*5.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	418.4	413.7	422.7	462.2	1717.0
2018	473.2	491.0	497.2	497.2	1958.6
2019	501.9	537.0	579.2	604.5	2222.6
2020	610.9	632.5	636.2	*630.4*	*2510*
2021	*645*	*670*	*680*	*665*	*2660*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.39	.40	.39	.45	1.62
2018	.51	.50	.55	.50	2.06
2019	.53	.60	.69	1.00	2.83
2020	.71	.74	.73	*.72*	*2.90*
2021	*.78*	*.81*	*.82*	*.79*	*3.20*

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.21	.21	.21	.21	.84
2018	.25	.25	.25	.25	1.00
2019	.27	.27	.27	.27	1.08
2020	.32	.32	.32	.32	1.28
2021					

BUSINESS: ManTech International Corporation provides mission-focused technology solutions and services for U.S. defense, intelligence community, and federal civilian agencies. Areas of expertise include full-spectrum cyber, data collection & analytics, enterprise information technology (IT), systems engineering and software application development. At 12/31/19, backlog was $9.1 billion, of which $1.3 bill. was funded. Employs approx. 8,900. Off./dir. have 83.1% of the total voting power, primarily through George J. Pedersen's 100% ownership of Class B common stock (4/20 proxy). Chairman, CEO & President: Kevin M. Phillips. Incorporated: Delaware. Address: 2251 Corporate Park Dr., Herndon, Virginia 20171. Tel.: 703-218-6000. Internet: www.mantech.com.

ManTech raised its full-year 2020 guidance. The provider of mission-focused technology solutions and services upped its revenue and adjusted earnings targets by $25 million and $0.09 a share at the midpoints, to a range of $2.49 billion-$2.51 billion and $3.24-$3.28, respectively. *Our presentation is based on GAAP results.* Indeed, double-digit growth on the top line was driven organically, primarily reflecting recent contract awards. To wit, September-period bookings were $1.3 billion, resulting in a book-to-bill ratio of 2.1x. And the total over the last 12 months was $3.5 billion, of which 50% was for new work. Furthermore, the backlog of business reached record levels at quarter end, totaling $9.8 billion. Given the company's growing backlog, strong bookings results, and robust pipeline, we look for this momentum to continue into 2021.

Management has announced two acquisitions. The company purchased Tapestry Technologies and Minerva Engineering, both of which are providers of advanced cyber solutions. These acquisitions ought to enhance and expand ManTech's cyber defense capabilities, as well as add customers, new past-performance qualifications, and mission-critical contracts. The financial terms of these deals were not disclosed.

These shares have made a strong recovery. In fact, the stock has risen more than 40% in value since our early November review, and is now trading near all-time highs. Much of this gain followed the third-quarter earnings release. Investors may have also taken notice of the company's capital deployment strategy, which has remained intact despite the COVID-19 pandemic. ManTech is focused on continued organic investment, growth-oriented strategic M&A, and the quarterly cash dividend. Too, it has ample financial capacity and a strong balance sheet to drive this continued shareholder value creation. As of September 30th, MANT had $102 million in cash and cash equivalents and no outstanding borrowings on its $500 million revolving-credit facility.

That said, long-term investors may want to look elsewhere. The rebound in price has discounted much of the growth we envision out to 2023-2025.

Michelle Jensen *February 5, 2021*

(A) Diluted earnings. Includes stock option expense. Excludes nonrecurring items: '13, ($2.31); 17, $1.29. May not sum to total due to rounding. Next earnings report due February 17th. (B) In millions. (C) Includes goodwill and other intangibles. At 12/31/19: $1388.0 million, or $34.55 a share. (D) Dividend initiated in June, 2011. Historically paid during late March, June, September, and December. (E) Includes accrued expenses.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	55
Earnings Predictability	65

McCORMICK NYSE-MKC

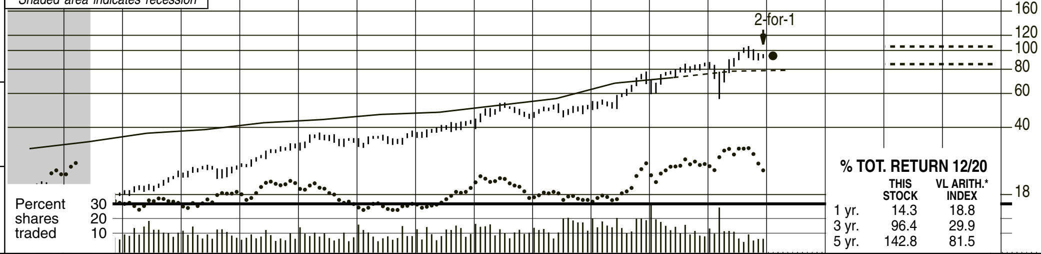
RECENT PRICE 93.99 | **P/E RATIO** 32.5 (Trailing: 33.0 / Median: 22.0) | **RELATIVE P/E RATIO** 1.54 | **DIV'D YLD** 1.4% | **VALUE LINE**

TIMELINESS 2 Lowered 1/15/21
SAFETY 1 Raised 5/1/09
TECHNICAL 3 Lowered 1/1/21
BETA .85 (1.00 = Market)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	18.4	23.9	25.6	33.2	37.6	38.5	43.7	53.9	53.3	78.0	86.7	105.5	
Low:	14.0	17.7	21.7	24.9	30.4	31.4	35.3	39.2	44.8	49.2	59.5	56.1	

Target Price Range
2023 | 2024 | 2025

LEGENDS
—— 22.0 x "Cash Flow" p sh
. . . . Relative Price Strength
2-for-1 split 12/20
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$76-$163	$120 (25%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	105	(+10%)	*4%*
Low	85	(-10%)	*-1%*

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	332	390	382
to Sell	453	372	399
Hld's(000)	203390	200202	200460

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	14.3	18.8
3 yr.	96.4	29.9
5 yr.	142.8	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
9.30	9.77	10.44	11.41	12.21	12.11	12.54	13.90	15.13	15.72	16.54	16.87	17.60	18.45	20.47	20.12	*21.05*	*22.00*	Sales per sh A	*24.80*
1.05	1.12	1.22	1.32	1.41	1.53	1.70	1.78	1.92	2.00	2.12	2.18	2.36	2.56	3.08	3.30	*3.55*	*3.60*	"Cash Flow" per sh	*4.25*
.76	.81	.86	.96	1.07	1.17	1.33	1.40	1.52	1.57	1.69	1.74	1.89	2.13	2.49	2.68	*2.90*	*2.95*	Earnings per sh A B	*3.55*
.28	.32	.36	.40	.44	.48	.52	.56	.62	.68	.74	.80	.86	.94	1.04	1.14	1.24	*1.36*	Div'ds Decl'd per sh ■ C	*1.50*
.26	.28	.33	.31	.33	.31	.33	.36	.42	.38	.52	.50	.61	.70	.64	.65	*.75*	*.75*	Cap'l Spending per sh	*.85*
3.28	3.02	3.59	4.25	4.06	5.06	5.49	6.08	6.41	7.42	7.05	6.56	6.49	9.77	12.00	12.96	*14.70*	*16.25*	Book Value per sh D	*21.30*
271.57	265.20	260.20	255.60	260.20	263.60	266.20	266.10	265.36	262.33	256.54	254.60	250.60	262.00	264.20	265.80	*267.00*	*268.00*	Common Shs Outst'g E	*266.00*
22.0	21.3	20.0	19.4	17.2	13.7	14.8	17.1	18.7	22.0	20.6	22.5	25.1	22.9	23.3	28.3	*30.2*		Avg Ann'l P/E Ratio	*27.0*
1.16	1.13	1.08	1.03	1.04	.91	.94	1.07	1.19	1.24	1.08	1.13	1.32	1.15	1.26	1.51	*1.53*		Relative P/E Ratio	*1.50*
1.7%	1.9%	2.1%	2.2%	2.4%	3.0%	2.6%	2.3%	2.2%	2.0%	2.1%	2.0%	1.8%	1.9%	1.8%	1.5%	1.4%		Avg Ann'l Div'd Yield	*1.5%*

CAPITAL STRUCTURE as of 8/31/20
Total Debt $4169.0 mill. **Due in 5 Yrs** $2.74 bill.
LT Debt $3737.5 mill. **LT Interest** $137 mill.
(Long-term interest earned: 7.7x) (49% of Cap'l)
Leases, Uncapitalized Annual rentals $41.8 mill.
Pension Assets-11/19 $1012.8 mill.
Oblig. $1230.4 mill.

Pfd Stock None
Common Stock 266,823,126 shs F
(Includes 248,695,946 non-voting shs.)

MARKET CAP: $25.1 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
3336.8	3697.6	4014.2	4123.4	4243.2	4296.3	4411.5	4834.1	5408.9	5347.4	*5620*	*5900*	Sales ($mill) A	*6600*
18.1%	17.3%	17.0%	16.9%	16.8%	16.8%	17.4%	18.4%	20.2%	21.3%	*21.5%*	*21.2%*	Operating Margin	*22.5%*
95.1	98.3	102.8	106.0	102.7	105.9	108.7	125.2	150.7	158.8	*165*	*168*	Depreciation ($mill)	*185*
356.3	374.2	407.8	418.2	441.6	449.5	483.4	546.7	663.0	717.5	*775*	*790*	Net Profit ($mill)	*950*
28.5%	29.0%	26.6%	26.8%	26.3%	26.2%	25.8%	23.8%	15.3%	19.5%	*20.0%*	*21.0%*	Income Tax Rate	*22.0%*
10.7%	10.1%	10.2%	10.1%	10.4%	10.5%	11.0%	11.3%	12.3%	13.4%	*13.8%*	*13.4%*	Net Profit Margin	*14.4%*
181.1	229.6	97.8	307.1	294.2	166.3	d.9	d330.3	d521.8	d604.2	*d200*	*d275*	Working Cap'l ($mill)	*425*
779.9	1029.7	779.2	1019.0	1014.1	1052.7	1054.0	4443.9	4052.9	3625.8	*3700*	*4000*	Long-Term Debt ($mill)	*4000*
1462.7	1618.5	1700.2	1947.7	1809.4	1670.2	1626.6	2559.9	3170.9	3444.2	*3920*	*4350*	Shr. Equity ($mill)	*5660*
17.0%	15.1%	17.5%	15.0%	16.5%	17.5%	19.1%	8.5%	10.3%	11.2%	*11.0%*	*10.5%*	Return on Total Cap'l	*10.5%*
24.4%	23.1%	24.0%	21.5%	24.4%	26.9%	29.7%	21.4%	20.9%	20.8%	*20.0%*	*18.0%*	Return on Shr. Equity	*17.0%*
14.9%	13.9%	14.3%	12.2%	13.8%	14.6%	16.3%	12.1%	12.3%	12.1%	*11.5%*	*10.0%*	Retained to Com Eq	*9.5%*
39%	40%	40%	43%	44%	46%	45%	43%	41%	42%	*43%*	*46%*	All Div'ds to Net Prof	*42%*

CURRENT POSITION ($MILL.)	2018	2019	8/31/20
Cash Assets	96.6	155.4	221.0
Receivables	518.1	502.9	496.5
Inventory	786.3	801.2	942.1
Other	78.9	90.7	100.0
Current Assets	1479.9	1550.2	1759.6
Accts Payable	710.0	846.9	902.8
Debt Due	643.5	723.8	431.5
Other	648.2	583.7	619.2
Current Liab.	2001.7	2154.4	1953.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	5.0%	4.5%	*4.0%*
"Cash Flow"	7.5%	8.0%	*6.0%*
Earnings	8.5%	9.0%	*6.5%*
Dividends	9.0%	9.0%	*6.5%*
Book Value	10.0%	10.5%	*10.5%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.)A Feb.28	May 31	Aug.31	Nov.30	Full Fiscal Year
2017	1043.7	1114.3	1185.2	1490.9	4834.1
2018	1237.1	1327.3	1345.3	1499.2	5408.9
2019	1231.5	1301.9	1329.2	1484.8	5347.4
2020	1212.0	1401.1	1430.3	*1576.6*	*5620*
2021	*1345*	*1460*	*1475*	*1620*	*5900*

Fiscal Year Ends	EARNINGS PER SHARE A B Feb.28	May 31	Aug.31	Nov.30	Full Fiscal Year
2017	.38	.41	.56	.78	2.13
2018	.50	.51	.64	.84	2.49
2019	.56	.58	.73	.81	2.68
2020	.54	.74	.77	*.85*	*2.90*
2021	*.58*	*.69*	*.80*	*.88*	*2.95*

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.235	.235	.235	.235	.94
2018	.26	.26	.26	.26	1.04
2019	.285	.285	.285	.285	1.14
2020	.31	.31	.31	.31	1.24
2021	.34				

BUSINESS: McCormick & Company, Inc. is a leading manufacturer, marketer, and distributor of spices, seasonings, flavorings, mixes, and condiments for the consumer, industrial, and foodservice markets. Has two segments: Consumer (accounted for 61% of total sales in fiscal 2019) and Flavor Solutions (39%). Acquired Reckitt Benckiser's Food Division (French's Mustard and Frank's RedHot lines) 8/17; Enrico Giotti SpA, 12/16. Foreign operations comprise 40% of sales in fiscal 2019. Has about 12,400 employees. Off./dir. own 12.7% of common stock; Lawrence E. Kurzius, 5.2% (2/20 Proxy). Chrmn., CEO & Pres.: Lawrence E. Kurzius. Inc.: MD. Addr.: 24 Schilling Road, Suite 1, Hunt Valley, Maryland 21031. Telephone: 410-771-7301. Internet: www.mccormick.com.

Fiscal 2020 (ended November 30th) was a challenging, but also productive year for McCormick & Company. (Note: The company is expected to release full fiscal-year results in late January.) We believe McCormick earned $2.90 a share, which is slightly above the top end of the company's most recent guidance of $2.82 to $2.86. *(All per-share data were adjusted to reflect a two-for-one stock split on December 1st.)* The primary catalysts were the ongoing focus on controlling operating costs under the "Comprehensive Continuous Improvement" program and a better-than-expected sales performance. We also think McCormick will surprise to the upside when it reports 12-month sales. The top line benefited from more people cooking at home during the coronavirus pandemic, with the company's spices used for preparing dinners. The strong performance from the Consumer segment offset a notable drop in the Flavor Solutions sales, which were hurt by less demand from the away-from-home channels.

The ongoing pandemic has not slowed the company's expansion plans. McCormick recently completed the purchase of *Cholula* Hot Sauce from L Catterton for $800 million. The acquisition of the Mexico-based premium hot sauce brand, which was funded with cash and commercial paper, enhances MKC's portfolio of global hot sauce brands that was acquired in the 2017 purchase of the *Frank's RedHot* line from RB Foods. We like the potential of the deal, as McCormick should be able to expand Cholula's global reach via its enhanced distribution network. Too, McCormick, given its market-leading position in the spices and seasonings categories, has done a good job bringing new products to the market in recent years; well-received new offerings include *Frank RedHot* thick sauces, *Stubb's* reduced sugar barbecue sauce, and *Old Bay* hot sauce.

This issue is timely. However, the recovery in price from its 2020 coronavirus-driven nadir discounts a lot of the growth we envision for the company to 2023-2025. Still, we think this stock is a nice option for conservative investors who believe the market is overbought and may be ripe for some profit taking.

William G. Ferguson *January 15, 2021*

(A) Fiscal year ends Nov. 30th. **(B)** Diluted earnings. Excl. nonrecurring gains/(losses): '04,(1¢); '05, (3¢); '06, (6¢), '07, (10¢); '13, (11¢); '14, (2¢); '17, (27¢); '18, $1.02; '19, (6¢); '20 Q1-Q3, (1¢). Next earnings report due late January. Earnings may not add due to rounding. **(C)** Divs. historically paid in mid-Jan., Apr., July & Oct. ■ Div'd reinvestment plan available. **(D)** Includes intangibles. In fiscal 2019: $7346.8 million, $27.05/sh. **(E)** In mill., adjusted for split. **(F)** Adjusted to reflect two-for-one stock split on December 1st.

Company's Financial Strength	A+
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	100

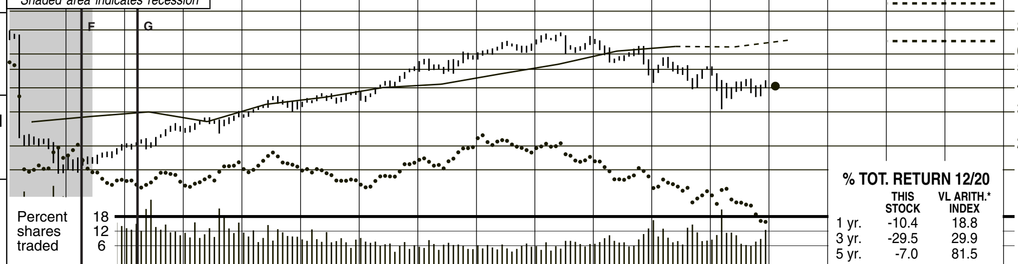
ALTRIA GROUP, INC. NYSE-MO

RECENT PRICE **40.84** | P/E RATIO **9.2** (Trailing: 9.3; Median: 16.0) | RELATIVE P/E RATIO **0.44** | DIV'D YLD **8.4%** | **VALUE LINE**

TIMELINESS 2 Raised 12/18/20
SAFETY 3 Lowered 4/17/20
TECHNICAL 4 Lowered 12/25/20
BETA .90 (1.00 = Market)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	20.5	26.2	30.4	36.3	38.6	51.7	61.7	70.1	77.8	71.9	57.9	51.8
Low:	14.5	19.1	23.2	28.0	31.8	33.8	47.3	56.2	60.0	46.5	39.3	31.0

LEGENDS
—— 15.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range
2023 | 2024 | 2025

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$31-$67	$49 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	110	(+170%)	*32%*
Low	70	(+70%)	*20%*

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	606	641	698
to Sell	963	793	703
Hld's(000)	1172253	1153688	1157231

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-10.4	18.8
3 yr.	-29.5	29.9
5 yr.	-7.0	81.5

2004	2005	2006	2007	2008[H]	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
43.51	46.93	48.36	35.02	9.39	11.35	11.66	11.64	12.25	12.27	12.45	12.98	13.25	13.45	13.53	13.51	*14.10*	*14.45*	Sales per sh	*15.95*
5.35	5.92	6.59	4.81	1.78	1.89	2.00	1.78	2.19	2.38	2.68	2.79	3.15	3.55	4.14	4.37	*4.50*	*4.80*	"Cash Flow" per sh	*5.80*
4.57	5.15	5.76	4.36	1.66	1.76	1.87	1.64	2.06	2.26	2.56	2.67	2.73	3.39	3.99	4.22	*4.35*	*4.65*	Earnings per sh [A]	*5.60*
2.82	3.06	3.32	3.16	1.68	1.32	1.46	1.58	1.70	1.84	2.08	2.17	2.35	2.54	3.00	3.28	3.40	*3.60*	Div'ds Decl'd per sh [B] ■	*4.45*
.93	1.06	1.17	2.10	.12	.13	.08	.05	.06	.07	.08	.12	.10	.10	.13	.13	*.15*	*.15*	Cap'l Spending per sh	*.15*
14.91	17.13	18.89	8.80	1.37	1.96	2.49	1.80	1.58	2.07	1.53	1.47	6.57	8.09	7.89	3.35	*2.15*	*2.45*	Book Value per sh [C]	*3.50*
2059.5	2085.0	2097.1	2107.7	2061.4	2076.0	2088.7	2044.4	2009.9	1993.5	1969.3	1960.1	1943.3	1901.3	1874.1	1858.0	*1858.0*	*1840.0*	Common Shs Outst'g [D]	*1725.0*
11.4	13.2	13.4	16.3	11.9	9.9	11.8	16.2	15.7	15.7	16.5	20.1	23.4	20.6	15.1	11.6	*9.8*		Avg Ann'l P/E Ratio	*16.0*
.60	.70	.72	.87	.72	.66	.75	1.02	1.00	.88	.87	1.01	1.23	1.04	.82	.63	*.50*		Relative P/E Ratio	*.90*
5.4%	4.5%	4.3%	4.5%	8.5%	7.6%	6.6%	6.0%	5.3%	5.2%	4.9%	4.0%	3.7%	3.6%	5.0%	6.7%	7.9%		Avg Ann'l Div'd Yield	*5.0%*

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
24363	23800	24618	24466	24522	25434	25744	25576	25364	25110	*26175*	*26600*	Sales ($mill)	*27500*
25.8%	26.5%	30.5%	34.1%	31.9%	33.1%	35.5%	38.3%	41.7%	42.7%	*42.5%*	*43.5%*	Operating Margin	*47.0%*
276.0	253.0	225.0	212.0	208.0	225.0	204.0	209.0	227.0	226.0	*250*	*260*	Depreciation ($mill)	*280*
3905.0	3390.0	4180.0	4535.0	5070.0	5243.0	5925.0	6531.0	7539.0	7895.9	*8080*	*8600*	Net Profit ($mill)	*9700*
31.7%	39.2%	35.4%	34.7%	34.8%	35.1%	56.2%	33.5%	23.1%	23.8%	*24.5%*	*24.5%*	Income Tax Rate	*24.5%*
16.0%	14.2%	17.0%	18.5%	20.7%	20.6%	23.0%	25.5%	29.7%	31.4%	*31.0%*	*32.3%*	Net Profit Margin	*35.3%*
d859.0	d512.0	d1936	d468.0	d795.0	d992.0	d115.0	d2448	d16894	d3350	*d2500*	*d3000*	Working Cap'l ($mill)	*d3625*
12194	13089	12419	13992	13693	12915	13881	13030	11898	27042	*27500*	*27000*	Long-Term Debt ($mill)	*25000*
5192.0	3680.0	3168.0	4119.0	3014.0	2880.0	12770	15377	14787	6222.0	*4000*	*4500*	Shr. Equity ($mill)	*6000*
25.7%	23.7%	30.4%	27.9%	32.8%	35.8%	23.6%	24.2%	29.4%	25.5%	*25.5%*	*27.5%*	Return on Total Cap'l	*31.5%*
75.2%	92.1%	131.9%	110.1%	168.2%	182.0%	46.4%	42.5%	51.0%	NMF	*NMF*	*NMF*	Return on Shr. Equity	*NMF*
18.2%	4.6%	24.6%	22.4%	39.1%	36.9%	11.1%	11.2%	14.4%	29.4%	*44.5%*	*44.0%*	Retained to Com Eq	*34.0%*
76%	95%	81%	80%	77%	80%	76%	74%	72%	77%	*78%*	*77%*	All Div'ds to Net Prof	*79%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $29255 mill. **Due in 5 Yrs** $10500 mill.
LT Debt $27755 mill. **LT Interest** $1150 mill.
(Total interest coverage: 8.3x) (90% of Cap'l)

Pension Assets-12/19 $8.2 bill. **Oblig.** $8.7 bill.
Pfd Stock None

Common Stock 1,858,419,165 shs.

MARKET CAP: $75.9 billion (Large Cap)

CURRENT POSITION[E] ($MILL.)	2018	2019	9/30/20
Cash Assets	1333	2117	4123
Receivables	142	152	151
Inventory (LIFO)	2331	2293	1862
Other	493	262	263
Current Assets	4299	4824	6399
Accts Payable	399	425	348
Debt Due	13848	1000	1500
Other	6946	6749	6442
Current Liab.	21193	8174	8290

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	-3.0%	2.0%	*3.0%*
"Cash Flow"	3.5%	10.5%	*6.5%*
Earnings	4.0%	11.0%	*6.5%*
Dividends	3.5%	9.5%	*7.0%*
Book Value	5.0%	30.0%	*-9.5%*

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	6083	6663	6729	6101	25576
2018	6108	6305	6837	6114	25364
2019	5628	6619	6856	6007	25110
2020	6359	6367	7123	*6326*	*26175*
2021	*6450*	*6750*	*7000*	*6400*	*26600*

Cal-endar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.72	.85	.90	.91	3.39
2018	.95	1.01	1.08	.95	3.99
2019	.90	1.10	1.19	1.02	4.22
2020	1.09	1.09	1.19	*.98*	*4.35*
2021	*1.10*	*1.17*	*1.25*	*1.13*	*4.65*

Cal-endar	QUARTERLY DIVIDENDS PAID [B] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.61	.61	.61	.66	2.49
2018	.66	.70	.70	.80	2.86
2019	.80	.80	.80	.84	3.24
2020	.84	.84	.84	.86	3.38
2021	.86				

BUSINESS: Altria Group, Inc. is the parent company of Philip Morris USA, John Middleton and Philip Morris Capital Corp. In 2019, the company operated 3 segments: Cigarettes (90% of operating profits) include *Marlboro, Benson & Hedges, Merit, Virginia Slims*; Smokeless products (8%); Other (2%). Sold *Miller*, 6/02. Has a 10.2% interest in *Anheuser-Busch In InBev*. Acq'd Nabisco, 12/00, Spun-off Kraft, 4/07; Spun-off Philip Morris Int'l, 3/08; Acq'd, UST, 1/09. Has 7,300 employees. Vanguard Group owns 8.1% of common shares; BlackRock owns 7.7%; officers and directors own less than 1.0% (4/20 proxy). CEO: Billy Gifford. Chairman: Thomas Farrell. Inc.: VA. Address: 6601 W. Broad Street, Richmond, Virginia 23230. Telephone: 804-274-2200. Internet: www.altria.com.

Altria Group can rest easy now that 2020 is in the rearview mirror. The tobacco giant, best known for its *Marlboro*-branded smoke sticks, saw its shares significantly lag the benchmark S&P 500 Index last year. The underperformance was in contrast to the strength of Altria's core domestic cigarette business, which likely had one of its best years ever in terms of pricing and volumes sold. We believe investors are instead focused on the company's long-term future, particularly as the shift to alternative products gains steam. Unlike rivals Philip Morris International and British American Tobacco, Altria hasn't had much success in this arena. It's homegrown e-cigarette brand MarkTen was discontinued several years ago, and a $13 billion bet on the once high-flying startup JUUL has gone up in flames. Altria is now betting its future on *iQOS*, a heat-not-burn device that was developed by Philip Morris International. Altria and PMI have a licensing agreement that gives the former exclusive rights to sell *iQOS* in the United States. However, while the device has been popular overseas, sales in the U.S. have not gotten much traction.

That could change now that the FDA has approved a new version of *iQOS*. Last month, the regulator authorized commercialization of *iQOS 3* in the United States. The new device offers several enhancements over *iQOS 2.4*, including longer battery life, faster recharging time, magnetic closure, and a side opening mechanism. Altria plans to offer *iQOS 3* in select markets before launching a national campaign in the second half of 2021.

Other efforts to diversify have had mixed results. MO's $1.8 billion investment in cannabinoid company Cronos Group was ill timed, and its stake is now worth about one-third less. Smaller transactions like the $372 million spent to acquire oral nicotine pouch maker Burger Sohne have worked out better, though the impact from such deals is pretty modest.

This stock should appeal to investors of all stripes. Income-oriented accounts should note the lofty dividend yield, while long-term investors can take solace in the above-average 3- to 5-year prospects. Additionally, the issue is favorable ranked for relative price performance (Timeliness: 2).

Daniel Henigson, CFA *January 15, 2021*

(A) Diluted earnings. Excl. nonrecur. gains (losses): '05, (12¢); '08, (17¢); '09, (21¢); '11, (21¢); '16, $4.55; '17, $1.92; '18, (31¢). Next egs. rpt due late Jan. Quarterly totals may not sum due to changes in share count. **(B)** Divd's historically paid in mid-Jan., late-Apr., mid-Jul., and mid-Oct. ■ Div'd reinvestment plan available. **(C)** Incl. intangibles. '19: $17.86 bill., $9.62/sh. **(D)** In millions. **(E)** Excl. fin'l services and real estate subsidiary **(F)** Spun-off Kraft Foods. **(G)** Spun-off Philip Morris Int'l. **(H)** Pro forma, reflects spinoff of Philip Morris Int'l.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	45
Earnings Predictability	95

MSA SAFETY, INC. NYSE-MSA

RECENT PRICE 148.30 | P/E RATIO 34.8 (Trailing: 32.8; Median: 20.0) | RELATIVE P/E RATIO 1.63 | DIV'D YLD 1.2% | VALUE LINE

TIMELINESS	3 Lowered 8/21/20
SAFETY	3 New 7/28/06
TECHNICAL	3 Lowered 8/28/20
BETA 1.00 (1.00 = Market)	

High:	29.6	32.6	40.9	44.3	55.4	61.1	54.5	71.3	86.4	110.8	128.2	155.5
Low:	15.8	22.4	24.5	32.7	43.0	46.3	38.3	37.7	65.9	71.5	90.8	83.6

18-Month Target Price Range

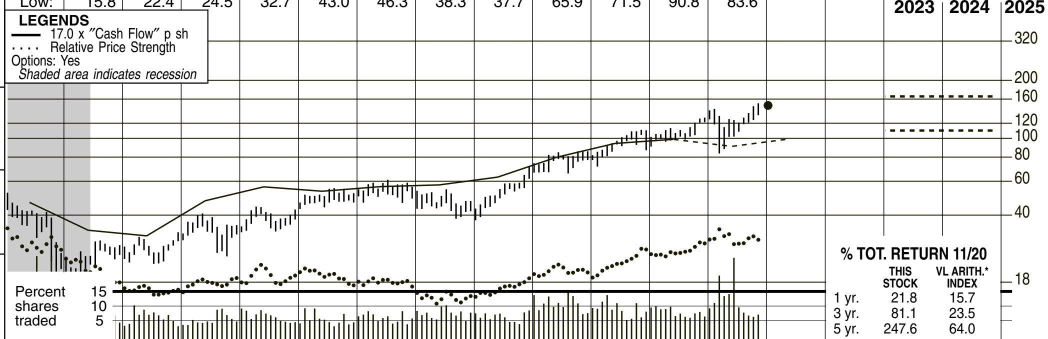
Low-High	Midpoint (% to Mid)
$109-$234	$172 (15%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	165	(+10%)	4%
Low	110	(-25%)	-5%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	88	126	106
to Sell	133	105	129
Hld's(000)	30310	29879	30034



% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	21.8	15.7
3 yr.	81.1	23.5
5 yr.	247.6	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
22.83	24.84	25.37	27.77	31.70	25.30	26.74	31.97	31.59	29.89	30.28	30.26	30.46	31.31	35.25	36.10	*33.35*	*34.75*	Sales per sh	*42.50*
2.58	2.90	2.52	2.52	2.74	1.96	1.84	2.80	3.30	3.13	3.31	3.38	3.71	4.69	5.54	5.82	*5.35*	*5.85*	"Cash Flow" per sh	*7.65*
1.86	2.19	1.85	1.80	1.96	1.21	1.05	1.87	2.42	2.28	2.52	2.52	2.77	3.65	4.50	4.80	*4.30*	*4.75*	Earnings per sh A	*6.25*
.37	.52	.68	.84	.94	.96	.99	1.03	1.10	1.18	1.23	1.27	1.31	1.38	1.49	1.64	*1.71*	*1.75*	Div'ds Decl'd per sh B	*2.25*
.73	.59	.63	.92	1.24	.72	.69	.83	.87	.98	.90	.97	.68	.62	.88	.94	*1.10*	*1.15*	Cap'l Spending per sh	*1.20*
10.02	10.37	12.06	12.84	10.90	12.04	12.26	11.72	12.41	15.13	14.29	13.74	14.70	15.54	16.36	18.59	*20.50*	*21.25*	Book Value per sh	*23.75*
37.34	36.55	36.02	35.66	35.79	35.97	36.52	36.69	37.01	37.20	37.45	37.37	37.74	38.22	38.53	38.84	*39.00*	*40.00*	Common Shs Outst'g C	*40.00*
18.9	19.2	20.9	24.9	18.6	19.7	25.4	17.8	15.8	21.6	21.4	18.5	18.9	20.6	20.7	22.6	*29.2*		Avg Ann'l P/E Ratio	*22.0*
1.00	1.02	1.13	1.32	1.12	1.31	1.62	1.12	1.01	1.21	1.13	.93	.99	1.04	1.12	1.23	*1.48*		Relative P/E Ratio	*1.20*
1.1%	1.2%	1.8%	1.9%	2.6%	4.0%	3.7%	3.1%	2.9%	2.4%	2.3%	2.7%	2.5%	1.8%	1.6%	1.5%	*1.4%*		Avg Ann'l Div'd Yield	*1.6%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $341.7 mill. **Due in 5 Yrs** $266.5 mill.
LT Debt $321.7 mill. **LT Interest** $8.7 mill.
(Total interest coverage: 17.9x)
(29% of Cap'l)
Leases, Uncapitalized: Annual rentals $11.1 mill.
Pension Assets-12/19 $515.9 mill. **Oblig.** $603.6 mill.
Preferred Stock 18,462 shs. 4½% cum., $50.00 par value, callable at $52.50
Common Stock 38,953,300 shs. as of 10/23/20
MARKET CAP: $5.8 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
976.6	1173.2	1168.9	1112.1	1133.9	1130.8	1149.5	1196.8	1358.1	1402.0	*1300*	*1390*	Sales ($mill)	*1700*
9.1%	12.7%	14.5%	14.5%	15.9%	15.9%	18.7%	21.9%	20.2%	20.5%	*21.0%*	*22.0%*	Operating Margin	*22.5%*
29.2	32.9	31.7	30.8	29.9	31.7	35.3	37.9	37.9	38.0	*40.0*	*44.5*	Depreciation ($mill)	*55.0*
38.1	69.9	90.6	85.9	94.1	94.8	104.9	141.3	175.4	188.0	*168*	*190*	Net Profit ($mill)	*250*
31.9%	33.2%	31.7%	29.3%	34.1%	29.8%	36.3%	24.2%	22.4%	23.4%	*25.0%*	*25.0%*	Income Tax Rate	*23.0%*
3.9%	6.0%	7.8%	7.7%	8.3%	8.4%	9.1%	11.8%	12.9%	13.4%	*12.9%*	*13.7%*	Net Profit Margin	*14.7%*
295.7	287.1	274.8	309.4	263.8	253.1	251.4	333.0	374.5	415.9	*490*	*465*	Working Cap'l ($mill)	*570*
367.1	334.0	272.3	260.7	245.0	460.0	363.8	447.8	341.3	328.4	*300*	*275*	Long-Term Debt ($mill)	*200*
451.4	433.7	463.0	566.5	538.6	517.1	558.2	597.6	633.9	725.8	*800*	*850*	Shr. Equity ($mill)	*950*
5.0%	9.9%	13.0%	11.0%	12.6%	10.3%	12.3%	14.3%	18.9%	18.4%	*16.0%*	*17.5%*	Return on Total Cap'l	*22.0%*
8.4%	16.1%	19.6%	15.2%	17.5%	18.3%	18.8%	23.6%	27.7%	25.9%	*21.0%*	*22.5%*	Return on Shr. Equity	*26.5%*
.5%	7.5%	11.0%	7.4%	9.1%	9.2%	10.1%	14.9%	18.8%	17.2%	*12.5%*	*14.0%*	Retained to Com Eq	*17.0%*
94%	54%	44%	51%	48%	50%	47%	37%	33%	34%	*40%*	*37%*	All Div'ds to Net Prof	*36%*

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	195.2	202.1	202.8
Receivables	248.6	258.8	229.3
Inventory (LIFO)	156.6	185.0	252.9
Other	56.2	47.5	59.1
Current Assets	656.6	693.4	744.1
Accts Payable	78.4	89.1	79.8
Debt Due	20.1	20.0	20.0
Other	183.6	168.4	184.9
Current Liab.	282.1	277.5	284.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Sales	1.5%	1.0%	*3.5%*
"Cash Flow"	6.0%	8.5%	*6.0%*
Earnings	7.0%	10.5%	*6.5%*
Dividends	5.5%	5.0%	*7.0%*
Book Value	2.5%	3.5%	*6.0%*

Cal-endar	QUARTERLY SALES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	265.8	288.8	296.1	346.1	1196.8
2018	325.9	339.3	331.1	361.8	1358.1
2019	326.0	349.7	351.0	375.3	1402.0
2020	341.1	314.4	304.4	*340.1*	*1300*
2021	*325*	*340*	*350*	*375*	*1390*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.58	.85	.92	1.31	3.65
2018	1.01	1.07	1.16	1.27	4.50
2019	1.14	1.22	1.15	1.29	4.80
2020	1.18	1.11	.94	*1.07*	*4.30*
2021	*1.10*	*1.15*	*1.20*	*1.30*	*4.75*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.33	.35	.35	.35	1.38
2018	.35	.38	.38	.38	1.49
2019	.38	.42	.42	.42	1.64
2020	.42	.43	.43	.43	
2021					

BUSINESS: MSA Safety Inc. (formerly Mine Safety Appliances Co.) is a global leader in the development, manufacture, and supply of a wide array of products that protect people's health and safety during work and military duties. It is composed of two business segments: MSA Americas and MSA International, which provided 65%, and 35% of revenues in 2019, respectively. Has about 4,800 employees. Officers & Directors own 7.0% (5.5% is John T. Ryan III) of common stock; BlackRock, Inc., 10.7%; The Vanguard Group, 9.7%; State Street Corp., 5.9% (4/20 Proxy). President & CEO: Nishan J. Vartanian. Inc.: PA. Address.: 1000 Cranberry Woods Drive, Cranberry Township, Pennsylvania 16066-5207 Telephone: 724-776-8600. Internet: www.msasafety.com.

Shares of MSA Safety have surged to record-high territory. Despite the company poised to report 2020 sales and earnings numbers well below 2019, investors have been encouraged by recent order rates. Management noted that it was seeing business pick up last fall. Also, the rollout of COVID-19 vaccines could mean economic activity returning to normal later this year.

Third-quarter results were below expectations. Indeed, MSA's business suffered greatly due to the pandemic. Sales in fall protection and portable gas detectors, among others, fell sharply from last year as the slowdown in construction and energy production took its toll. The overall topline figure of $304.4 million was down 13% year over year. Meanwhile, adjusted earnings of $0.94 per share missed our target by $0.16. A higher effective tax rate for the quarter cut into profits.

We have adjusted our near-term estimates. We have chopped our respective top- and bottom-line targets by $70 million and $0.30 per share for the recently completed fiscal year. In 2021, the first half of the year may be uneven, as the COVID-19 pandemic continues to limit industrial production. However, we expect economic activity to ramp up towards the summer, which should boost demand for protection equipment. The end result should be solid year-over-year growth.

Finances are not a concern. The company's debt load is very manageable, which allows management a good amount of flexibility to pursue strategic acquisitions, should the opportunity arise.

Product development remains key to long-term growth. MSA as been at the forefront of developing innovative solutions, especially in the fire service and fall protection markets. New products, such as the *Personal Fall Limiter*, will be crucial to drive sustained growth.

At the recent quotation, these neutrally ranked shares appear to be richly valued. The stock's surge in the second half of last year has pushed it well within our 3- to 5-year Target Price Range. From our view, investors may want to wait for a more attractive entry point. Too, the income component here lies below the *Value Line* median.

Kevin P. O'Sullivan *January 8, 2021*

(A) Diluted earnings. GAAP earnings through 2013, adjusted thereafter. Quarterly earnings may not add due to rounding. Excludes disc. operations '13, 6¢; '14, 3¢; '15, 3¢; '16 (2¢). Excludes non-recurring losses: '14, 22¢; '15, 68¢; '16, 33¢; '17, $2.98; '18 $1.32; '19, $1.32; '20, 49¢. Next egs. report due late February.
(B) Dividends historically paid in March, June, September, and December. Special one-time dividend of $0.28 per share was paid on 12/28/12.
(C) In millions.

Company's Financial Strength	B+
Stock's Price Stability	80
Price Growth Persistence	80
Earnings Predictability	85

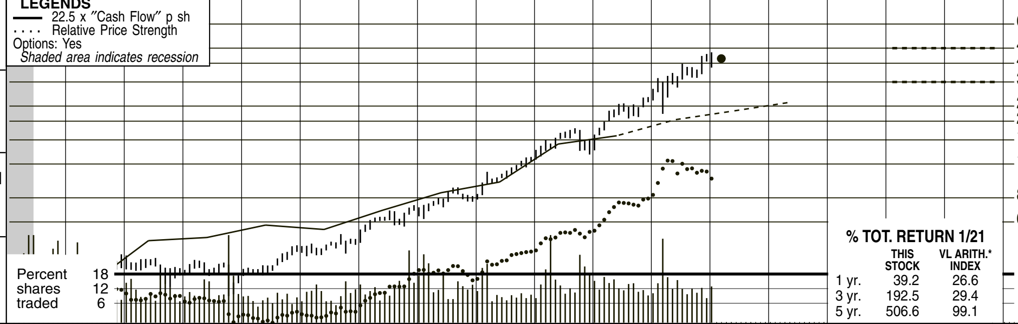
MSCI INC. NYSE-MSCI

RECENT PRICE 422.73 | P/E RATIO 49.4 (Trailing: 54.0 Median: 29.0) | RELATIVE P/E RATIO 2.31 | DIV'D YLD 0.8% | VALUE LINE 442

TIMELINESS 3 Lowered 1/22/21
SAFETY 3 New 11/25/16
TECHNICAL 3 Raised 1/22/21
BETA .95 (1.00 = Market)

High:	40.8	40.2	38.2	45.4	52.0	73.4	90.8	130.6	184.2	267.5	446.9	455.8
Low:	26.8	27.5	24.8	31.5	39.8	46.8	62.2	78.4	126.5	141.1	218.7	380.0

LEGENDS
—— 22.5 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range
2024 2025 2026

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$301-$662	$482 (15%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	480	(+15%)	4%
Low	320	(-25%)	-5%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	291	338	312
to Sell	327	292	334
Hld's(000)	76810	76956	74053

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	39.2	26.6
3 yr.	192.5	29.4
5 yr.	506.6	99.1

MSCI Inc. was founded in 1969, when it first began licensing equity index products, and incorporated in 1998. Until going public in November of 2007, the company's only two shareholders were Morgan Stanley and Capital Group International. MSCI became a fully independent, stand-alone public outfit in May of 2009.

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
7.43	7.91	8.77	8.89	10.64	12.61	14.14	17.04	18.37	20.45	23.15	25.25	Revenues per sh	35.00
2.13	2.22	2.57	2.44	3.07	3.78	4.30	6.77	7.48	9.05	10.05	11.20	"Cash Flow" per sh	17.75
1.41	1.48	1.83	1.70	2.09	2.70	3.31	5.35	6.44	7.83	8.90	10.00	Earnings per sh A	16.00
- -	- -	- -	.18	.80	1.00	1.32	1.92	2.52	2.92	3.32	3.72	Div'ds Decl'd per sh C	5.00
.19	.37	.34	.38	.40	.35	.37	.36	.34	.65	.70	.75	Cap'l Spending per sh	1.00
10.77	11.87	13.35	12.78	8.92	3.48	4.45	d1.98	d.90	d3.60	d1.20	1.80	Book Value per sh	15.00
121.21	120.11	118.08	112.07	101.01	91.28	90.10	84.17	84.80	83.00	83.00	83.00	Common Shs Outst'g B	80.00
24.8	22.2	20.1	26.5	29.6	28.7	32.1	29.2	34.1	43.6	Bold figures are		Avg Ann'l P/E Ratio	25.0
1.56	1.41	1.13	1.39	1.49	1.51	1.61	1.58	1.82	2.24	Value Line		Relative P/E Ratio	1.40
- -	- -	- -	.4%	1.3%	1.3%	1.2%	1.2%	1.1%	.9%	estimates		Avg Ann'l Div'd Yield	1.3%
900.9	950.1	1035.7	996.7	1075.0	1150.7	1274.2	1434.0	1557.8	1695.4	1920	2095	Revenues ($mill)	2800
45.6%	45.1%	43.6%	41.3%	45.0%	49.8%	52.0%	53.9%	54.6%	57.3%	58.0%	59.0%	Operating Margin	65.0%
85.2	82.0	80.5	74.5	79.9	84.4	83.4	89.3	83.5	90.0	95.0	100	Depreciation ($mill)	140
173.5	184.2	222.6	198.9	230.0	260.9	304.0	480.3	550.8	661.4	740	830	Net Profit ($mill)	1280
34.2%	36.3%	35.6%	35.5%	34.2%	32.4%	34.9%	20.7%	6.6%	13.2%	19.0%	19.0%	Income Tax Rate	21.0%
19.3%	19.4%	21.5%	20.0%	21.4%	22.7%	23.9%	33.5%	35.4%	39.0%	38.5%	39.6%	Net Profit Margin	45.7%
225.1	4.8	134.0	297.7	565.2	519.1	659.4	626.1	1181.0	1000.0	1100	1200	Working Cap'l ($mill)	1500
1066.5	811.6	788.0	800.0	1579.4	2075.2	2078.1	2575.5	3071.9	3366.8	3500	3500	Long-Term Debt ($mill)	3500
1305.4	1425.2	1576.4	1432.8	901.5	317.6	401.0	d166.5	d76.7	d300	d100	150	Shr. Equity ($mill)	1200
8.4%	9.6%	9.9%	9.6%	10.5%	13.0%	14.6%	22.7%	20.9%	24.5%	24.5%	25.0%	Return on Total Cap'l	29.0%
13.3%	12.9%	14.1%	13.9%	25.5%	82.1%	75.8%	- -	NMF	NMF	NMF	NMF	Return on Shr. Equity	NMF
13.3%	12.9%	14.1%	12.5%	15.8%	51.8%	45.9%	- -	NMF	NMF	NMF	NMF	Retained to Com Eq	73.5%
- -	- -	- -	10%	38%	37%	39%	36%	40%	37%	37%	37%	All Div'ds to Net Prof	31%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $3365.8 mill. **Due in 5 Yrs** $500.0 mill.
LT Debt $3365.8 mill. **LT Interest** $170.0 mill.
(113% of Cap'l)
Leases, Uncapitalized Annual rentals $28.2 mill.

No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 82,895,040 shs.
as of 10/20/20

MARKET CAP: $35.0 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	904.2	1506.6	1302.9
Receivables	473.4	499.3	429.8
Inventory	- -	- -	- -
Other	57.5	75.9	110.4
Current Assets	1435.1	2081.8	1843.1
Accts Payable	3.9	6.5	4.7
Debt Due	- -	- -	- -
Other	805.1	894.3	830.2
Current Liab.	809.0	900.8	834.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	15.0%	14.0%	11.5%
"Cash Flow"	19.0%	21.0%	16.5%
Earnings	20.0%	24.5%	18.0%
Dividends	- -	- -	14.5%
Book Value	- -	- -	61.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	351.3	363.1	357.9	361.7	1434.0
2019	371.4	385.6	394.2	406.6	1557.8
2020	416.8	409.6	425.3	443.7	1695.4
2021	465	475	485	495	1920
2022	505	515	530	545	2095

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.31	1.30	1.35	1.31	D5.35
2019	1.55	1.54	1.68	1.67	6.44
2020	1.90	1.77	2.20	1.96	7.83
2021	2.15	2.20	2.25	2.30	8.90
2022	2.35	2.45	2.55	2.65	10.00

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.28	.28	.38	.38	1.32
2018	.38	.38	.58	.58	1.92
2019	.58	.58	.68	.68	2.52
2020	.68	.68	.78	.78	2.92
2021	.78				

BUSINESS: MSCI Inc. provides portfolio construction and risk management tools and services for a diverse client roster, including asset owners (pension funds, endowments, foundations, central banks, insurance companies), asset management firms (mutual funds, hedge funds, ETF marketers), and private wealth managers (banks, broker-dealers, exchanges, custodians, trust companies, investment consultants). Business lines include indices/ETFs, risk management analytics, portfolio management analytics, and governance. Has about 3,400 employees. Officers & directors own 2.9% of common (3/20 Proxy). CEO: Henry A. Fernandez. Inc.: DE. Addr.: 7 World Trade Center, 250 Greenwich St., 49th Fl., New York, NY 10007. Tel.: 212-804-3900. Internet: www.msci.com.

MSCI, which has seen its stock climb roughly 40% over the past year, closed out 2020 on an upbeat note. In fact, fourth-quarter share earnings rose a better-than-anticipated 17%, to $1.96, thanks to solid top-line growth (of 9%) and continued operating leverage. (Our share-net estimate was $1.88.) The company also continued to shore up its base of "sticky" recurring revenues during the period, with new recurring subscription sales increasing 9.3%. And it continued its shareholder-friendly ways, repurchasing more than 470,000 shares for $164 million, or for an average price of about $348 apiece.

We expect the momentum to persist through 2021 and beyond. MSCI, under the veteran leadership of CEO Henry Fernandez, maintains a dominant, all-weather franchise, one that has been little affected by the COVID-19 pandemic. Moreover, the company should continue to benefit from some powerful secular trends, including the move toward passive investing via ETFs (exchange traded funds), and the heightened popularity of socially responsible ESG (environment, social, and governance) investing. Notably, in the fourth quarter, assets in equity ETFs linked to MSCI indexes surpassed the $1 trillion mark. And the ESG business continued to boom, so much so that the company will now be classifying "ESG and Climate" as a stand-alone reporting segment. In the meantime, the company remains focused on innovation, and is working hard to expand its fixed-income product portfolio. And technology investments, letting clients access MSCI data in the cloud, are ongoing, which ought to garner nice benefits going forward. All in all, given the long list of positives here, we see share net advancing at a double-digit clip both this year and next, to $8.90 and $10.00, respectively. We also envision the bottom line reaching around $16.00 a share by the 2024-2026 horizon.

This neutrally ranked (3) issue, already trading within our long-term Target Price Range, appears richly valued at current levels. That said, potential acquisitions are not factored into our estimates. And there's ample room to hike the dividend payout, a measure that would bolster returns in the years ahead.

Justin Hellman *February 19, 2021*

(A) Earnings based on diluted shares outstanding. Excludes nonrecurring gains: '18, $0.31; '19, $0.15. Next earnings report due late April.
(B) In millions.
(C) Dividend initiated in late '14. Payments typically made in March, May, August, and November.
(D) Quarters don't sum to yearend total due to rounding/changes in the share base.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	75
Earnings Predictability	85

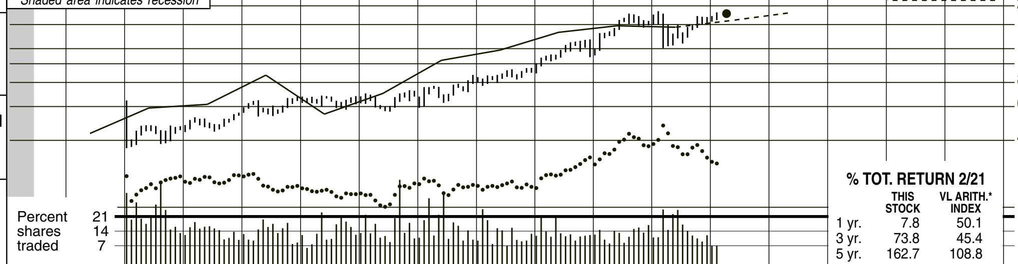
MOTOROLA SOLU. NYSE-MSI

RECENT PRICE 182.45 | P/E RATIO 21.6 (Trailing: 23.7 Median: 17.0) | RELATIVE P/E RATIO 1.00 | DIV'D YLD 1.6% | VALUE LINE

TIMELINESS 2 Lowered 3/5/21
SAFETY 2 Raised 9/14/18
TECHNICAL 3 Lowered 1/29/21
BETA .90 (1.00 = Market)

High:	64.6	55.8	67.7	68.3	73.0	87.6	95.3	134.0	182.3	187.5	184.9	
Low:	36.5	44.2	53.3	57.8	56.4	59.1	76.9	89.2	110.6	120.8	165.6	

LEGENDS
—— 15.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



18-Month Target Price Range
Low-High Midpoint (% to Mid)
$135-$272 $204 (10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	290	(+60%)	14%
Low	215	(+20%)	6%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	325	286	354
to Sell	346	359	286
Hld's(000)	145857	147194	142416

Percent shares traded 21 14 7

Target Price Range 2024 2025 2026: 320, 200, 160, 120, 100, 80, 60, 40, 18

% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	7.8	50.1
3 yr.	73.8	45.4
5 yr.	162.7	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
--	--	--	--	--	22.65	25.73	31.50	34.17	26.76	32.67	36.66	39.58	44.91	46.26	43.77	***47.35***	***50.00***	Revenues per sh	***60.00***
--	--	--	--	--	2.90	3.93	4.10	5.82	3.65	4.68	6.96	7.85	9.72	10.51	10.32	***11.25***	***12.35***	"Cash Flow" per sh	***14.30***
--	--	--	--	--	1.85	2.61	3.20	4.73	2.58	3.33	4.92	5.46	7.15	7.96	7.69	***8.70***	***9.70***	Earnings per sh A	***11.50***
--	--	--	--	--	--	.22	.96	1.14	1.30	1.43	1.70	1.93	2.13	2.35	2.56	***2.84***	***3.16***	Div'ds Decl'd per sh D	***4.30***
--	--	--	--	--	.57	.58	.68	.75	.82	1.00	1.65	1.41	1.20	1.45	1.28	***1.45***	***1.50***	Cap'l Spending per sh	***1.65***
--	--	--	--	--	16.65	16.36	11.83	14.38	12.44	d.61	d5.85	d10.81	d7.91	d4.11	d3.29	***.60***	***4.35***	Book Value per sh B	***6.00***
--	--	--	--	--	336.30	318.80	276.10	254.50	219.80	174.30	164.70	161.20	163.50	170.50	169.40	***171.00***	***172.00***	Common Shs Outst'g C	***175.00***
--	--	--	--	--	--	16.6	15.5	12.7	25.0	19.4	14.7	15.8	16.1	19.4	20.3	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	***22.0***
--	--	--	--	--	--	1.04	.99	.71	1.32	.98	.77	.79	.87	1.03	1.04			Relative P/E Ratio	***1.20***
--	--	--	--	--	--	.5%	1.9%	1.9%	2.0%	2.2%	2.3%	2.2%	1.9%	1.5%	1.6%			Avg Ann'l Div'd Yield	***1.7%***

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
8203.0	8698.0	8696.0	5881.0	5695.0	6038.0	6380.0	7343.0	7887.0	7414.0	***8100***	***8600***	Revenues ($mill)	***10500***
21.2%	19.8%	20.1%	21.1%	23.0%	28.8%	29.6%	29.4%	30.0%	30.3%	***29.5%***	***30.0%***	Operating Margin	***30.5%***
366.0	179.0	202.0	169.0	142.0	295.0	343.0	360.0	394.0	409.0	***420***	***440***	Depreciation ($mill)	***470***
888.0	954.0	1280.0	634.0	673.0	851.0	923.0	1230.0	1398.0	1338.8	***1500***	***1680***	Net Profit ($mill)	***2015***
33.4%	33.4%	10.7%	32.6%	33.0%	31.4%	31.0%	21.9%	22.5%	20.0%	***22.0%***	***22.0%***	Income Tax Rate	***22.0%***
10.8%	11.0%	14.7%	10.8%	11.8%	14.1%	14.5%	16.8%	17.7%	18.1%	***18.5%***	***19.5%***	Net Profit Margin	***19.2%***
4953.0	4066.0	3800.0	4629.0	2389.0	800.0	1019.0	1176.0	739.0	838.0	***830***	***1225***	Working Cap'l ($mill)	***1900***
1130.0	1859.0	2457.0	3396.0	4386.0	4392.0	4419.0	5289.0	5113.0	5163.0	***5000***	***5000***	Long-Term Debt ($mill)	***3500***
5214.0	3265.0	3659.0	2735.0	d106.0	d964.0	d1742	d1293	d700.0	d558.0	***100***	***750***	Shr. Equity ($mill)	***995***
15.0%	19.7%	22.0%	11.4%	17.6%	27.8%	38.2%	33.6%	34.2%	31.5%	***29.5%***	***29.0%***	Return on Total Cap'l	***45.0%***
17.0%	29.2%	35.0%	23.2%	--	--	--	--	--	--	***NMF***	***NMF***	Return on Shr. Equity	***NMF***
15.7%	20.9%	27.0%	11.6%	--	--	--	--	--	--	***NMF***	***NMF***	Retained to Com Eq	***NMF***
8%	28%	23%	50%	41%	33%	33%	27%	27%	33%	***34%***	***34%***	All Div'ds to Net Prof	***43%***

CAPITAL STRUCTURE as of 12/31/20

Total Debt $5.18 bill. **Due in 5 years** $2.25 Bill.
LT Debt $5.16 bill. **LT Interest** $215 mill.

Leases, Uncapitalized: Annual rentals $141 mill.

Pension Assets - 12/20 $6.1 bill. **Oblig.** $7.4 bill.

Common Stock 169,028,294 shs.
as of 2/1/21

MARKET CAP: $30.8 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	1257	1001	1254
Receivables	1293	1412	1390
Inventory (FIFO)	356	447	508
Other	1366	1318	1175
Current Assets	4272	4178	4327
Accts Payable	592	618	612
Debt Due	31	16	12
Other	2473	2805	2865
Current Liab.	3096	3439	3489

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	7.0%	7.5%	*5.0%*
"Cash Flow"	13.5%	16.5%	*5.5%*
Earnings	15.0%	16.5%	*7.0%*
Dividends	--	12.5%	*10.5%*
Book Value	--	--	*NMF*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1468	1760	1862	2254	7343
2019	1657	1860	1994	2377	7887
2020	1655	1618	1868	2273	7414
2021	***1750***	***1815***	***2025***	***2510***	***8100***
2022	***1900***	***1980***	***2165***	***2555***	***8600***

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.10	1.46	1.94	2.63	7.15
2019	1.28	1.69	2.04	2.94	7.96
2020	1.49	1.39	1.95	2.86	7.69
2021	***1.65***	***1.75***	***2.20***	***3.10***	***8.70***
2022	***1.80***	***2.10***	***2.45***	***3.35***	***9.70***

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.47	.47	.47	.52	1.93
2018	.52	.52	.52	.57	2.13
2019	.57	.57	.57	.64	2.35
2020	.64	.64	.64	.64	2.56
2021	.71				

BUSINESS: Motorola Solutions, Inc., designs, manufacturers and services analog and digital two-way radios for private networks and end-to-end enterprise mobility solutions to a wide range of customers including government and public safety agencies (fire safety, law enforcement, emergency services, etc.) as well as retail, utilities, transportation, manufacturing, and healthcare customers. North America provides around 72% of sales. Has about 18,000 employees. Officers and directors own 2.3% of common stock; BlackRock, Inc., 11.2%; Vanguard Group, 11.1% (3/20 proxy). President and CEO: Greg Brown. Incorporated: Delaware. Address: 1303 East Algonquin Road, Schaumburg, Illinois 60196. Telephone: 847-576-5000. Internet: www.motorola.com

Motorola Solutions ended 2020 with mixed results. The core Products and Systems Integration segment (P&SI, 66% of fourth-quarter sales) saw its top line tumble 10% year over year, primarily due to weaker public safety and commercial land mobile radios (LMRs), partially offset by growth in video security. The other division, Software and Services (34%), increased revenue 8% on higher demand for radio services, video security, and command center software. Total revenue was down 4%, causing earnings per share to decrease 3%. The backlog reached a record $11.4 billion, up $175 million versus a year ago. Although the quarter marked the largest ever for LMR orders in North America, P&SI backlog was still down $38 million, driven by COVID-19-related delays in sales engagements, particularly with smaller customers.

Guidance is sound. Revenue for the March interim is expected to advance between 5.5% and 6%, with non-GAAP earnings growing 6%-10%. Supply constraints ought to remain a headwind over the near-term. For 2021, the top line is expected to rise 7%-8%, with mid-single digit growth in products and low-double digit growth in services. Adjusted earnings are targeted to improve 11%-12%. These estimates may prove conservative if stimulus measures for state and local governments occur or there is support for a infrastructure bill.

Prospects for the video business are bright. Sales of "fixed video" products, i.e., surveillance cameras, grew over 45% in the fourth quarter. Meanwhile, third- and fourth-quarter body camera orders were up 60%. Management seems confident in its ability to win body camera market share in suburban and rural municipalities as they follow adoption from large cities. Still, Motorola's operation will likely remain smaller than the leader in the space, Axon Enterprise. The company pegs the addressable markets at $500 million for body cameras and $15 billion for fixed video. Management expects to generate over $1 billion in video revenue this year, putting it in line with recent strong growth rates.

Timely Motorola's essential products and software shield it from turbulence in the broader economy.

Kevin Downing *March 12, 2021*

(A) Diluted earnings. Egs. may not sum due to changes in share count. Next earnings report due early May. All data are pro forma.
(B) Includes intangibles. In 2020: $3.453 bill., $20.38/share.
(C) In millions.
(D) Quarterly divds. paid in mid-January, mid-April, mid-July and mid-Oct.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	75
Earnings Predictability	70

VAIL RESORTS, INC. NYSE-MTN

RECENT PRICE 278.50 | P/E RATIO NMF (Trailing: NMF; Median: 42.0) | RELATIVE P/E RATIO NMF | DIV'D YLD Nil | VALUE LINE

TIMELINESS 3 Raised 7/5/19
SAFETY 3 New 8/18/06
TECHNICAL 1 Raised 1/8/21
BETA .90 (1.00 = Market)

High:	42.4	54.0	53.4	59.5	76.9	94.2	133.6	170.0	237.8	302.8	251.8	300.0
Low:	14.8	32.4	34.5	37.5	50.7	64.5	84.6	114.9	159.8	200.3	179.6	125.0

Target Price Range 2023 | 2024 | 2025

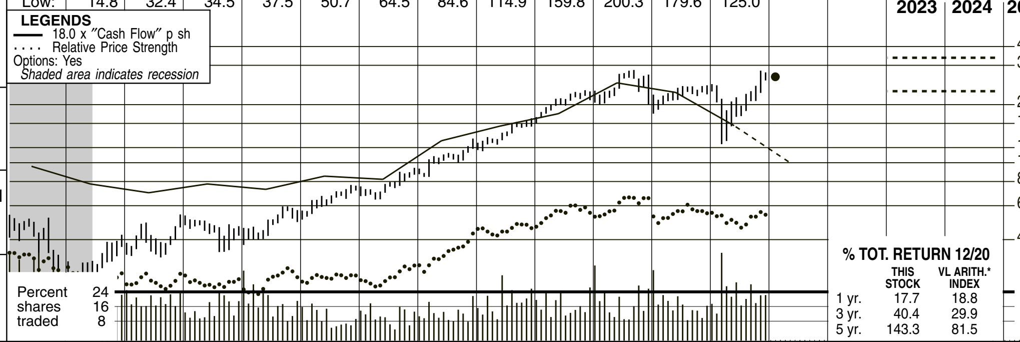
18-Month Target Price Range
Low-High: $122-$327; Midpoint (% to Mid): $225 (-20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	350	(+25%)	7%
Low	235	(-15%)	-3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	178	183	147
to Sell	258	196	200
Hld's(000)	39402	39201	40308



% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	17.7	18.8
3 yr.	40.4	29.9
5 yr.	143.3	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
20.43	22.13	21.65	24.20	31.20	27.01	24.19	32.35	28.79	31.17	34.66	38.34	44.26	47.67	49.63	56.31	48.82	39.20	Revenues per sh A	69.15
3.35	3.23	3.40	3.84	5.33	4.32	3.89	4.32	4.05	4.74	4.56	7.22	8.59	9.99	14.42	12.87	8.66	5.45	"Cash Flow" per sh	16.80
.90	.78	1.14	1.54	2.64	1.33	.79	1.03	.45	1.03	.66	3.07	4.01	5.22	9.13	7.32	2.42	d.90	Earnings per sh AB	9.75
--	--	--	--	--	--	--	.15	.68	.79	1.25	2.08	2.87	3.73	5.05	6.46	5.28	Nil	Div'ds Decl'd per sh C	6.00
2.57	4.16	5.64	3.07	4.09	2.94	1.92	2.65	3.73	2.64	3.27	3.39	3.02	3.61	3.47	4.76	4.28	3.70	Cap'l Spending per sh	4.70
14.00	14.77	16.59	18.37	19.74	21.16	22.35	23.39	22.94	23.30	23.06	24.12	24.17	39.27	39.22	37.20	32.73	31.00	Book Value per sh D	38.25
35.34	36.60	38.75	38.86	36.92	36.17	35.91	36.07	35.58	35.95	36.20	36.51	36.18	40.01	40.53	40.34	40.23	40.30	Common Shs Outst'g E	40.50
17.9	29.8	29.7	31.6	18.8	20.8	47.4	43.8	NMF	NMF	NMF	30.2	30.7	33.9	25.5	32.3	NMF		Avg Ann'l P/E Ratio	30.0
.95	1.59	1.60	1.68	1.13	1.39	3.02	2.75	NMF	NMF	NMF	1.52	1.61	1.70	1.38	1.72	NMF		Relative P/E Ratio	1.65
--	--	--	--	--	--	--	.3%	1.6%	1.4%	1.7%	2.2%	2.3%	2.1%	2.2%	2.7%	2.5%		Avg Ann'l Div'd Yield	2.1%

CAPITAL STRUCTURE as of 10/31/20
Total Debt $2451.6 mill. **Due in 5 Yrs** $1919 mill.
LT Debt $2387.9 mill. **LT Interest** $100 mill.
Includes $346.0 mill. in capital leases
(Total interest coverage: 1.0x) (63% of Cap'l)

Leases, Uncapitalized: Annual rentals $47.0 mill.
No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 40,251,595 shs.
as of 12/7/20
MARKET CAP: $11.2 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
868.6	1167.0	1024.4	1120.8	1254.6	1399.9	1601.3	1907.2	2011.6	2271.6	1963.7	1580	Revenues ($mill) A	2800
20.1%	18.5%	18.4%	20.0%	20.8%	24.4%	28.0%	30.6%	30.6%	30.8%	25.3%	23.0%	Operating Margin	32.0%
110.6	118.0	127.6	132.7	140.6	149.1	161.5	189.2	204.5	218.1	249.6	255	Depreciation ($mill)	280
28.9	37.7	16.5	37.7	24.4	114.6	149.5	210.6	379.9	301.2	98.8	d35.0	Net Profit ($mill)	400
40.3%	35.7%	41.7%	36.5%	48.5%	23.2%	38.4%	33.5%	33.5%	18.9%	6.3%	NMF	Income Tax Rate	15.0%
3.3%	3.2%	1.6%	3.4%	1.9%	8.2%	9.3%	11.0%	18.9%	13.3%	5.0%	NMF	Net Profit Margin	14.3%
d119.1	2.4	d16.9	30.2	d49.1	d110.6	d183.6	d171.5	d54.9	d191.2	61.6	d100	Working Cap'l ($mill)	d100
524.8	490.7	489.8	795.9	625.6	806.7	686.9	1234.0	1234.3	1527.7	2387.1	2900	Long-Term Debt ($mill)	2900
802.4	843.7	816.3	837.9	834.8	880.6	874.5	1571.2	1589.4	1500.6	1316.7	1250	Shr. Equity ($mill)	1550
2.8%	4.1%	2.5%	3.5%	3.9%	8.3%	10.9%	8.5%	14.6%	11.3%	4.0%	NMF	Return on Total Cap'l	10.5%
3.6%	4.5%	2.0%	4.5%	2.9%	13.0%	17.1%	13.4%	23.9%	20.1%	7.5%	NMF	Return on Shr. Equity	26.0%
3.6%	3.8%	NMF	1.1%	NMF	4.4%	5.2%	4.1%	11.1%	2.7%	NMF	Nil	Retained to Com Eq	10.0%
--	14%	NMF	75%	NMF	66%	69%	69%	54%	87%	NMF	Nil	All Div'ds to Net Prof	61%

CURRENT POSITION ($MILL.)	2019	2020	10/31/20
Cash Assets	108.8	391.0	462.2
Receivables	270.9	106.7	208.5
Inventory (Avg Cost)	96.5	101.8	100.9
Other	51.7	65.6	70.0
Current Assets	527.9	665.1	841.6
Accts Payable	96.4	59.7	74.6
Debt Due	48.5	63.7	63.7
Other	574.2	480.1	811.9
Current Liab.	719.1	603.5	950.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '23-'25
Revenues	6.5%	8.0%	6.0%
"Cash Flow"	10.5%	17.0%	6.5%
Earnings	15.0%	31.5%	8.5%
Dividends	--	32.5%	1.5%
Book Value	5.5%	9.0%	2.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Oct. 31	Jan. 31	Apr. 30	Jul. 31	Full Fiscal Year
2017	178.3	725.2	794.6	209.1	1907.2
2018	220.9	734.6	844.5	211.6	2011.6
2019	220.0	849.6	958.0	244.0	2271.6
2020	267.8	924.6	694.1	77.2	1963.7
2021	131.8	600	675	173.2	1580

Fiscal Year Ends	EARNINGS PER SHARE A B Oct. 31	Jan. 31	Apr. 30	Jul. 31	Full Fiscal Year
2017	d1.70	3.63	4.40	d1.43	5.22
2018	d.71	5.67	6.17	d2.07	9.13
2019	d2.66	5.02	7.12	d2.22	7.32
2020	d2.64	5.04	3.74	d3.82	2.42
2021	d3.82	2.15	3.60	d2.83	d.90

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.81	1.053	1.053	1.053	3.97
2018	1.053	1.47	1.47	1.47	5.46
2019	1.47	1.76	1.76	1.76	6.75
2020	1.76	1.76	--	--	3.52
2021					

BUSINESS: Vail Resorts, Inc. is a mountain resort company, with a portfolio of assets in North America and Australia. Has three segments: Mountain (87.1% of fiscal '20 revenue); Lodging (12.7%); and Real Estate (.2%). North American resorts include Vail, Whistler Blackcomb, Breckenridge, Park City, Keystone, Kirkwood, Heavenly Mountain, Okemo. Australian Resorts: Perisher, Falls Creek, Hotham. Has about 7,300 year-round employees (employed 36,200 seasonal workers in 2020). Offs. & dirs. own 2.1% of stock; Ronald Baron/Baron Capital Mgmt., 11.3%; T. Rowe Price, 9.6%; Vanguard, 9.5% (10/20 proxy). Chairman & CEO: Robert A. Katz. Inc.: DE. Address: 390 Interlocken Crescent, Broomfield, CO 80021. Telephone: (303) 404-1800. Internet: www.vailresorts.com.

Vail Resorts' fiscal first-quarter results (ended October 31st) fell short of expectations. As a result of local COVID-19 restrictions, two of the company's resorts in Australia remained closed during the period. In North America, visitation was down at the U.S. resorts and at Whistler Blackcomb in Canada. Revenue of $132 million was about half last year's total and nearly $20 million short of our estimate. Cost reductions helped cut resort operating expenses by 33%. Still, the company reported a loss per share of $3.82, a steeper deficit than our $3.50 forecast.

The near-term outlook appears challenging. Given the uncertain prospects for travel demand, the company declined to provide financial guidance for the year. But management expects visits to the resorts to fall materially, mostly as a result of pressure on visitation from non-pass lift ticket purchasers. Prospects for international travel seem poor, which would hurt Whistler Blackcomb, where about 50% of visitors come from abroad. A drop in destination visits is also likely to pressure ancillary revenues, including ski school, food and beverage, and retail rental, that tend to rely more on these guests. To bring costs more in line with expected demand, Vail reduced capacity at its restaurants, shifted some menus to grab-and-go options, scaled back ski instruction group sizes, and eliminated some lesson types. We have lowered our 2021 revenue estimate from $1.72 billion, to $1.58 billion. On the lighter top line, our per-share call has moved from a gain of $0.70, to a loss of $0.90. Finally, we note that in mid-December, Vail placed $575 million in zero-coupon convertible senior notes due 2026. We were encouraged by the reception among institutional investors for the offering. But we also point out the terms prevent the company from paying a dividend through January 31, 2022, without majority approval of the lenders. Management noted it believes the company has sufficient liquidity to fund operations at least through the 2021/2022 season, even with extended resort shutdowns.

This equity is neutrally ranked for year-ahead performance. The current price seems to discount most of the earnings growth we project out to 2023-2025.

Christopher Joseph, CFA January 29, 2021

(A) Fiscal year ends July 31st.
(B) Diluted earnings. Excludes non-recurring gains/(losses): '04, ($1.07); '05, (14¢); '10, 4¢; '11, (9¢); '14, 11¢. Qly. figs. may not sum due to rounding or change in shares outstanding. Next earnings report due mid-March.
(C) Dividend suspended 4/20.
(D) Includes goodwill and intangibles. In 2020: $2.0 billion, $50.31 per share.
(E) In millions.

Company's Financial Strength	B+
Stock's Price Stability	80
Price Growth Persistence	90
Earnings Predictability	40

MAXIM INTEGR. PROD. NDQ-MXIM

RECENT PRICE 88.91 | P/E RATIO 29.8 (Trailing: 33.7 Median: 20.0) | RELATIVE P/E RATIO 1.35 | DIV'D YLD Nil | VALUE LINE

TIMELINESS	–	Suspended 7/24/20	
SAFETY	3	New 1/6/12	
TECHNICAL	–	Suspended 7/24/20	
BETA .95 (1.00 = Market)			

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$52-$116	$84 (-5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	125	(+40%)	10%
Low	80	(-10%)	-1%

Institutional Decisions

	2Q2020	3Q2020	4Q2020
to Buy	287	266	262
to Sell	257	320	305
Hld's(000)	240527	230278	223679

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	24.9	28.4	30.7	33.7	35.8	42.2	42.4	55.4	74.9	63.4	88.8	98.4	
Low:	15.7	20.6	23.5	26.5	25.3	29.5	30.3	38.2	46.6	47.8	41.9	84.8	

LEGENDS
—— 19.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession

Percent shares traded 45 30 15

Target Price Range

2024	2025	2026

% TOT. RETURN 2/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	70.1	50.1
3 yr.	64.4	45.4
5 yr.	214.4	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
5.10	5.80	6.27	6.40	5.38	6.64	8.36	8.21	8.49	8.63	8.10	7.73	8.11	8.90	8.51	8.21	*9.40*	*9.95*	Revenues per sh A	*11.30*
1.89	1.49	1.22	1.50	.87	.97	2.35	2.34	2.56	2.51	2.62	2.52	2.75	3.29	2.91	2.71	*3.35*	*3.60*	"Cash Flow" per sh	*4.45*
1.58	1.14	.87	.98	.19	.40	1.61	1.58	1.77	1.63	1.54	1.63	2.13	2.71	2.44	2.26	*2.95*	*3.20*	Earnings per sh A B	*3.95*
.38	.48	.62	.75	.80	.80	.84	.88	.96	1.04	1.12	1.20	1.32	1.56	1.84	1.92	*.48*	*Nil*	Div'ds Decl'd per sh C	*2.00*
.40	.63	1.25	.67	.44	.41	.59	.90	.75	.47	.27	.24	.18	.24	.30	.25	*.25*	*.25*	Cap'l Spending per sh	*.30*
7.89	8.67	9.77	9.82	8.48	7.82	8.49	8.67	8.72	8.54	8.04	7.42	7.79	6.93	6.79	6.21	*7.20*	*7.55*	Book Value per sh	*8.50*
327.49	320.08	320.55	320.55	306.02	300.85	295.78	292.73	287.62	284.44	284.82	283.91	282.91	278.66	271.85	266.80	*270.00*	*272.00*	Common Shs Outst'g D	*265.00*
26.4	33.5	35.2	25.0	NMF	46.2	14.2	16.3	16.5	18.6	20.9	21.6	19.7	19.9	22.9	25.4	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*26.0*
1.41	1.81	1.87	1.50	NMF	2.94	.89	1.04	.93	.98	1.05	1.13	.99	1.07	1.22	1.30			Relative P/E Ratio	*1.45*
.9%	1.2%	2.0%	3.1%	5.3%	4.3%	3.7%	3.4%	3.3%	3.4%	3.5%	3.4%	3.1%	2.9%	3.3%	3.3%			Avg Ann'l Div'd Yield	*1.9%*

CAPITAL STRUCTURE as of 12/26/20
Total Debt $994.7 mill. **Due in 5 Yrs** $500.0 mill.
LT Debt $994.7 mill. **LT Interest** $45.0 mill.
(34% of Cap'l)

Leases, Uncapitalized: Annual rentals $12.1 mill.
No Defined Benefit Pension Plan

Pfd Stock None

Common Stock 268,041,067 shs.
as of 1/14/21

MARKET CAP: $23.8 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
2472.3	2403.5	2441.5	2453.7	2306.9	2194.7	2295.6	2480.1	2314.3	2191.4	*2540*	*2700*	Revenues ($mill) A	*3000*
36.3%	32.8%	34.6%	30.4%	32.1%	33.4%	37.7%	40.2%	37.5%	36.7%	*39.5%*	*40.0%*	Operating Margin	*43.0%*
205.1	211.1	207.1	244.6	299.4	244.6	164.3	145.0	110.7	108.5	*110*	*115*	Depreciation ($mill)	*130*
489.0	473.7	529.6	470.5	445.9	470.6	614.8	773.0	679.7	613.9	*800*	*865*	Net Profit ($mill)	*1050*
26.1%	19.2%	15.3%	- -	- -	7.7%	13.3%	3.4%	4.7%	6.5%	*22.0%*	*22.0%*	Income Tax Rate	*22.0%*
19.8%	19.7%	21.7%	19.2%	19.3%	21.4%	26.8%	31.2%	29.4%	28.0%	*31.5%*	*32.0%*	Net Profit Margin	*35.0%*
1313.6	944.0	1535.0	1688.1	1937.4	2197.7	3026.6	2413.0	2168.3	1864.5	*2150*	*2200*	Working Cap'l ($mill)	*2300*
300.0	5.6	503.6	1001.0	1000.0	990.1	1487.7	991.1	992.6	994.0	*1000*	*1000*	Long-Term Debt ($mill)	*900*
2510.8	2538.3	2508.0	2429.9	2290.0	2107.8	2202.7	1930.9	1845.3	1657.5	*1950*	*2050*	Shr. Equity ($mill)	*2250*
17.6%	18.7%	17.7%	13.8%	13.7%	15.4%	16.8%	26.8%	24.2%	23.4%	*28.0%*	*29.0%*	Return on Total Cap'l	*34.0%*
19.5%	18.7%	21.1%	19.4%	19.5%	22.3%	27.9%	40.0%	36.8%	37.0%	*41.0%*	*42.0%*	Return on Shr. Equity	*46.5%*
9.6%	8.5%	9.9%	7.3%	5.6%	6.1%	10.9%	17.3%	9.4%	5.8%	*34.5%*	*42.0%*	Retained to Com Eq	*20.0%*
51%	54%	53%	63%	71%	73%	61%	57%	74%	84%	*16%*	*Nil*	All Div'ds to Net Prof	*55%*

CURRENT POSITION ($MILL.)	2019	2020	12/26/20
Cash Assets	1898.3	1614.2	1805.8
Receivables	360.0	404.8	485.8
Inventory (FIFO)	246.5	259.6	261.5
Other	34.7	39.2	36.0
Current Assets	2539.5	2317.8	2589.1
Accts Payable	84.3	92.0	97.0
Debt Due	- -	- -	- -
Other	286.9	361.3	359.4
Current Liab.	371.2	453.3	456.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	3.5%	.5%	*5.0%*
"Cash Flow"	10.5%	3.0%	*7.0%*
Earnings	17.0%	8.5%	*8.0%*
Dividends	8.5%	11.5%	*2.0%*
Book Value	-2.5%	-4.5%	*4.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Sep.Per	Dec.Per	Mar.Per	Jun.Per	Full Fiscal Year
2018	575.7	622.6	648.6	633.2	2480.1
2019	638.6	576.9	542.2	556.6	2314.3
2020	533.0	551.1	561.9	545.4	2191.4
2021	619.4	628.3	*635*	*657.3*	*2540*
2022	*650*	*675*	*675*	*700*	*2700*

Fiscal Year Ends	EARNINGS PER SHARE A B Sep.Per	Dec.Per	Mar.Per	Jun.Per	Full Fiscal Year
2018	.60	.65	.73	.73	2.71
2019	.75	.60	.52	.57	2.44
2020	.52	.55	.61	.58	2.26
2021	.72	.73	*.75*	*.75*	*2.95*
2022	*.75*	*.80*	*.80*	*.85*	*3.20*

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.33	.33	.36	.36	1.38
2018	.42	.42	.46	.46	1.76
2019	.46	.46	.48	.48	1.88
2020	.48	.48	.48	- -	1.44
2021	- -				

BUSINESS: Maxim Integrated Products, Inc. designs, manufactures, and markets a broad range of linear and mixed-signal integrated circuits, commonly referred to as analog circuits. The company offers proprietary and industry-standard analog integr. circuits used for diverse applic. and numerous product variations. It also operates a wafer bump manufact. facility in Dallas, Texas. Maxim markets its products worldwide through a direct-sales and applications org. and through its own and other unaffiliated distribution channels. Has about 7,115 employees. All off./dir. own less than 1% of common stock (9/20 proxy). Chairman: William P. Sullivan. Pres. & CEO: Tunc Doluca. Inc.: DE. Address: 160 Rio Robles, San Jose, CA 95134. Tel.: 408-601-1000. Internet: www.maxim-ic.com.

The merger between Maxim Integrated Products and Analog Devices remains on track. As we mentioned in our December report, Analog will pay 0.63 of a share of its equity for each Maxim share held, for a total value of around $20.9 billion. Analog Devices shareholders will own about 69% of the combined company. The deal has been approved by both the boards and shareholders of each company, and has also received antitrust clearance from the U.S. Federal Trade Commission. While the transaction is still subject to certain customary closing conditions, including receipt of non-U.S. regulatory approvals, we still think it will be completed this summer.

Meanwhile, Maxim posted good results for the fiscal 2021 second quarter (ended December 26th). Revenues of $628 million were $28 million higher than our estimate, and increased 14% compared to the previous-year tally. The advance was driven by higher volumes to automotive customers thanks to increased demand for infotainment, safety, and powertrain products. The Industrial Products group also had a good showing, owing to increased demand for medical, control, and automation products. Higher volumes of handheld and other consumer goods supported gains at the Consumer Products segment. Margins widened thanks to the higher sales, along with elevated factory utilization. Lower SG&A and R&D costs, as a percentage of revenues, also boosted the bottom line. All told, share earnings of $0.73 jumped 33% compared to the previous-year tally.

We are raising our fiscal 2021 top- and bottom-line estimates by $70 million and $0.40 per share, respectively, to $2.54 billion and $2.95. Due to the pending merger with Analog Devices, management has suspended the practice of providing guidance. However, we are confident the company will continue to see good demand from most of its end markets.

The Timeliness rank of Maxim shares remains suspended due to the pending acquisition. The stock's price has been fairly rangebound since our December report. On a stand-alone basis, the equity offers unappealing price appreciation potential over the 3- to 5-year haul.

Iason Dalavagas *March 26, 2021*

(A) Fiscal year ends the last Saturday in June.
(B) Diluted earnings. Next earnings report due late April.
(C) Dividends historically paid in late March, June, September, and December. Dividend suspended 10/20.
(D) In millions.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	75
Earnings Predictability	75

NORTHROP GRUMMAN NYSE-NOC

RECENT PRICE 297.94 | P/E RATIO 12.5 (Trailing: 12.6; Median: 14.0) | RELATIVE P/E RATIO 0.58 | DIV'D YLD 1.9% | VALUE LINE

TIMELINESS 3 Lowered 1/22/21
SAFETY 1 Raised 9/21/07
TECHNICAL 3 Raised 3/5/21
BETA .85 (1.00 = Market)

High:	69.8	72.5	71.3	116.2	153.2	194.0	253.8	311.2	360.9	383.9	385.0	308.8
Low:	53.5	49.2	56.6	64.2	109.2	141.6	175.0	223.9	223.6	237.1	263.3	282.9

LEGENDS
— 13.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2024 | 2025 | 2026

18-Month Target Price Range
Low-High $240-$444 | Midpoint (% to Mid) $342 (15%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	555	(+85%)	18%
Low	455	(+55%)	13%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	480	480	481
to Sell	564	514	493
Hld's(000)	140378	138219	137969

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-22.5	26.6
3 yr.	-12.0	29.4
5 yr.	67.0	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
88.44	87.15	94.77	103.63	110.00	119.46	104.03	106.35	113.78	120.86	129.76	139.99	148.22	176.40	201.87	220.73	**217.55**	**227.50**	Revenues per sh	**284.95**
5.83	6.50	7.30	7.77	7.52	8.52	10.36	10.49	11.29	12.76	13.55	15.17	14.30	23.62	27.58	31.37	**29.70**	**30.85**	"Cash Flow" per sh	**39.65**
3.52	4.44	5.04	5.32	4.87	5.80	7.41	7.81	8.35	9.75	10.39	12.19	11.47	18.49	21.21	23.65	**23.60**	**25.20**	Earnings per sh A	**31.65**
1.01	1.16	1.48	1.57	1.69	1.84	1.97	2.15	2.38	2.71	3.10	3.50	3.90	4.70	5.16	5.67	**5.80**	**6.20**	Div'ds Decl'd per sh B■	**8.25**
2.37	2.13	2.03	2.08	2.13	2.65	1.92	1.40	1.68	2.83	2.60	5.26	5.33	7.32	7.54	8.52	**8.05**	**8.65**	Cap'l Spending per sh	**10.95**
48.45	48.03	52.35	36.45	41.34	46.59	40.71	40.12	49.00	36.47	30.46	30.04	40.49	47.99	52.61	63.45	**82.70**	**101.40**	Book Value per sh C	**173.05**
347.36	345.92	337.83	327.01	306.87	290.96	253.89	237.13	216.74	198.41	181.30	175.07	174.09	170.61	167.64	166.72	**163.00**	**160.00**	Common Shs Outst'g D	**155.00**
15.6	14.9	15.2	12.4	9.9	10.5	8.3	8.2	10.4	12.9	16.1	17.4	23.0	16.8	15.1	13.8	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	**16.0**
.83	.80	.81	.75	.66	.67	.52	.52	.58	.68	.81	.91	1.16	.91	.80	.71			Relative P/E Ratio	**.90**
1.8%	1.8%	1.9%	2.4%	3.5%	3.0%	3.2%	3.4%	2.7%	2.1%	1.9%	1.6%	1.5%	1.5%	1.6%	1.7%			Avg Ann'l Div'd Yield	**1.6%**

CAPITAL STRUCTURE as of 12/31/20
Total Debt $14261 mill. Due in 5 Yrs $34064mill.
LT Debt $14261 mill. Total Interest $593 mill.
(Total interest coverage: 10.1x)
(62% of Cap'l)
Leases, Uncapitalized $298 mill.
Pension Assets-12/20 $34.5 bill. Oblig. $40.2 bill.

Pfd Stock None

Common Stock 166,718,384 shs.
as of 1/25/21

MARKET CAP: $49.7 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
26412	25218	24661	23979	23526	24508	25803	30095	33841	36799	**35460**	**37080**	Revenues ($mill)	**44165**
14.5%	14.4%	14.7%	15.3%	15.1%	14.9%	14.6%	15.2%	18.7%	17.3%	**17.5%**	**17.5%**	Operating Margin	**18.0%**
544.0	510.0	495.0	462.0	467.0	456.0	475.0	800.0	1018.0	1267.0	**995**	**1040**	Depreciation ($mill) E	**1235**
2086.0	1978.0	1952.0	2069.0	1990.0	2200.0	2015.0	3229.0	3606.0	3963.0	**3900**	**4160**	Net Profit ($mill)	**4900**
32.3%	33.3%	31.8%	29.6%	28.7%	24.7%	33.9%	13.7%	7.7%	16.8%	**18.0%**	**18.0%**	Income Tax Rate	**18.0%**
7.9%	7.8%	7.9%	8.6%	8.5%	9.0%	7.8%	10.7%	10.7%	10.8%	**10.9%**	**10.9%**	Net Profit Margin	**11.1%**
1611.0	2336.0	3673.0	2292.0	877.0	1226.0	9384.0	1406.0	1251.0	5764.0	**3545**	**2975**	Working Cap'l ($mill)	**3525**
3935.0	3930.0	5928.0	5925.0	6416.0	7058.0	14399	13883	12770	14261	**13100**	**12400**	Long-Term Debt ($mill)	**11700**
10336	9514.0	10620	7235.0	5522.0	5259.0	7048.0	8187.0	8819.0	10579	**13520**	**16650**	Shr. Equity ($mill)	**27225**
15.4%	15.5%	12.6%	16.8%	17.9%	19.1%	10.2%	15.9%	17.9%	17.1%	**14.5%**	**14.0%**	Return on Total Cap'l	**13.0%**
20.2%	20.8%	18.4%	28.6%	36.0%	41.8%	28.6%	39.4%	40.9%	37.5%	**28.5%**	**24.5%**	Return on Shr. Equity	**18.5%**
14.9%	15.2%	13.2%	20.8%	25.1%	29.7%	18.8%	29.4%	30.9%	28.5%	**21.5%**	**18.5%**	Retained to Com Eq	**13.5%**
26%	27%	28%	27%	30%	29%	34%	25%	24%	24%	**25%**	**24%**	All Div'ds to Net Prof	**26%**

CURRENT POSITION ($MILL.)

	2018	2019	12/31/20
Cash Assets	1579	2245	4907
Receivables	1448	1326	1501
Inventory (Avg Cst)	654	783	759
Other	5999	6331	8177
Current Assets	9680	10685	15344
Accts Payable	2182	2226	1806
Debt Due	- -	- -	- -
Other	6092	7208	7774
Current Liab.	8274	9434	9580

ANNUAL RATES

of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	6.0%	10.5%	*5.5%*
"Cash Flow"	13.0%	17.0%	*6.0%*
Earnings	15.0%	17.5%	*7.0%*
Dividends	12.0%	13.5%	*8.0%*
Book Value	3.0%	7.0%	*21.0%*

QUARTERLY REVENUES ($ mill.)

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	6735	7119	8085	8156	30095
2019	8189	8456	8475	8721	33841
2020	8620	8884	9083	10212	36799
2021	*8470*	*8670*	*9030*	*9290*	*35460*
2022	*8860*	*9070*	*9430*	*9720*	*37080*

EARNINGS PER SHARE A

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	4.79	4.52	7.11	2.07	18.49
2019	5.06	5.06	5.49	5.61	21.21
2020	5.15	6.01	5.89	6.60	23.65
2021	*5.45*	*5.75*	*6.10*	*6.30*	*23.60*
2022	*5.75*	*6.10*	*6.50*	*6.85*	*25.20*

QUARTERLY DIVIDENDS PAID B■

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.90	1.00	1.00	1.00	3.90
2018	1.10	1.20	1.20	1.20	4.70
2019	1.20	1.32	1.32	1.32	5.16
2020	1.32	1.45	1.45	1.45	5.67
2021					

BUSINESS: Northrop Grumman Corporation operates in several main sectors. It is a leading maker of manned and unmanned airborne systems; a designer of electronic warfare items; makes space systems and provides advanced information systems. Acquired satellite and missile systems maker Orbital ATK in 2018. Has approximately 97,000 employees. Consolidated backlog at 12/31/20: $81.0 billion. U.S. Government accounted for 84% of total revenues in '20. Officers & directors control about .3% of stock; State Street Corp., 10.1%; Vanguard Group, 7.9%; BlackRock, 6.4% (4/20 Proxy). CEO & Pres.: Kathy Warden. Incorporated: DE. Address: 2980 Fairview Park Drive, Falls Church, VA 22042. Tele.: 703-280-2900. Internet: www.northropgrumman.com.

Northrop Grumman widely outperformed our revenue estimate for a second consecutive quarter. The company booked an unexpected sale for aeronautics equipment that exceeded $440 million. This combined with robust growth in Space Systems and manned aircraft to drive the top line 17% higher in the fourth quarter, to $10.2 billion. The Space division continued to witness rising volume across next-gen OPIR and restricted programs. Higher spending on tactical missiles and subsystems also spurred results.

The company has agreed to sell its federal IT and mission support services business. Peraton, an affiliate of Veritas, is expected to purchase the division for $3.4 billion in cash in a deal that is on track to close some time in the first half of 2021. Northrop Grumman is hoping to use the proceeds to take advantage of recent declines in its equity value, as it has received approval by its board to increase share repurchasing authority by $3 billion, to a total of $5.8 billion. The company expects buybacks to exceed this $3 billion value in 2021. It also plans to harness its strong cash flow, and the divestiture of the IT Services business, to retire more than $2 billion in debt, most of which was not scheduled to come off the books until 2022.

Funding for the company's portfolio was well represented in the $740 billion 2021 defense budget that was recently approved by Congress. To wit, despite the recent divestiture, Mission Systems' sales are expected to come in roughly flat this year. Too, growth in Space Systems ought to remain robust in the low double-digit vicinity.

The Timeliness rank of Northrop Grumman stock has fallen two notches, to 3 (Average). Following the divestiture of the IT business, the company is not expecting to achieve much in terms of earnings growth in the year ahead. Thereafter, however, lucrative defense contracts and strong backlog, in excess of $80 billion, have the potential to bring about meaningful profitability here. Given its strong cash flows, we also foresee more attention being paid to the dividend moving forward, which is somewhat of a laggard in the space.

Robert J. Scrudato *March 5, 2021*

(A) Diluted earnings. Excl. nonrecur. (losses) gains.: '05, 33¢; '06, (7¢); '07, 11¢; '08, ($9.09); '09, 34¢; '10, $1.02; '19, $7.99. Next earnings report due late April.
(B) Div'd historically paid mid-March, June, Sept., and Dec. ■ Div'd reinvest. plan available.
(C) Incl. intang. assets. In 2020: $18.3 bill., $109.19/sh.
(D) In millions.
(E) Depreciation on accelerated basis.

Company's Financial Strength	A++
Stock's Price Stability	90
Price Growth Persistence	100
Earnings Predictability	85

OLD DOMINION NDQ-ODFL

RECENT PRICE **212.25** | P/E RATIO **31.6** (Trailing: 37.4; Median: 19.0) | RELATIVE P/E RATIO **1.48** | DIV'D YLD **0.4%** | VALUE LINE **325**

TIMELINESS 3 Lowered 2/19/21
SAFETY 1 Raised 8/21/20
TECHNICAL 3 Lowered 2/5/21
BETA .90 (1.00 = Market)

18-Month Target Price Range
Low-High $149-$286 — Midpoint (% to Mid) $218 (0%)

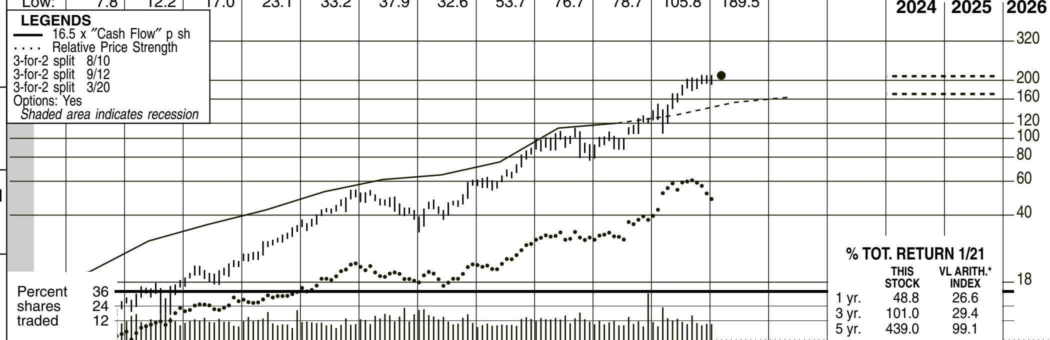
2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	210	(Nil)	*Nil*
Low	170	(-20%)	*-5%*

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	441	307	309
to Sell	96	237	236
Hld's(000)	86874	86190	83351

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	14.3	18.5	23.4	35.6	54.3	54.0	61.1	89.4	113.5	131.5	213.7	214.0
Low:	7.8	12.2	17.0	23.1	33.2	37.9	32.6	53.7	76.7	78.7	105.8	189.5



Target Price Range 2024 | 2025 | 2026

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	48.8	26.6
3 yr.	101.0	29.4
5 yr.	439.0	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
8.43	10.17	11.14	12.22	9.89	11.77	14.57	16.33	18.09	21.59	23.48	24.20	27.18	33.19	34.38	**34.30**	**40.25**	**43.65**	Revenues per sh	**52.05**
.87	1.11	1.21	1.24	1.03	1.24	1.78	2.17	2.58	3.21	3.71	3.93	4.57	6.86	7.27	**8.00**	**9.30**	**9.95**	"Cash Flow" per sh	**11.45**
.43	.58	.57	.55	.28	.60	1.08	1.31	1.59	2.07	2.38	2.37	2.91	4.92	5.11	5.68	**6.85**	**7.40**	Earnings per sh A	**8.40**
--	--	--	--	--	--	--	--	--	--	--	--	.27	.35	.45	.60	**.80**	**.88**	Div'ds Decl'd per sh D	**1.04**
1.32	1.74	1.48	1.44	1.68	.85	1.94	2.89	2.29	2.85	3.65	3.38	3.09	4.83	4.01	**1.90**	**5.25**	**5.05**	Cap'l Spending per sh	**5.25**
2.74	3.32	3.89	4.44	4.71	5.31	6.63	7.94	9.53	11.57	13.31	14.97	18.43	22.00	25.77	**28.40**	**32.75**	**37.55**	Book Value per sh	**54.85**
125.84	125.84	125.84	125.84	125.84	125.84	129.25	129.25	129.25	129.14	126.62	123.63	123.56	121.85	119.53	**117.00**	**115.50**	**114.00**	Common Shs Outst'g C	**110.00**
15.1	15.1	14.3	15.8	30.9	17.9	14.2	15.4	17.9	20.7	19.4	19.2	22.7	19.4	20.8	29.6	*Bold figures are*		Avg Ann'l P/E Ratio	**22.5**
.80	.82	.76	.95	2.06	1.14	.89	.98	1.01	1.09	.98	1.01	1.14	1.05	1.11	1.52	*Value Line*		Relative P/E Ratio	**1.25**
--	--	--	--	--	--	--	--	--	--	--	--	.4%	.4%	.4%	.4%	*estimates*		Avg Ann'l Div'd Yield	**.6%**
						1882.5	2110.5	2337.6	2787.9	2972.4	2991.5	3358.1	4043.7	4109.1	4015.1	**4650**	**4975**	Revenues ($mill)	**5725**
						17.3%	18.8%	19.9%	21.1%	22.3%	22.5%	23.3%	25.9%	26.1%	29.1%	**29.0%**	**28.5%**	Operating Margin B	**27.5%**
						90.8	110.7	127.1	146.5	165.3	189.9	205.8	230.4	253.7	261.3	**275**	**285**	Depreciation ($mill)	**325**
						139.5	169.5	206.1	267.5	304.7	295.8	359.1	605.7	615.5	672.7	**800**	**850**	Net Profit ($mill)	**935**
						36.6%	38.0%	37.3%	38.1%	37.8%	38.1%	37.6%	25.7%	25.3%	25.4%	**25.0%**	**25.0%**	Income Tax Rate	**25.0%**
						7.4%	8.0%	8.8%	9.6%	10.3%	9.9%	10.7%	15.0%	15.0%	16.8%	**17.2%**	**17.1%**	Net Profit Margin	**16.3%**
						127.1	49.9	100.9	177.5	96.3	94.0	233.6	349.5	500.7	870.2	**925**	**1000**	Working Cap'l ($mill)	**1200**
						229.8	201.4	155.7	120.0	107.3	105.0	45.0	45.0	45.0	99.9	**100**	**150**	Long-Term Debt ($mill)	**300**
						856.5	1026.0	1232.1	1494.1	1684.6	1851.2	2276.9	2680.5	3080.7	3326.3	**3785**	**4280**	Shr. Equity ($mill)	**6035**
						13.5%	14.3%	15.2%	16.8%	17.1%	15.2%	15.5%	22.2%	19.7%	**19.5%**	**20.5%**	**19.0%**	Return on Total Cap'l	**15.0%**
						16.3%	16.5%	16.7%	17.9%	18.1%	16.0%	15.8%	22.6%	20.0%	20.2%	**21.0%**	**20.0%**	Return on Shr. Equity	**15.5%**
						16.3%	16.5%	16.7%	17.9%	18.1%	16.0%	14.3%	21.0%	18.2%	18.1%	**18.5%**	**17.5%**	Retained to Com Eq	**13.5%**
						--	--	--	--	--	--	9%	7%	9%	9%	**12%**	**12%**	All Div'ds to Net Prof	**12%**

CAPITAL STRUCTURE as of 9/30/20
Total Debt $144.9 mill. **Due in 5 Yrs** $45.0 mill.
LT Debt $99.9 mill. **LT Interest** $2.4 mill.
(Total interest covered: over 25x)

Leases, Uncapitalized Annual rentals $12.8 mill.

No Defined Benefit Pension Plan

Pfd Stock None.

Common Stock 117,311,447 shs.
as of 11/4/20
MARKET CAP: $24.9 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	190.3	403.6	625.7
Receivables	427.5	397.5	453.3
Other	88.4	65.7	59.5
Current Assets	706.2	866.8	1138.5
Accts Payable	78.5	70.3	59.2
Debt Due	--	--	45.0
Other	278.2	295.8	345.1
Current Liab.	356.7	366.1	449.3

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	11.0%	11.0%	*6.0%*
"Cash Flow"	18.5%	18.5%	*8.0%*
Earnings	25.0%	21.0%	*9.0%*
Dividends	--	--	*14.0%*
Book Value	17.5%	18.0%	*13.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.)A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	925.0	1033.5	1058.2	1027.0	4043.7
2019	990.8	1060.7	1048.5	1009.1	4109.1
2020	987.4	896.2	1058.2	1073.3	4015.1
2021	*1100*	*1150*	*1200*	*1200*	*4650*
2022	*1175*	*1230*	*1295*	*1275*	*4975*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.89	1.33	1.41	1.29	4.92
2019	1.09	1.44	1.37	1.21	5.11
2020	1.11	1.25	1.71	1.61	5.68
2021	***1.55***	***1.65***	***1.90***	***1.75***	***6.85***
2022	***1.70***	***1.80***	***2.05***	***1.85***	***7.40***

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.067	.067	.067	.067	.27
2018	.087	.087	.087	.087	.35
2019	.113	.113	.113	.113	.45
2020	.153	.15	.15	.15	.60
2021	.20				

BUSINESS: Old Dominion Freight Line, Inc. is the third-largest less-than-truckload (LTL) motor carrier in the U.S. Provides regional, inter-regional, and national LTL service and value-added logistics services from a single integrated organization. Revenue is generated primarily from customers throughout the U.S. and North America. In 2019, the company's largest customer accounted for 4.2% of revenues. Owned 9,296 tractors, 37,539 trailers and 236 service centers as of 12/31/19. Has about 20,105 employees. Off./dir. own 11.7% of common stock; The Vanguard Group, 9.6% (4/20 Proxy). Chairman: David S. Congdon. CEO & Pres.: Greg C. Gantt. Inc.: VA. Address: 500 Old Dominion Way, Thomasville, NC 27360. Tel.: (336) 889-5000. Internet: www.odfl.com.

Old Dominion Freight Line stock has been a standout performer over the last 11 months. After falling sharply, along with the broader market on coronavirus worries last March, the shares came roaring back and with a modest increase since our November report recently traded near record territory.

The investment community was pleased with the quick recovery in Old Dominion's quarterly results. This included a strong performance in the final period of 2020, with share earnings totaling $1.61. That tally handily exceeded our estimate of $1.44 and the prior-year figure of $1.21. The primary catalyst was a healthy top-line advance of 6.4%, which was helped by ODFL's ability to meet demand pushed back from earlier in the year. Old Dominion's investments in service centers and equipment in recent years enable it to provided shipping services when industrywide capacity was a bit constrained. In the final quarter, Old Dominion saw increases in less than truck load (LTL) tons and revenue per hundredweight. The strong performance to end the year resulted in a full-year double-digit earnings advance.

The outlook for 2021 is brightening. Although there still may be some near-term bumps in the road from the recent resurgence in COVID-19 deaths, the recovery in the freight industry has recently taken the form of a V-shaped one. The ongoing recovery in global trade and continued rise in online shopping are increasing the need for LTL shipping services. On the last conference call, CEO and President Greg Gantt said: "We are encouraged by the improving demand environment and believe continued execution of our strategic plan will produce profitable growth and increased shareholder value in 2021. On point, Old Dominion increased the quarterly dividend payout by 33% and is ramping up its capital spending. We are raising our 2021 share-net estimate by $0.40, to $6.85.

This high-quality stock is ranked 3 (Average) for Timeliness. Trading at more than 30 times our 12-month earnings estimate, much of the profit growth we envision to 2024-2026 has likely been discounted.

William G. Ferguson — *February 19, 2021*

(A) Based on diluted shares outstanding. Excludes nonrecurring gain: '17, $0.85. Next earnings report due late April. (B) Expenses exclude operating taxes and licenses prior to 2008. (C) In millions, adjusted for splits. (D) Initiated dividend payment Q1 2017. Dividends paid late March, June, September, and December.

Company's Financial Strength	A++
Stock's Price Stability	85
Price Growth Persistence	100
Earnings Predictability	75

PERKINELMER, INC. NYSE-PKI

RECENT PRICE 151.93 | P/E RATIO 13.9 (Trailing: 18.3, Median: 19.0) | RELATIVE P/E RATIO 0.68 | DIV'D YLD 0.2% | VALUE LINE

TIMELINESS 1 Raised 9/11/20
SAFETY 2 Raised 5/15/20
TECHNICAL 3 Lowered 2/5/21
BETA .95 (1.00 = Market)

High:	26.2	28.8	32.4	41.4	48.3	54.5	57.3	74.1	98.3	103.0	150.0	162.7
Low:	18.7	17.5	20.3	29.5	39.0	41.7	39.5	50.6	70.7	72.2	62.9	140.3

Target Price Range 2024 | 2025 | 2026

18-Month Target Price Range

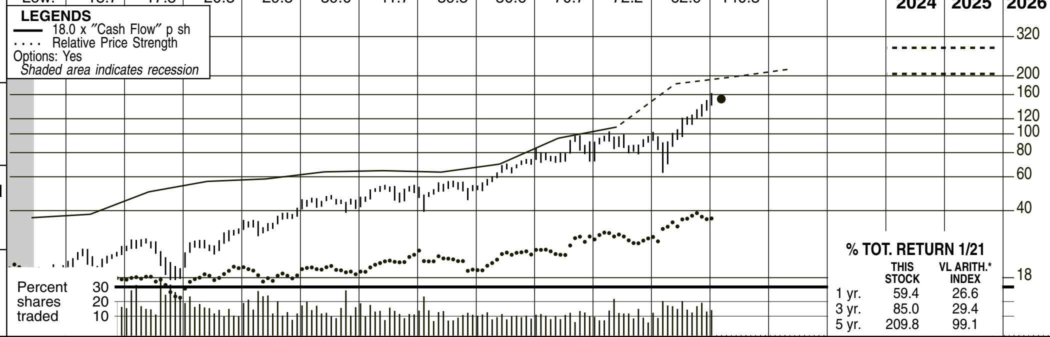
Low-High: $117-$245 — Midpoint (% to Mid): $181 (20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	280	(+85%)	17%
Low	205	(+35%)	8%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	171	242	267
to Sell	206	175	198
Hld's(000)	104719	103524	100940



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	59.4	26.6
3 yr.	85.0	29.4
5 yr.	209.8	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
11.42	12.55	15.20	16.54	15.49	14.73	17.01	18.62	19.23	19.89	20.19	19.30	20.45	25.12	25.95	33.75	37.50	40.90	Sales per sh	47.75
1.37	1.45	1.98	2.22	2.05	2.13	2.78	3.16	3.25	3.53	3.59	3.53	3.87	5.28	6.04	10.50	10.95	12.10	"Cash Flow" per sh	13.80
.95	1.14	1.28	1.45	1.27	1.33	1.83	2.06	2.09	2.47	2.55	2.60	2.90	3.61	4.10	8.30	8.75	9.50	Earnings per sh A	11.00
.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	Div'ds Decl'd per sh B■	.32
.19	.36	.40	.37	.27	.29	.27	.37	.35	.26	.26	.29	.35	.84	.69	.70	.75	.55	Cap'l Spending per sh	.80
12.79	12.80	13.40	13.39	13.92	16.64	16.31	16.86	17.71	18.16	18.84	19.65	22.68	23.37	25.32	33.35	31.25	33.65	Book Value per sh D	38.65
129.06	123.26	117.59	117.11	117.02	115.72	112.98	115.04	112.63	112.48	112.03	109.62	110.36	110.60	111.14	112.00	112.00	110.00	Common Shs Outst'g C	110.00
22.1	18.7	20.3	16.8	13.2	17.0	13.1	13.3	16.9	18.0	19.5	19.9	22.0	22.3	22.0	12.9	Bold figures are		Avg Ann'l P/E Ratio	22.0
1.18	1.01	1.08	1.01	.88	1.08	.82	.85	.95	.95	.98	1.04	1.11	1.20	1.17	.65	Value Line		Relative P/E Ratio	1.20
1.3%	1.3%	1.1%	1.2%	1.7%	1.2%	1.2%	1.0%	.8%	.6%	.6%	.5%	.4%	.3%	.3%	.3%	estimates		Avg Ann'l Div'd Yield	.1%

CAPITAL STRUCTURE as of 10/4/20
Total Debt $1852.8 mill. **Due in 5 Yrs** $685.0 mill.
LT Debt $1492.6 mill. **LT Interest** $40.0 mill.
(Total interest coverage: 17.7x) (32% of Cap'l)

Leases, Uncapitalized: Annual rentals $44.5 mill.
Pension Assets-12/19 $434.3 mill. **Oblig.** $646.2 mill.

Pfd Stock None

Common Stock 111,974,485 shs. as of 11/5/20
MARKET CAP: $17.0 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1921.3	2141.5	2166.2	2237.2	2262.4	2115.5	2257.0	2778.0	2883.7	3782.7	4200	4500	Sales ($mill)	5250
11.4%	22.4%	21.8%	22.9%	22.6%	22.6%	23.9%	25.5%	28.1%	38.5%	37.0%	35.5%	Operating Margin	35.0%
110.9	126.9	128.5	116.7	112.0	100.0	105.0	180.6	214.0	245	245	285	Depreciation ($mill)	310
203.4	236.1	237.2	280.3	289.9	286.5	322.6	403.6	457.3	930.0	980	1045	Net Profit ($mill)	1210
23.7%	22.5%	19.5%	20.7%	18.9%	14.4%	24.4%	12.4%	10.6%	20.0%	22.0%	18.0%	Income Tax Rate	18.0%
10.6%	11.0%	10.9%	12.5%	12.8%	13.5%	14.3%	14.5%	15.9%	24.6%	23.3%	23.2%	Net Profit Margin	23.0%
262.1	390.7	442.0	471.3	471.7	586.5	249.1	463.0	611.6	585	1100	1530	Working Cap'l ($mill)	1610
944.9	938.8	932.1	1051.9	1011.8	1045.3	1788.8	1876.6	2064.0	1610	1400	1250	Long-Term Debt ($mill)	1250
1842.2	1939.8	1994.5	2042.1	2110.4	2153.6	2503.2	2585.0	2813.8	3735	3500	3700	Shr. Equity ($mill)	4250
7.8%	8.6%	9.0%	9.7%	9.9%	9.6%	8.0%	9.8%	10.0%	18.0%	20.5%	21.5%	Return on Total Cap'l	22.5%
11.0%	12.2%	11.9%	13.7%	13.7%	13.3%	12.9%	15.6%	16.3%	25.0%	28.0%	28.5%	Return on Shr. Equity	28.5%
9.3%	10.5%	10.3%	12.2%	12.2%	11.9%	11.7%	14.4%	15.1%	24.0%	27.0%	27.5%	Retained to Com Eq	27.5%
16%	14%	13%	11%	11%	11%	10%	8%	7%	3%	3%	3%	All Div'ds to Net Prof	3%

CURRENT POSITION ($MILL.)	2018	2019	10/4/20
Cash Assets	163.1	191.9	258.3
Receivables	632.7	725.2	797.9
Inventory (LIFO)	338.3	356.9	486.5
Other	100.5	100.4	133.1
Current Assets	1234.6	1374.4	1675.8
Accts Payable	220.9	235.9	258.0
Debt Due	14.9	10.0	360.2
Other	535.8	516.9	626.6
Current Liab.	771.6	762.8	1244.8

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	4.0%	4.5%	10.5%
"Cash Flow"	9.5%	9.0%	15.5%
Earnings	10.0%	10.0%	17.5%
Dividends	--	--	2.0%
Book Value	6.0%	6.0%	7.0%

Cal-endar	QUARTERLY SALES ($ mill.) Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	644.0	703.4	674.3	756.3	2778.0
2019	648.8	722.5	706.9	805.5	2883.7
2020	652.4	811.7	964.0	1354.6	3782.7
2021	1200	1100	950	950	4200
2022	1000	1150	1150	1200	4500

Cal-endar	EARNINGS PER SHARE AE Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	.63	.91	.90	1.17	3.61
2019	.69	1.00	1.06	1.35	4.10
2020	.67	1.57	2.09	3.96	8.30
2021	3.00	2.25	1.75	1.75	8.75
2022	2.25	2.35	2.35	2.55	9.50

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.07	.07	.07	.07	.28
2018	.07	.07	.07	.07	.28
2019	.07	.07	.07	.07	.28
2020	.07	.07	.07	.07	.28
2021	.07				

BUSINESS: PerkinElmer (formerly EG&G), Inc. provides advanced technologies, solutions, and services to improve the health and safety of people and their environment. It operates two business segments: Discovery and Analytical Solutions (61% of 2019 sales) and Diagnostics (39%). Serves a variety of markets, including industrial and lab services. Acquired Perten Instruments, 2014; Euroimmun Medical, 2017. R&D: 7.0% of sales. Employs 13,000. Off./dir. own less than 1% of common stock; T. Rowe Price Assoc., 17.8%; The Vanguard Group, 11.0%; Capital Research Global, 10.6% (3/20 proxy). CEO and President: Prahlad R. Singh. Inc.: MA. Address: 940 Winter Street, Waltham, Massachusetts 02451. Tel: (781) 663-6900. Internet: www.perkinelmer.com.

PerkinElmer reported impressive 2020 fourth-quarter results. Demand for its array of COVID-19 testing solutions drove sales and earnings markedly higher. The top-line tally of roughly $1.35 billion represented an advance of nearly 70% year over year. COVID-19 related solutions accounted for nearly all of the advance, and helped push the Diagnostics segment up 176%. Elsewhere, the Discovery and Analytics arm rose about 1%. Meanwhile, adjusted share net of approximately $3.96 nearly tripled last year's tally. Besides the big jump in sales volume, an improved product mix and cost-savings measures helped boost profits.

We have increased our 2021 estimates and introduced our 2022 targets. We have raised our respective 2021 top- and bottom-line estimates by $200 million and $0.75 per share. The pandemic is still raging across the globe, and demand for testing solutions should remain high. Next year, our forecast suggests more-modest growth. This assumes that the pandemic has been mitigated considerably from the implementation of mass vaccinations.

The company reached an agreement to acquire Oxford Immunotec Global PLC for roughly $590 million. Oxford is a leader in developing test kits for latent tuberculosis, and at first glance, seems like it would fit nicely within PerkinElmer's Diagnostics unit. This move comes on the heels of the purchase of Horizon Discovery Group late last year. PerkinElmer is taking advantage of its recent good fortune and making strategic investments to grow its business over the long haul.

PerkinElmer should continue to prosper in a post-COVID-19 world. While the company will be hard-pressed to match its recent growth rates once the pandemic subsides, the current crisis has magnified the need for diagnostics and testing solutions in order to help avoid further health disasters. The company is well positioned to fill those needs.

From our perspective, these shares are suitable for most investors. The stock is ranked 1 (Highest) for Timeliness, and capital appreciation potential out to mid-decade is substantial. One drawback, however, is the paltry yield, which will not entice income-oriented accounts.

Kevin P. O'Sullivan *February 12, 2021*

(A) Diluted egs. Adj. after 2011. Excl. nonrec./discontinued gains/(losses): '05, $1.09; '06, ($0.20); '07, ($0.19); '08, ($0.39); '09, ($0.54); '10, $1.92; '11, ($1.76); '12, ($1.45); '13, ($0.60); '14, ($1.02); '15, ($0.67); '16, ($0.48); '17, $1.48;'18, ($1.48); '19, ($2.06); '20, ($1.23). Next egs. report due early May. (B) Div'ds paid in Jan., May, Aug., and Nov. ■ Div'd reinv. plan avail. (C) In millions. (D) Includes intan. in '19: $4394.5 mill., $39.54/shr. (E) Qtrly EPS may not sum to total due to changes in shares outstanding.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	100
Earnings Predictability	95

PHILIP MORRIS INT. NYSE-PM

RECENT PRICE **81.50** | P/E RATIO **15.4** (Trailing: 15.9 / Median: 17.0) | RELATIVE P/E RATIO **0.73** | DIV'D YLD **5.9%** | VALUE LINE

TIMELINESS 2 Lowered 1/8/21
SAFETY 3 Lowered 1/17/20
TECHNICAL 3 Raised 1/8/21
BETA .95 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	52.3	60.9	79.4	94.1	96.7	91.6	90.3	104.2	123.6	111.3	92.7	90.2
Low:	32.0	16.7	55.8	72.9	82.9	75.3	75.3	84.5	90.0	64.7	65.7	56.0

Target Price Range 2023 | 2024 | 2025

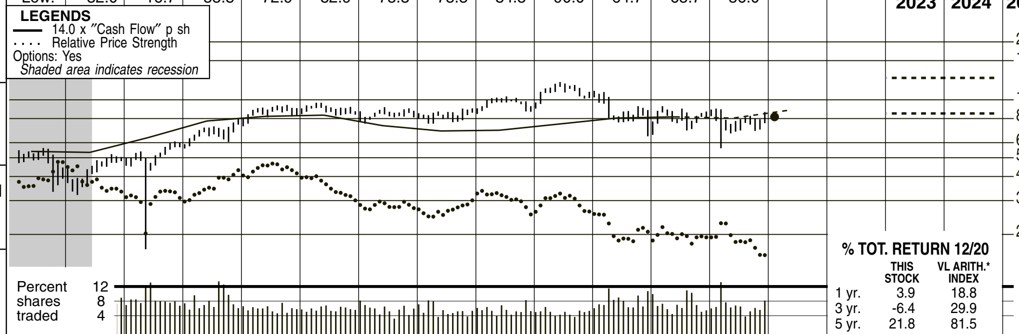
18-Month Target Price Range
Low-High: $54-$116 — Midpoint (% to Mid): $85 (5%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	130	(+60%)	16%
Low	85	(+5%)	7%

U.S. Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	620	662	670
to Sell	955	805	791
Hld's(000)	1166446	1154723	1156458



% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	3.9	18.8
3 yr.	-6.4	29.9
5 yr.	21.8	81.5

Philip Morris International, Inc. became an independent publicly held company when it was spun off from parent company, Altria Group on March 28, 2008. The spinoff was instituted in order to separate Altria's domestic and international businesses. All Altria's shareholders of record as of March 19, 2008 received one share of PM for every share of MO they owned.

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
37.58	44.24	46.80	50.36	51.78	47.70	48.31	50.28	51.35	50.08	49.45	52.60	Revenues per sh	59.10
4.55	5.55	5.86	5.95	5.25	4.92	4.97	5.35	5.75	5.83	5.75	6.35	"Cash Flow" per sh	7.60
3.92	4.85	5.17	5.26	4.76	4.42	4.48	4.72	5.10	5.19	5.10	5.70	Earnings per sh A	6.80
2.44	2.82	3.24	3.58	3.88	4.04	4.12	4.22	4.49	4.62	4.74	4.86	Div'ds Decl'd per sh B■	5.28
.40	.52	.64	.76	.75	.62	.76	1.00	.92	.55	.40	.60	Cap'l Spending per sh	.85
1.95	.13	d2.10	d4.89	d8.16	d8.55	d8.18	d7.78	d8.01	d7.44	d7.70	d7.40	Book Value per sh C	d6.75
1801.8	1725.9	1653.6	1589.0	1546.9	1549.3	1551.4	1553.2	1554.6	1555.9	1557.0	1550.0	Common Shs Outst'g D	1485.0
13.2	13.8	16.7	17.0	17.7	18.8	21.5	23.4	17.3	15.7	15.5		Avg Ann'l P/E Ratio	16.0
.84	.87	1.06	.96	.93	.95	1.13	1.18	.93	.86	.78		Relative P/E Ratio	.90
4.7%	4.2%	3.8%	4.0%	4.6%	4.9%	4.3%	3.8%	5.1%	5.7%	6.0%		Avg Ann'l Div'd Yield	4.9%
67713	76346	77393	80029	80106	73908	74953	78098	79823	77921	77000	81500	Revenues ($mill)	87800
16.7%	17.7%	18.1%	17.4%	15.4%	15.4%	15.4%	16.0%	15.5%	16.3%	16.0%	17.0%	Operating Margin	18.0%
932.0	993.0	898.0	882.0	628.0	754.0	743.0	963.0	989.0	964.0	975	1000	Depreciation ($mill)	1100
7259.0	8591.0	8800.0	8576.0	7493.0	6873.0	6967.0	7342.0	7942.0	8110.0	7940	8860	Net Profit ($mill)	10200
27.4%	29.1%	29.5%	29.3%	29.1%	28.0%	27.9%	28.3%	22.8%	23.0%	22.5%	23.0%	Income Tax Rate	23.0%
10.7%	11.3%	11.4%	10.7%	9.4%	9.3%	9.3%	9.4%	9.9%	10.4%	10.3%	10.9%	Net Profit Margin	11.6%
952.0	65.0	d426.0	d214.0	372.0	418.0	1141.0	5632.0	2251.0	1681.0	1500	1800	Working Cap'l ($mill)	2500
13370	14828	17639	24023	26929	25250	25851	31334	26975	26656	27000	27000	Long-Term Debt ($mill)	27000
3506.0	229.0	d3476	d7766	d12629	d13244	d12688	d12086	d12459	d11577	d12000	d11500	Shr. Equity ($mill)	d10000
45.3%	59.4%	65.2%	55.7%	56.1%	61.4%	56.3%	40.4%	56.9%	55.6%	53.0%	57.0%	Return on Total Cap'l	60.0%
NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	Return on Shr. Equity	NMF
80.9%	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	Retained to Com Eq	NMF
61%	56%	61%	67%	81%	91%	92%	89%	87%	88%	93%	85%	All Div'ds to Net Prof	78%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $29490 mil. **Due in 5 Yrs** $17000 mil.
LT Debt $27346 mil. **LT Interest** $600 mil.
(Total interest coverage, 15.9x) (NMF of Cap'l)

Pfd Stock None
Pension Assets-12/19 $7.9 bill. **Oblig.** $10.6 bill.

Common Stock 1,557,299,554 shares

MARKET CAP: $127 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	6593	6861	4821
Receivables	3564	3717	3712
Inventory (LIFO)	8804	9235	8160
Other	481	701	760
Current Assets	19442	20514	17453
Accts Payable	2068	2299	2155
Debt Due	4784	4389	2144
Other	10339	12145	11226
Current Liab.	17191	18833	15525

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	4.5%	.5%	2.5%
"Cash Flow"	4.0%	--	5.0%
Earnings	4.5%	--	5.0%
Dividends	9.0%	4.5%	3.0%
Book Value	--	--	NMF

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	16556	19319	20638	21585	78098
2018	18426	21100	20439	19858	79823
2019	17705	19987	20380	19849	77921
2020	18253	17819	20444	20484	77000
2021	19000	20400	21000	21100	81500

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.02	1.14	1.27	1.31	4.72
2018	1.00	1.41	1.44	1.25	5.10
2019	1.09	1.46	1.43	1.22	5.19
2020	1.21	1.29	1.42	1.18	5.10
2021	1.30	1.40	1.50	1.50	5.70

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.04	1.04	1.04	1.07	4.19
2018	1.07	1.07	1.14	1.14	4.42
2019	1.14	1.14	1.14	1.17	4.59
2020	1.17	1.17	1.17	1.20	4.71
2021	1.20				

BUSINESS: Philip Morris International, Inc. manufactures, sells, and distributes a wide range of tobacco products in markets outside the United States. The company's operations are based in Lausanne, Switzerland. Brands include *Marlboro, Philip Morris, Chesterfield,* and *Parliament.* 2019 operating profit breakdown: European Union, 37.7%; Eastern Europe, Middle East and Africa, 21.2%, Asia, 38.9%, North America, 2.2%. Has 53 factories and 73,500 employees in various international markets. Officers & directors own less than 1% of stock; Vanguard Group, 8.0%; BlackRock, 6.1%. (3/20 Proxy). Chairman: Lucio A. Noto. Chief Executive Officer: Andre Calantzopoulos. Inc.: VA. Addr. 120 Park Avenue, New York, NY 10017. Tel.: 917-663-2233. Internet: www.pmi.com.

Philip Morris International's core tobacco business continues to thrive. Although the company is set to post a slight decline in operating earnings for the first time since 2015, a look beneath the hood reveals a firm with the wind at its back. For starters, PMI's 2020 forecast of $5.10 a share includes an anticipated $0.32 (6%) in foreign exchange headwinds; in constant-currency terms, EPS is projected to grow 4%-5%. Moreover, not even the COVID-19 pandemic could slow *iQOS* uptake. The tobacco giant sold a record 54.4 billion heatsticks through the first nine months of 2020, up 28% year over year. Management also affirmed it was on track to achieve its 2021 target of 90 billion-100 billion *iQOS* shipments (note that these figures do not include sales in the United States, where the company has a licensing and distribution agreement with local leader Altria Group). Lastly, although traditional cigarette sales took a hit last year—government imposed lockdowns and store closures were the primary drivers here—PMI was able to offset much of the drop through select price hikes and a reduction in promotional activity.

Notably improved profits are likely in 2021. Tentative pluses include a return to normal economic activity thanks to the deployment of COVID-19 vaccines, the resumption of share repurchases, continued strength among *iQOS*, and an easing of foreign exchange headwinds. The company is also planning significant price hikes in several markets where governments have pledged to raise excise taxes on cigarettes. All things considered, a 12% jump in share net seems possible in the year just begun.

The company recently announced a planned leadership succession. Current CEO Andre Calantzopoulos is set to retire in May. Chief Operating Officer Jacek Olczak has been selected to replace him. Lucio Noto also temporarily replaced Louis Camilleri as chairman of the board. He will be replaced in May by Mr. Calantzopoulos following his retirement as CEO.

These shares are now ranked 2 (Above Average) for year-ahead price performance, having risen a notch on our Timeliness scale since October. Income-oriented accounts will also find much to like about this issue.

Daniel Henigson, CFA *January 15, 2021*

(A) Diluted earnings. Qtly. totals may not sum due to changes in share count. Next earnings report due early February. (B) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available. (C) Includes intangibles. At 12/31/19: $7,971 million. ($5.12 per share). (D) In millions.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	20
Earnings Predictability	100

POOL CORP. NDQ-POOL

RECENT PRICE	359.40	P/E RATIO	41.4 (Trailing: 45.1 Median: 25.0)	RELATIVE P/E RATIO	1.92	DIV'D YLD	0.6%	VALUE LINE

TIMELINESS 2 Lowered 1/15/21
SAFETY 2 Raised 8/4/17
TECHNICAL 3 Raised 1/15/21
BETA .90 (1.00 = Market)

18-Month Target Price Range
Low-High Midpoint (% to Mid)
$247-$501 $374 (5%)

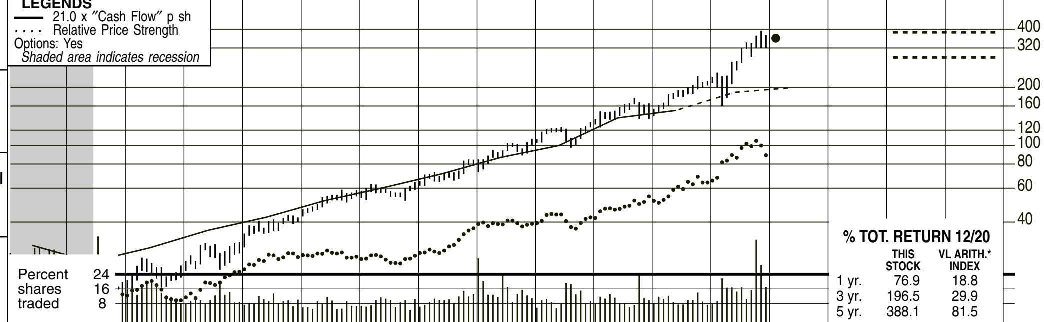
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	385	(+5%)	3%
Low	285	(-20%)	-4%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	202	233	255
to Sell	205	201	220
Hld's(000)	36368	37794	36721

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	25.0	26.2	31.6	43.5	58.9	64.7	84.4	108.0	131.8	175.9	228.2	391.5
Low:	11.2	18.2	22.3	29.5	42.8	51.6	61.7	72.4	97.3	123.9	141.8	160.3



% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	76.9	18.8
3 yr.	196.5	29.9
5 yr.	388.1	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
25.12	29.64	37.50	40.58	36.99	31.43	32.75	37.86	42.20	46.20	51.50	55.33	62.57	69.34	75.89	79.84	93.75	101.25	Revenues per sh	120.00
1.48	1.78	2.12	1.75	1.44	1.19	1.40	1.73	2.02	2.46	2.87	3.39	4.12	4.75	6.60	7.22	8.95	9.50	"Cash Flow" per sh	15.00
1.19	1.50	1.74	1.37	1.18	.95	1.15	1.47	1.71	2.05	2.44	2.90	3.47	3.99	5.62	6.40	8.20	8.75	Earnings per sh A	14.00
.20	.34	.41	.47	.51	.52	.52	.55	.62	.73	.85	1.00	1.19	1.42	1.72	2.10	2.29	2.40	Div'ds Decl'd per sh C	4.00
.12	.16	.29	.22	.15	.15	.16	.41	.35	.42	.40	.68	.84	.98	.80	.83	.80	.80	Cap'l Spending per sh	.90
4.22	5.21	5.45	4.39	5.01	5.15	5.79	5.91	6.08	6.36	5.60	5.99	4.99	5.55	5.66	10.24	15.00	16.00	Book Value per sh B	30.00
52.19	52.39	50.93	47.52	48.22	48.99	49.28	47.37	46.30	45.01	43.62	42.71	41.09	40.21	39.51	40.07	40.00	40.00	Common Shs Outst'g D	40.00
22.9	23.0	23.9	23.7	16.9	19.3	18.8	18.4	22.3	25.2	23.7	24.6	26.4	28.9	26.5	28.8	33.5		Avg Ann'l P/E Ratio	24.0
1.21	1.22	1.29	1.26	1.02	1.29	1.20	1.15	1.42	1.42	1.25	1.24	1.39	1.45	1.43	1.56	1.69		Relative P/E Ratio	1.35
.7%	1.0%	1.0%	1.4%	2.6%	2.8%	2.4%	2.0%	1.6%	1.4%	1.5%	1.4%	1.3%	1.2%	1.2%	1.1%	.7%		Avg Ann'l Div'd Yield	1.2%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $339.9 mill. **Due in 5 Yrs** $339.9 mill.
LT Debt $328.2 mill. **LT Interest** $20.0 mill.
(LT interest earned: 17.1x; total interest coverage: 14.2x)
(55% of Cap'l)
Leases, Uncapitalized: Annual rentals $51.6 mill.
No Defined Benefit Pension Plan
Pfd Stock None

Common Stock 40,158,582 shs.
as of 10/26/20
MARKET CAP: $14.4 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
1613.8	1793.3	1954.0	2079.7	2246.6	2363.1	2570.8	2788.2	2998.1	3199.5	3750	4050	Revenues ($mill)	4800
7.0%	7.5%	8.4%	8.6%	9.1%	9.8%	10.7%	11.1%	11.3%	11.5%	12.0%	12.5%	Operating Margin	16.0%
11.3	9.7	11.6	13.4	14.5	16.4	20.3	24.2	26.1	27.9	28.0	30.0	Depreciation ($mill)	40.0
57.6	72.0	82.0	97.3	110.7	128.3	149.0	167.0	234.5	261.6	330	350	Net Profit ($mill)	560
39.2%	38.7%	41.0%	38.8%	38.9%	38.5%	38.5%	38.1%	20.1%	17.7%	21.0%	21.0%	Income Tax Rate	21.0%
3.6%	4.0%	4.2%	4.7%	4.9%	5.4%	5.8%	6.0%	7.8%	8.2%	8.8%	8.6%	Net Profit Margin	11.7%
265.5	307.1	295.1	313.9	345.3	356.8	399.4	460.7	609.6	582.7	520	530	Working Cap'l ($mill)	600
198.7	247.3	230.9	246.4	319.3	328.0	436.9	508.8	657.6	499.7	330	360	Long-Term Debt ($mill)	500
285.2	279.7	281.6	286.2	244.4	255.7	205.2	223.1	223.6	410.2	600	640	Shr. Equity ($mill)	1200
12.5%	14.3%	16.5%	18.9%	20.3%	22.7%	24.3%	23.8%	27.7%	29.8%	35.5%	35.0%	Return on Total Cap'l	33.0%
20.2%	25.7%	29.1%	34.0%	45.3%	50.2%	72.6%	74.9%	NMF	63.8%	55.0%	54.5%	Return on Shr. Equity	46.5%
11.2%	16.3%	18.8%	22.2%	29.9%	33.3%	48.3%	48.8%	73.8%	43.3%	39.5%	39.5%	Retained to Com Eq	33.5%
45%	37%	36%	35%	34%	34%	33%	35%	30%	32%	28%	27%	All Div'ds to Net Prof	29%

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	16.4	28.6	74.7
Receivables	69.4	76.5	135.6
Inventory (FIFO)	672.6	702.3	612.8
Other	156.8	166.1	243.6
Current Assets	915.2	973.5	1066.7
Accts Payable	237.8	262.0	268.4
Debt Due	9.2	11.7	11.7
Other	58.6	117.1	202.4
Current Liab.	305.6	390.8	482.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	7.5%	10.0%	8.0%
"Cash Flow"	15.5%	20.5%	16.0%
Earnings	16.5%	21.0%	17.5%
Dividends	13.5%	19.0%	15.0%
Book Value	4.0%	3.5%	27.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	546.4	988.2	743.4	510.2	2788.2
2018	585.9	1057.8	811.3	543.1	2998.1
2019	597.5	1121.3	898.5	582.2	3199.5
2020	677.3	1280.8	1139.2	652.7	3750
2021	800	1380	1200	670	4050

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.52	2.21	1.16	.10	3.99
2018	.75	2.80	1.66	.41	5.62
2019	.80	3.22	1.95	.43	6.40
2020	.75	3.87	2.92	.66	8.20
2021	.95	4.15	2.95	.70	8.75

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.31	.37	.37	.37	1.42
2018	.37	.45	.45	.45	1.72
2019	.45	.55	.55	.55	2.10
2020	.55	.58	.58	.58	2.29
2021					

BUSINESS: Pool Corporation distributes swimming pool supplies, equipment and leisure products on the wholesale level. Offers maintenance, repair and replacement parts, packaged pool kits, construction materials, and complementary products. As of 12/31/19, operated 373 customer service centers in North America, Europe, and Australia. Acquired Automatic Rain Co., 10/05; General Pool & Spa Supply, 10/09. Has about 4,500 employees. BlackRock, Inc. own 9% of the stock; Officers & Directors, 4% (3/20 proxy). Chairman: John E. Stokely; President & CEO: Manuel J. Perez de la Mesa. Incorporated: Delaware. Address: 109 Northpark Blvd., Covington, Louisiana 70433. Telephone: 985-892-5521. Internet: www.poolcorp.com.

Pool Corp. likely delivered strong top- and bottom-line growth in 2020. For the third quarter, the company saw a 27% increase in revenues and a 50% rise in earnings per share compared to the previous-year period. The extraordinary growth was largely driven by the trend towards home-based activities during the COVID-19 pandemic. With public pursuits severely limited by fears of the coronavirus, people have sought recreation in their own backyards, driving strong demand for pool construction and maintenance. While the usual seasonal weather effects almost certainly slowed activity in the fourth quarter, we believe comparable-quarter growth continued through the end of the year.

In light of recent stronger-than-anticipated financial results, we have raised our 2021 estimates. Whereas we had previously expected to see revenues of $3.70 billion this year, we now foresee a top-line sum of $4.05 billion. Furthermore, we have raised our earnings per share call from $7.70 to $8.75.

Pool Corp. continued to build on its leadership position in swimming pool and outdoor living products. In the second half of 2020, the company expanded its network by acquiring Northeastern Swimming Pool Distributors on September 11th, and Jet Line Products on October 1st. Pool Corp.'s strong free cash flow will allow it to make further tuck-in acquisitions in this arena. The company's niche in the swimming pool arena has proven remarkably lucrative over time, as it has delivered 20%-plus annual earnings growth over the past decade. This has driven POOL shares up more than tenfold in price since its 2012 low of $29.50.

Our main concern here is the lofty valuation. At the recent quotation, this stock traded at a high price/earnings multiple, compared to both its own historical average and the *Value Line* median. Indeed, in our view, the stock price already discounts much of the earnings growth we envision for the company over the long term. That said, the issue holds an Above Average rank (2) for Timeliness, indicating strong year-ahead relative prospects, as well as a high score (95 out of 100) for Price Growth Persistence.

Adam J. Platt *January 29, 2021*

(A) Diluted earnings. Excludes nonrecurring loss: '09, 56¢; '12, 14¢; '17, 22¢. Next earnings report due mid-February.
(B) Includes intangibles: At 12/31/19: $199.6 mill., $4.99/sh.
(C) Dividends historically paid in early March, June, September, and December.
(D) In millions.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	95
Earnings Predictability	100

POST HOLDINGS NYSE-POST

RECENT PRICE 100.12 | P/E RATIO 26.8 (Trailing: 36.9 Median: NMF) | RELATIVE P/E RATIO 1.27 | DIV'D YLD Nil | VALUE LINE

TIMELINESS 3 Lowered 2/15/19
SAFETY 3 New 4/27/12
TECHNICAL 5 Lowered 1/8/21
BETA .95 (1.00 = Market)

18-Month Target Price Range
Low-High Midpoint (% to Mid)
$73-$139 $106 (5%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	160	(+60%)	12%
Low	110	(+10%)	3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	137	122	116
to Sell	181	159	152
Hld's(000)	60834	59460	58920

	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	36.1	53.9	60.6	71.4	89.0	89.0	101.4	113.7	112.4
Low:	25.3	33.7	30.9	38.9	50.9	75.8	70.7	87.3	69.0

LEGENDS
—— 10.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range

2023	2024	2025

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-7.4	18.8
3 yr.	27.5	29.9
5 yr.	63.7	81.5

On February 3, 2012, Post completed its legal separation from Ralcorp Holdings via a tax-free spinoff. Shareholders of Ralcorp Holdings received one share of Post common stock for every two shares of Ralcorp common stock held. On February 6, 2012, Post Holdings began trading on the New York Stock Exchange.

2010	2011F	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
--	--	29.37	31.62	53.82	77.08	77.45	79.06	93.81	78.79	85.82	91.55	Sales per sh A	109.70
--	--	3.55	3.34	3.13	d4.17	7.79	7.88	10.44	10.35	8.44	10.55	"Cash Flow" per sh	14.20
--	--	1.53	.94	d.42	.62	2.59	2.67	4.07	4.98	2.71	4.45	Earnings per sh B	6.75
--	--	--	--	--	--	--	--	--	--	--	Nil	Div'ds Decl'd per sh	Nil
--	--	.95	1.00	2.58	1.79	1.87	2.88	3.37	3.80	3.53	3.85	Cap'l Spending per sh	4.45
--	--	37.72	38.49	38.91	40.07	39.12	34.95	38.69	40.58	42.99	46.85	Book Value per sh C	63.05
--	--	32.65	32.70	44.80	60.30	64.90	66.10	66.70	72.10	66.40	65.00	Common Shs Outst'g D	62.00
--	--	20.0	42.6	--	NMF	27.5	30.6	20.4	20.2	35.2		Avg Ann'l P/E Ratio	20.0
--	--	1.27	2.39	--	NMF	1.44	1.54	1.10	1.08	1.78		Relative P/E Ratio	1.10
--	--	--	--	--	--	--	--	--	--	--		Avg Ann'l Div'd Yield	Nil
996.7	968.2	958.9	1034.1	2411.1	4648.2	5026.8	5225.8	6257.2	5681.1	5698.7	5950	Sales ($mill) A	6800
28.1%	28.0%	21.4%	20.9%	13.8%	15.3%	17.1%	16.7%	17.8%	21.1%	21.5%	20.5%	Operating Margin	20.5%
55.4	58.7	63.2	76.8	155.8	272.8	302.8	323.1	398.4	379.6	370.3	380	Depreciation ($mill)	435
92.0	d424.3	52.6	36.5	d1.2	52.7	217.4	211.0	308.6	370.7	190.1	315	Net Profit ($mill) E	445
35.0%	--	36.7%	31.8%	--	31.1%	29.7%	35.0%	35.0%	18.7%	20.5%	24.0%	Income Tax Rate	24.0%
9.2%	NMF	5.5%	3.5%	NMF	1.1%	4.3%	4.0%	4.9%	6.5%	3.3%	5.3%	Net Profit Margin	6.5%
72.8	1.0	83.3	522.1	699.1	1170.7	1442.9	1911.5	1408.2	1323.4	1313.4	1375	Working Cap'l ($mill)	1500
716.5	716.5	930.3	1408.6	3830.5	4511.4	4551.2	7149.1	7232.1	7066.0	6959.0	6750	Long-Term Debt ($mill)	5650
2061.7	1434.7	1231.5	1498.6	2283.2	2976.0	3008.6	2780.0	3050.4	2925.9	2854.5	3045	Shr. Equity ($mill)	3910
4.2%	NMF	3.8%	2.7%	1.5%	2.6%	4.9%	3.7%	4.9%	5.3%	3.9%	5.0%	Return on Total Cap'l	6.5%
4.5%	NMF	4.3%	2.4%	NMF	1.8%	7.2%	7.6%	10.1%	12.7%	6.7%	10.5%	Return on Shr. Equity	11.5%
4.5%	NMF	4.3%	2.6%	NMF	NMF	8.0%	8.5%	11.5%	12.5%	6.7%	10.5%	Retained to Com Eq	11.5%
--	--	--	12%	NMF	32%	7%	6%	3%	1%	--	Nil	All Div'ds to Net Prof G	Nil

CAPITAL STRUCTURE as of 9/30/20
Total Debt $7023.9 mill. **Due in 5 Yrs** $64.9 mill.
LT Debt $6959.0 mill. **LT Interest** $386 mill.
(Long-term interest earned: 1.7X)
(71% of Cap'l)

Leases, Uncapitalized Annual rentals $28.7 mill.

Pension Assets-9/20 $1114.7 mill.
Pension Oblig. $965.5 mill.

Pfd Stock: None

Common Stock 65,848,095 shs.
as of 11/16/20
MARKET CAP: $6.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	994.5	1054.5	1193.4
Receivables	462.3	445.1	441.6
Inventory (FIFO)	484.2	579.8	599.4
Other	259.3	46.9	53.4
Current Assets	2200.3	2126.3	2287.8
Accts Payable	365.1	395.6	367.9
Debt Due	22.1	13.5	64.9
Other	404.9	393.8	541.6
Current Liab.	792.1	802.9	974.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '23-'25
Sales	--	9.5%	5.0%
"Cash Flow"	--	66.5%	8.0%
Earnings	--	59.5%	11.5%
Dividends	--	--	Nil
Book Value	--	1.0%	9.0%

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2017	1249.8	1255.4	1272.1	1448.5	5225.8
2018	1433.1	1586.1	1608.1	1629.9	6257.2
2019	1411.3	1387.8	1439.2	1442.8	5681.1
2020	1456.8	1494.2	1336.4	1411.3	5698.7
2021	1475	1500	1475	1500	5950

Fiscal Year Ends	EARNINGS PER SHARE AB Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2017	.62	.55	.63	.87	2.67
2018	.87	1.06	1.06	1.08	4.07
2019	1.11	1.28	1.19	1.40	4.98
2020	.73	.65	.75	.58	2.71
2021	.95	1.00	1.20	1.30	4.45

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	NO CASH DIVIDENDS BEING PAID				
2018					
2019					
2020					
2021					

BUSINESS: Post Holdings is a consumer packaged goods holding company, operating in the center-of-the-store, refrigerated, foodservice, food ingredient, and convenience nutrition categories. It has five operating units: Post Consumer Brands, Weetabix, Foodservice, Refrigerated Retail, and BellRing Brands. Brands include: *Honey Bunches of Oats*, *Shredded Wheat*, *Post Raisin Bran*, *Malt-O-Meal*, *Bob Evans*, and *Power Bar*. Spun off from Ralcorp Hldgs. 2/12; acquired Michael Foods, 6/14; MOM Brands, 5/15. Off./dir. own 9.7% of common stock; Route One Investment Co., 10.4% (12/20 Proxy). Has 11,550 emplys. CEO & Pres.: Robert V. Vitale. Inc.: MO. Addr.: 2503 S. Hanley Road, St. Louis, MO 63144. Telephone: (314) 644-7600. Internet: www.postholdings.com.

Post Holdings is glad to see fiscal 2020 (ended September 30th) in the rearview mirror. From the get-go, management knew the 12-month stretch would pose some operating challenges, as Post was spinning off its active nutrition unit (became BellRing Brands) and creating a majority-owned joint venture called 8th Avenue to house its private-label business. The transition was even more daunting than expected, as it was completed against the backdrop of the coronavirus pandemic. Although more people eating at home gave a boost to traditional breakfast lines, like cereal, the gains in the largest segment were partially offset by a sharp decline in sales at the company's second-largest division, Foodservice (primarily egg and potato products). The latter unit suffered from a drastic drop in sales to away-from-home channels (i.e., restaurants, educational facilities, and lodging), due to the ongoing pandemic. For the full fiscal year, Post Holdings (partially reflecting the aforementioned restructuring plan) posted adjusted earnings of $2.71 a share, versus the $4.98 recorded in the previous 12 months. That said,

The investment community is again starting to jump aboard here. The issue has recovered more than 10% since our mid-October report. We think it is a case of some bargain hunting ahead of a possible notable bottom-line recovery in fiscal 2021. We look for earnings to rebound to around the $4.50-a-share level in the current fiscal year. Our assumption is based on continued solid showings from the cereal, refrigerated foods, and active nutrition (BellRing) businesses, along with a semi-recovery in away-from-home sales. The hope is that there will be a partial return to normality later in the year, as the COVID-19 vaccines are distributed.

This neutrally ranked stock offers worthwhile long-term appreciation potential. With the restructurings in the rearview mirror, Post may well return to its roots as an aggressive acquirer, which may prove our earnings projections conservative. We also think the leveraged balance sheet will not be an obstacle, given Post's significant cash flow generation. This should allow for opportunistic deals and for a reduction in the debt load.

William G. Ferguson *January 15, 2021*

(A) FY ends Sept. 30th. (B) Dil. egs. Excl. nonrecur. gains (charges): '12, (8¢); '13, (64¢); '14, ($8.61); '15, ($2.65); '17, ($2.17); '18, $2.09; '19, ($3.28); '20, ($2.70). May not sum due to shr. count change. Next earnings report due early February. (C) Includes intangibles. At 9/30/20: $7.64 bill., $115.00/shr. (D) In millions. (E) Incl. goodwill impairment charge: $566.5 mill. in FY 2011. (F) FY 2011 data restated to reflect a change in the amount of goodwill impaired. (G) Paid quarterly div'ds. on Convertible Preferred Stock in years 2013-2019.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	75
Earnings Predictability	15

RLI CORP. NYSE-RLI

RECENT PRICE **104.84** | P/E RATIO **36.8** (Trailing: 40.3 / Median: 22.0) | RELATIVE P/E RATIO **1.72** | DIV'D YLD **0.9%** | VALUE LINE

TIMELINESS 3 Lowered 11/6/20
SAFETY 2 Raised 6/5/20
TECHNICAL 3 Lowered 2/19/21
BETA .80 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$76-$152	$114 (10%)

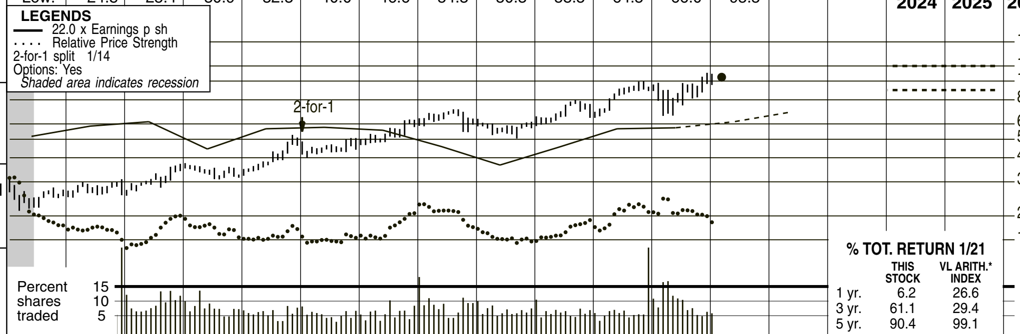
2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	120	(+15%)	5%
Low	90	(-15%)	-2%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	103	123	108
to Sell	129	106	126
Hld's(000)	35091	38931	38035

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	31.0	37.2	37.5	52.6	50.7	63.2	71.5	63.7	80.0	99.9	110.6	109.4
Low:	24.8	25.4	30.9	32.3	40.0	46.6	54.3	50.3	58.5	64.5	66.0	95.5



Target Price Range
2024 | 2025 | 2026

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	6.2	26.6
3 yr.	61.1	29.4
5 yr.	90.4	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
9.61	10.92	12.29	12.31	11.57	11.77	12.72	13.56	14.68	15.95	16.08	16.58	16.72	17.78	18.70	19.18	**21.80**	**23.35**	P/C Prem Earned per sh	**30.00**
1.21	1.47	1.78	1.84	1.58	1.59	1.50	1.38	1.23	1.29	1.26	1.21	1.24	1.40	1.54	1.50	**1.55**	**1.70**	Investment Inc per sh	**2.50**
1.34	1.89	3.52	1.94	2.04	2.27	2.78	1.49	2.48	2.48	2.49	1.74	.60	.94	1.51	**1.55**	**16.35**	**1.65**	Underwriting Inc per sh	**3.00**
1.84	2.19	3.26	2.50	2.35	2.66	2.80	2.02	2.57	2.62	2.53	2.08	1.67	2.06	2.57	2.60	**2.80**	**3.15**	Earnings per sh A	**4.75**
.32	.38	.44	.49	.54	.57	.60	.63	.67	.71	.75	.79	.83	.87	.91	.95	**.99**	**1.03**	Div'ds Decl'd per sh B■	**1.14**
13.56	15.58	17.48	16.49	19.57	18.87	19.35	18.73	19.29	19.61	18.91	18.74	19.34	18.13	22.18	25.17	**28.35**	**32.20**	Book Value per sh	**44.45**
51.10	48.55	44.31	42.95	42.53	41.93	42.32	42.53	42.98	43.10	43.54	43.95	44.15	44.50	44.87	45.14	**45.00**	**45.00**	Common Shs Outst'g C	**45.00**
170%	166%	163%	163%	130%	146%	159%	182%	208%	230%	283%	346%	296%	379%	379%	349%			Price to Book Value	**235%**
12.5	11.8	8.8	10.8	10.8	10.4	11.0	16.9	15.6	17.2	21.1	31.1	34.3	33.4	32.7	33.8	*Bold figures are*		Avg Ann'l P/E Ratio	**22.0**
.67	.64	.47	.65	.72	.66	.69	1.08	.88	.91	1.06	1.63	1.73	1.80	1.74	1.73	*Value Line*		Relative P/E Ratio	**1.20**
1.4%	1.5%	1.5%	1.8%	2.1%	2.1%	1.9%	1.8%	1.7%	1.6%	1.4%	1.2%	1.4%	1.3%	1.1%	1.1%	*estimates*		Avg Ann'l Div'd Yield	**1.1%**

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
538.5	576.6	630.8	687.4	700.2	728.6	737.9	791.3	839.1	865.7	**980**	**1050**	P/C Premiums Earned	**1350**
37.2%	47.1%	41.2%	43.2%	42.7%	48.0%	54.4%	54.1%	49.3%	**51.0%**	**52.0%**	**53.0%**	Loss to Prem Earned	**53.0%**
41.0%	41.9%	41.9%	41.3%	41.8%	41.5%	42.0%	40.6%	42.7%	**41.0%**	**40.5%**	**40.0%**	Expense to Prem Writ	**37.0%**
21.8%	11.0%	16.9%	15.6%	15.5%	10.5%	3.6%	5.3%	8.1%	**8.0%**	**7.5%**	**7.0%**	Underwriting Margin	**10.0%**
27.6%	19.7%	21.4%	20.5%	30.7%	26.5%	8.8%	12.3%	16.9%	**17.0%**	**15.0%**	**15.0%**	Income Tax Rate	**12.0%**
120.3	87.1	112.2	115.2	112.0	92.9	74.6	92.2	117.4	117.0	**125**	**140**	Net Profit ($mill)	**215**
3.5%	3.3%	2.8%	2.9%	2.7%	2.6%	2.5%	2.8%	2.6%	2.4%	**2.7%**	**3.0%**	Inv Inc/Total Inv	**5.0%**
2695	2645	2740	2776	2737	2778	2947	3105	3546	3938	**4400**	**4900**	Total Assets ($mill)	**6000**
818.9	796.4	829.0	845.1	823.5	823.6	853.6	806.8	995.4	1136.0	**1275**	**1450**	Shr. Equity ($mill)	**2000**
14.7%	10.9%	13.5%	13.6%	13.6%	11.3%	8.7%	11.4%	11.8%	10.3%	**10.0%**	**9.5%**	Return on Shr. Equity	**11.0%**
11.6%	7.6%	10.1%	10.0%	9.7%	7.1%	4.5%	6.6%	7.7%	6.6%	**6.5%**	**6.5%**	Retained to Com Eq	**8.0%**
21%	31%	26%	27%	29%	37%	49%	42%	35%	37%	**35%**	**33%**	All Div'ds to Net Prof	**24%**

CAPITAL STRUCTURE as of 12/31/20
Total Debt $149.5 mill. **Due in 5 Years** Nil
(12% of Cap'l)
Leases,Uncapitalized Annual rentals $6.0 million

No Defined Benefit Pension Plan
Pfd Stock None

Common Stock 45,143,000 shs.

MARKET CAP: $4.7 billion (Mid Cap)

FINANCIAL POSITION ($MILL.)	2018	2019	12/31/20
Bonds	1760.5	1983.1	2196.6
Stocks	340.5	460.6	524.0
Other	1004.1	1102.0	1217.9
Total Assets	3105.1	3545.7	3938.5
Unearned Prems	496.5	540.2	113.5
Reserves	1461.3	1574.4	1750.0
Other	340.3	435.7	939.0
Total Liab'ties	2298.2	2550.3	2802.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Premium Inc	4.0%	4.0%	*8.0%*
Invest Income	-2.0%	1.5%	*8.5%*
Earnings	-2.5%	-2.5%	*12.5%*
Dividends	6.0%	5.5%	*4.0%*
Book Value	1.0%	0.5%	*12.0%*

Cal-endar	NET PREMIUMS EARNED ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	190.0	196.5	200.8	204.0	791.3
2019	204.7	207.5	211.3	215.6	839.1
2020	215.6	208.7	216.6	224.8	865.7
2021	*215*	*240*	*250*	*275*	*980*
2022	*240*	*250*	*270*	*290*	*1050*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.60	.60	.46	.40	2.06
2019	.71	.66	.57	.63	2.57
2020	.66	.77	.42	.75	2.60
2021	*.72*	*.73*	*.65*	*.70*	*2.80*
2022	*.76*	*.80*	*.74*	*.85*	*3.15*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.20	.21	.21	.21	.83
2018	.21	.22	.22	.22	.87
2019	.22	.23	.23	.23	.91
2020	.23	.24	.24	.24	.95
2021					

BUSINESS: RLI Corp., through its subsidiaries RLI Insurance and Mt. Hawley, writes multiple lines of insurance on an admitted basis in all 50 states. Also underwrites specialty property and casualty insurance on an admitted basis and excess and surplus business on a non-admitted basis. Underwrites earthquake risks (in California). Other companies in the group include: Replacement Lens, Inc.; License Express Services, Inc. Has 882 employees. State Street owns 11.2% of common stock; BlackRock 10.4%; The Vanguard Group 10.1%; officers & directors, 5.1% (3/20 proxy). President, Chairman, and Chief Executive Officer: Jonathan E. Michael. Inc.: Illinois. Address: 9025 North Lindbergh Drive, Peoria, Illinois 61615. Telephone: 309-692-1000. Internet: www.rlicorp.com.

RLI finished a solid 2020 with good fourth-quarter results. Earnings from operations, which excludes capital gains and losses from investments, increased 19% on a year-over-year basis, to $0.75 during the December quarter. The combined ratio was virtually unchanged from the previous year's quarter, clocking in at 92% for the period. This means that the insurer generated $8 in pretax profits for every $100 in coverage. This helped to negate a 6.3% decline in net investment income to $16.7 million. This doesn't come as much of a surprise to us, given that bond reinvestment rates remain near historical lows, reflecting a subdued interest-rate environment.

We look for share net to advance at a healthy pace over the next two years, assuming that positive industry fundamentals continue. It's quite likely that the broader insurance market will continue to register healthy rate gains in the coming 18 months or so, given the current catastrophes that are plaguing the industry, notably winter storms and extreme cold in Texas. Catastrophes can be a bit of a double-edged sword for insurers. On one hand, of course, they cut into profits as claims are paid out. However, they can also give insurers the upper hand during policy-renewal season. We also look for a gradual uptick in net investment income over the next two years. Interest rates are likely to steadily advance in the months ahead, which should provide a much needed shot in the arm for bond reinvestment rates.

We look for earnings to climb at a low double-digit pace over the pull to 2024-2026. Our cautious optimism is based on decent economic conditions over that time frame. Indeed, a healthy economy gives insurers the wherewithal to raise rates when conditions are warranted. A strong balance sheet is also a plus and provides financial options.

Though we like the RLI story, these shares don't stand out from the crowd at the recent valuation. Indeed, they are merely ranked to mirror the broader market averages in the year ahead, while 3- to 5-year price appreciation potential is limited. A modest dividend yield does little to sweeten the pot.

Alan G. House *March 5, 2021*

(A) Dil. egs. Excl. nonrecurr. (net): '08, (70¢); '09, (19¢); '10, 35¢; '11, 25¢; 12, 38¢; '13, 66¢; '14, 47¢; '15, 59¢; '16, 48¢; 17, (69¢); '18, (63¢); '19, $1.66. Next egs. report due late April. (B) Div'ds. paid late March, June, Sept., and Dec. ■ Div'd. reinvest. plan avail. Excl. spec'l div'd.: $3.50/sh. on 12/29/10; $2.50/sh., 12/20/11; $2.50/sh., 12/20/12; $1.50/sh., 12/20/13; $3.00/sh., 12/22/14; $2.00/sh., 12/22/15; $2.00/sh., 12/23/16; $1.75, 12/27/17; $1.00/sh., 12/27/18, 12/20/19 & 12/18/20. (C) In mill., adj. for split.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	75
Earnings Predictability	75

ROLLINS, INC. NYSE-ROL

RECENT PRICE	37.23	P/E RATIO	NMF (Trailing: NMF, Median: 34.0)	RELATIVE P/E RATIO	NMF	DIV'D YLD	0.9%	VALUE LINE	398

TIMELINESS 2 Lowered 2/12/21
SAFETY 2 Raised 3/6/09
TECHNICAL 3 Lowered 1/1/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$22-$48	$35 (-5%)

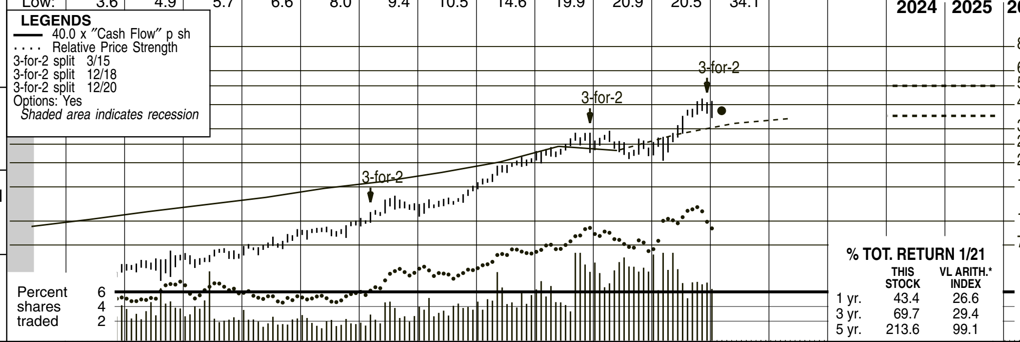
2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+35%)	9%
Low	35	(-5%)	Nil

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	179	220	230
to Sell	213	158	182
Hld's(000)	201031	194977	189417

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	6.0	7.0	7.2	9.1	10.1	13.5	15.2	21.5	28.6	29.3	43.0	41.8
Low:	3.6	4.9	5.7	6.6	8.0	9.4	10.5	14.6	19.9	20.9	20.5	34.1



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	43.4	26.6
3 yr.	69.7	29.4
5 yr.	213.6	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
1.55	1.67	1.76	2.02	2.15	2.29	2.44	2.58	2.72	2.87	3.02	3.21	3.41	3.71	4.10	4.40	4.80	5.00	Revenues per sh	5.45
.15	.16	.18	.20	.23	.25	.28	.30	.33	.37	.40	.45	.50	.61	.58	.70	.80	0.85	"Cash Flow" per sh	1.10
.10	.11	.13	.14	.16	.18	.20	.23	.25	.28	.31	.34	.39	.47	.41	.53	.60	.65	Earnings per sh A	.90
.03	.03	.04	.05	.06	.07	.08	.09	.11	.12	.14	.18	.20	.25	.28	.24	.32	.40	Div'ds Decl'd per sh B■	.50
.05	.04	.03	.03	.03	.03	.04	.04	.04	.06	.08	.07	.05	.06	.06	.05	.05	.10	Cap'l Spending per sh	.15
.34	.41	.46	.45	.53	.60	.66	.72	.89	.94	1.06	1.16	1.33	1.45	1.66	1.91	2.00	2.05	Book Value per sh C	2.55
516.46	515.55	509.47	506.46	500.70	496.74	493.60	492.80	492.29	491.14	492.19	490.03	490.48	490.96	491.15	491.60	491.25	490.00	Common Shs Outst'g D	487.50
25.2	24.8	26.0	24.4	22.1	24.7	29.0	29.1	30.7	32.0	36.9	37.0	47.4	50.9	NMF	NMF	Bold figures are	Value Line	Avg Ann'l P/E Ratio	48.0
1.34	1.34	1.38	1.47	1.47	1.57	1.82	1.85	1.72	1.68	1.86	1.94	2.38	2.75	NMF	NMF	estimates		Relative P/E Ratio	2.65
1.0%	1.2%	1.2%	1.5%	1.6%	1.6%	1.4%	1.4%	1.4%	1.4%	1.2%	1.4%	1.1%	1.0%	1.1%	.8%			Avg Ann'l Div'd Yield	1.2%

CAPITAL STRUCTURE as of 12/31/20
Total Debt $203.0 mill. **Due in 5 Yrs** $150.0 mill.
LT Debt $185.8 mill. **LT Interest** $5.0 mill.
(16% of Cap'l)
Leases, Uncapitalized Annual rentals $72.9 mill.

Pension Assets-12/19 $23.6 mill. **Oblig.** $2.8 mill.

Pfd Stock None

Common Stock 491,619,000 shs.

MARKET CAP: $18.3 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1205.1	1270.9	1337.4	1411.6	1485.3	1573.4	1674.0	1821.6	2015.5	2161.2	2350	2450	Revenues ($mill)	2650
16.6%	17.0%	17.2%	18.6%	19.2%	19.7%	20.9%	20.7%	19.8%	21.1%	21.5%	22.0%	Operating Margin	25.5%
37.5	38.7	39.6	43.5	44.5	50.9	56.6	66.8	81.1	88.3	90.0	95.0	Depreciation ($mill)	100
100.7	111.3	123.3	137.7	152.1	167.4	190.7	231.7	203.3	260.8	295	320	Net Profit ($mill)	440
37.5%	37.0%	35.6%	37.3%	37.5%	35.8%	35.2%	25.4%	22.1%	26.5%	25.0%	25.0%	Income Tax Rate	25.0%
8.4%	8.8%	9.2%	9.8%	10.2%	10.6%	11.4%	12.7%	10.1%	12.1%	12.6%	13.1%	Net Profit Margin	16.6%
d50.1	d22.4	38.6	31.3	60.9	13.2	d31.8	d13.0	d100.2	d158.7	d100	d85.0	Working Cap'l ($mill)	100.0
- -	- -	- -	- -	- -	- -	- -	- -	279.0	185.8	150	75.0	Long-Term Debt ($mill)	Nil
324.0	354.9	438.3	462.7	524.0	568.5	653.9	711.9	815.8	941.4	975	1000	Shr. Equity ($mill)	1250
31.1%	31.4%	28.1%	29.8%	29.0%	29.4%	29.2%	32.5%	18.9%	23.5%	26.5%	30.0%	Return on Total Cap'l	35.5%
31.1%	31.4%	28.1%	29.8%	29.0%	29.4%	29.2%	32.5%	24.9%	28.0%	30.5%	32.0%	Return on Shr. Equity	35.5%
18.4%	18.2%	16.1%	16.6%	15.7%	14.1%	13.8%	15.4%	6.1%	15.5%	14.5%	12.0%	Retained to Com Eq	16.0%
41%	42%	43%	44%	46%	52%	53%	53%	76%	45%	53%	62%	All Div'ds to Net Prof	55%

CURRENT POSITION ($MILL.)	2018	2019	12/31/20
Cash Assets	115.5	94.3	98.5
Receivables	104.0	122.7	126.3
Inventory	15.8	19.5	30.8
Other	50.7	73.3	59.2
Current Assets	286.0	309.8	314.8
Accts Payable	27.2	35.2	64.6
Debt Due	- -	12.5	17.2
Other	271.8	362.3	391.7
Current Liab.	299.0	410.0	473.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Revenues	6.5%	6.5%	5.5%
"Cash Flow"	10.5%	11.0%	10.0%
Earnings	11.5%	11.0%	11.5%
Dividends	17.5%	17.5%	11.0%
Book Value	12.0%	11.5%	8.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	408.7	480.5	487.8	444.6	1821.6
2019	429.0	524.0	556.5	506.0	2015.5
2020	487.9	553.3	583.7	536.3	2161.2
2021	520	605	630	595	2350
2022	530	640	650	630	2450

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.10	.13	.13	.11	.47
2019	.09	.13	.09	.10	.41
2020	.09	.15	.16	.13	.53
2021	.10	.15	.20	.15	.60
2022	.10	.20	.20	.15	.65

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.051	.051	.051	.051	.204
2018	.062	.062	.062	.062	.248
2019	.070	.070	.070	.070	.280
2020	.080	.053	.053	.053	.239
2021	.080				

BUSINESS: Rollins, Inc. owns and operates Orkin LLC Exterminating, one of the world's largest pest- and termite-control service providers. Has over 500 locations (including franchises) in the U.S., Canada, Europe, Latin America, the Caribbean, the Middle East, and Asia. Commercial and residential pest contol account for 81% of revenues, and the balance is mainly from the termite business. Acquired HomeTeam Pest Defense, 4/08; Crane Pest Control, 12/08; two acquisitions in Australia in 2014. Has approx. 14,000 employ. Rollins family & other dirs. own 53.2% and less than 1.0%, resp., of stock (3/20 proxy). Chairman: R. Randall Rollins. CEO: Gary W. Rollins. Inc.: DE. Addr.: 2170 Piedmont Rd., N.E., Atlanta, GA 30324. Telephone: 404-888-2000. Internet: www.rollins.com.

Rollins posted strong fourth-quarter and full-year results amid the pandemic. In the December period, the top and bottom lines grew 6% and 30%, respectively, to $536 million and $0.13 per share. The company enjoyed solid demand in the residential pest control business. Also, ongoing investments in technology seemed to pay off. (Note: Full fourth-quarter results were not available at the time of this report's writing.) On a full-year basis, revenues and share earnings advanced 7% and 29%, respectively, to $2.16 billion and $0.53.

The residential side of the business is expected to remain solid. The demand for pest control and termite services ought to stay healthy in the near term. This will especially be true since more people are working from home and can easily schedule service appointments.

The commercial line should start recovering as business normalizes. Although vaccines are rolling out, the COVID-19 situation will probably remain unclear in the near term. We think demand for cleaning services will likely ramp up, as more businesses reopen. In fact, many commercial operations may frequently request decontamination services even in a post-pandemic world. Rollins' sanitation offering, VitalClean, may experience higher demand.

We are revising our 2021 share-net call upward and introducing our 2022 estimates. The latest results were encouraging, indicating that the company did well even during tumultuous times. Thus, share earnings for this year will probably advance double digits, to about $0.60. Meanwhile, we estimate the 2022 top and bottom lines will increase 4% and 8%, respectively, to about $2.45 billion and $0.65 per share.

Long-term business prospects are bright. The pest control company has been investing in technology, which should further optimize routes and save costs. Moreover, the company will probably channel these savings into introducing new decontamination services similar to VitalClean or enhancing customer service.

Good-quality shares of Rollins are timely, but have below-average long-term capital appreciation potential.

Emma Jalees *February 19, 2021*

(A) Dil. shs. Excl. nonrec. gains: '05, 1¢; '09, 2¢. 2017 excl. one-time tax impact: 5¢. Egs may not sum due to rdg. and/or change in shs. out. Next egs. rpt. due mid-April.
(B) Div'd paid in mid-March, June, September, and December. Excl. special div'd: $0.08 paid 12/12, $0.06 paid 12/13, $0.07 paid 12/14, $0.10 paid 10/17, $0.14 paid 11/18, $0.05 paid 12/19, & $0.13 paid 12/20 ■ Div'd reinvest. plan available.
(C) Incl. intang. In '20: $765.48 mill., $1.56/sh.
(D) In mill., adj. for stock splits.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	90
Earnings Predictability	85

SELECTIVE INSUR. NDQ-SIGI

RECENT PRICE **68.39** | P/E RATIO **13.6** (Trailing: 16.5; Median: 15.0) | RELATIVE P/E RATIO **0.64** | DIV'D YLD **1.5%** | VALUE LINE

TIMELINESS **2** Raised 11/20/20
SAFETY **3** New 7/27/90
TECHNICAL **2** Lowered 2/26/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$53-$109	$81 (20%)

2024-26 PROJECTIONS

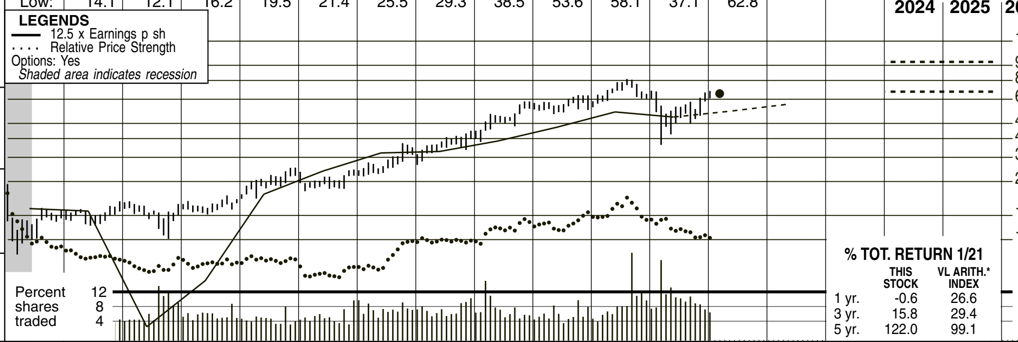
	Price	Gain	Ann'l Total Return
High	100	(+45%)	*11%*
Low	70	(Nil)	*3%*

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	106	114	91
to Sell	147	118	114
Hld's(000)	47240	48105	47307

High:	18.9	19.0	20.3	28.3	27.7	37.9	44.0	62.4	67.2	81.4	70.9	70.7
Low:	14.1	12.1	16.2	19.5	21.4	25.5	29.3	38.5	53.6	58.1	37.1	62.8

Target Price Range 2024 | 2025 | 2026



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-0.6	26.6
3 yr.	15.8	29.4
5 yr.	122.0	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
24.94	26.18	27.94	28.28	26.88	26.39	26.45	28.72	31.04	33.93	34.69	37.57	39.17	41.33	43.68	44.77	*46.65*	*48.35*	P/C Prem Earned per sh	*50.75*
2.39	2.74	3.21	2.48	2.23	2.71	2.71	2.39	2.41	2.54	2.12	2.29	2.77	3.31	3.74	3.79	*3.85*	*3.90*	Investment Inc per sh	*4.75*
1.21	.97	.25	d.26	d.04	d.44	d1.94	d1.14	.61	1.29	2.64	2.74	2.72	2.07	2.84	*2.33*	*2.80*	*3.40*	Underwriting Inc per sh	*4.05*
2.24	2.30	2.22	1.43	1.39	1.35	.34	.59	1.65	2.17	2.70	2.75	3.12	3.66	4.40	4.14	*4.45*	*4.85*	Earnings per sh A	*6.50*
.40	.44	.49	.52	.52	.52	.52	.52	.52	.53	.57	.61	.66	.74	.83	.94	*1.03*	*1.14*	Div'ds Decl'd per sh B■	*1.48*
17.26	18.81	19.81	16.84	18.83	19.96	20.39	19.77	20.63	23.36	24.37	26.77	29.28	30.40	36.91	45.72	*49.10*	*52.75*	Book Value per sh	*58.45*
56.86	57.27	54.31	52.88	53.24	53.68	54.41	55.16	55.92	54.59	57.36	57.21	58.50	58.95	59.46	59.90	*60.00*	*60.00*	Common Shs Outst'g C	*65.00*
142%	144%	122%	133%	80%	81%	80%	91%	117%	103%	124%	141%	172%	198%	190%	124%	*Bold figures are*		Price to Book Value	*145%*
10.9	11.8	10.9	15.7	10.8	12.0	48.1	30.5	14.6	11.1	11.2	13.5	16.2	16.4	15.9	13.7	*Value Line*		Avg Ann'l P/E Ratio	*13.0*
.58	.64	.58	.94	.72	.76	3.02	1.94	.82	.58	.56	.71	.81	.89	.85	.70	*estimates*		Relative P/E Ratio	*.70*
1.6%	1.6%	2.0%	2.3%	3.5%	3.2%	3.2%	2.9%	2.2%	2.2%	1.9%	1.6%	1.3%	1.2%	1.2%	1.7%			Avg Ann'l Div'd Yield	*1.8%*

CAPITAL STRUCTURE as of 12/31/20
Total Debt $550.7 mill. **Due in 5 Yrs** $550.7 mill.
LT Debt $550.7 mill. **LT Interest** $32.0 mill.
(17% of Cap'l)
Leases, Uncapitalized $8.3 million.
Pension Assets-12/19 $385 mill. **Oblig.** $391 mill.

Pfd Stock None
Common Stock 59,900,000 shs.

MARKET CAP: $4.1 billion (Mid Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1439.3	1584.1	1736.1	1852.6	1989.9	2149.6	2291.0	2436.2	2597.2	2681.8	*2800*	*2900*	P/C Premiums Earned	*3300*
74.7%	70.8%	64.6%	62.5%	57.7%	57.4%	58.7%	61.5%	59.7%	*61.0%*	*61.0%*	*60.0%*	Loss to Prem Earned	*59.0%*
32.6%	33.2%	33.4%	33.7%	34.7%	35.5%	34.4%	33.2%	33.8%	*33.8%*	*33.0%*	*33.0%*	Expense to Prem Writ	*33.0%*
-7.3%	-4.0%	2.0%	3.8%	7.6%	7.0%	6.9%	5.3%	6.5%	*5.2%*	*6.0%*	*7.0%*	Underwriting Margin	*8.0%*
--	--	29.6%	27.0%	28.4%	28.1%	27.7%	18.0%	18.9%	*20.0%*	*20.0%*	*20.0%*	Income Tax Rate	*20.0%*
19.1	32.1	86.7	124.5	157.1	161.7	184.9	218.6	264.4	249.7	*270*	*295*	Net Profit ($mill)	*425*
3.8%	3.2%	3.1%	3.0%	2.5%	2.5%	2.9%	3.5%	3.5%	*3.5%*	*3.6%*	*3.7%*	Inv Inc/Total Inv	*3.8%*
5736	6794	6270	6582	6904	7356	7686	7953	8797	9688	*10500*	*11500*	Total Assets ($mill)	*14000*
1109.2	1090.6	1153.9	1275.6	1398.0	1531.4	1713.0	1791.8	2194.9	2738.9	*2945*	*3165*	Shr. Equity ($mill)	*3800*
1.7%	2.9%	7.5%	9.8%	11.2%	10.6%	10.8%	12.2%	12.0%	*9.1%*	*9.0%*	*9.5%*	Return on Shr. Equity	*11.0%*
NMF	.5%	5.1%	7.5%	9.0%	8.4%	8.6%	9.8%	9.9%	*7.1%*	*7.0%*	*7.0%*	Retained to Com Eq	*8.5%*
NMF	84%	32%	23%	20%	21%	20%	19%	18%	*23%*	*23%*	*23%*	All Div'ds to Net Prof	*23%*

FINANCIAL POSITION ($MILL.)	2018	2019	12/31/20
Bonds	5310.2	6116.4	6472.7
Stocks	147.6	72.9	310.4
Mortgages	--	--	--
Other	2494.9	2607.9	2904.8
Total Assets	7952.7	8797.2	9687.9
Unearned Prems	1431.9	1523.2	1618.3
Reserves	3893.9	4067.2	4260.4
Other	835.1	1011.8	1070.3
Total Liab.	6160.9	6602.2	6949.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Premium Inc	4.0%	6.0%	*3.0%*
Invest Income	2.0%	6.0%	*5.5%*
Earnings	8.5%	20.5%	*8.5%*
Dividends	4.0%	7.5%	*10.5%*
Book Value	5.5%	8.5%	*9.0%*

Cal-endar	NET PREM. EARNED ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	591.8	604.8	614.3	625.3	2436.2
2019	632.6	642.6	653.6	668.4	2597.2
2020	651.7	630.7	694.5	704.9	2681.8
2021	*685*	*700*	*705*	*710*	*2800*
2022	*710*	*725*	*730*	*735*	*2900*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	.46	1.01	.99	1.20	3.66
2019	.90	1.16	.97	1.37	4.40
2020	.84	.40	1.06	1.84	4.14
2021	*1.00*	*1.10*	*1.10*	*1.25*	*4.45*
2022	*1.10*	*1.20*	*1.20*	*1.35*	*4.85*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.16	.16	.16	.18	.66
2018	.18	.18	.18	.20	.74
2019	.20	.20	.20	.23	.83
2020	.23	.23	.23	.25	.94
2021	.25				

BUSINESS: Selective Insurance Group, Inc. is a holding company for five property/casualty insurance companies. (Main subsidiary: Selective Insurance Company of America.) Markets products primarily in the East and Midwest. New Jersey accounted for 19% of premiums written in '19. Mix of 2019 premiums written: personal lines, 20%; commercial lines, 80%. Commercial premiums by industry (as percentage of total): automobile, 26%; general liability, 32%; workers' compensation, 17%; other, 25%. Has about 2,400 employees. Officers/directors own 2.0% of common stock; BlackRock, 11.7% (4/20 Proxy). Chairman, Pres. & CEO: John J. Marchioni. Inc.: NJ Address: 40 Wantage Ave., Branchville, NJ 07890. Telephone: 973-948-3000. Internet: www.selective.com.

Selective Insurance Group ought to experience a reversal of fortune this year. In that vein, we look for catastrophe loss levels to gradually retreat toward more-historical trends, enabling the combined ratio to decline (resulting in a wider underwriting margin and higher income). Meantime, the broad dissemination of vaccines should help quell the ongoing health crisis, allowing for fewer business disruptions and reduced claims activity. Though low interest rates will probably keep investment income in check for the foreseeable future, a larger asset base and revamped investment strategy ought to bolster gains, to a degree. Elsewhere, we look for renewal price increases, strong retention rates in the Standard lines business, and elevated new policy submissions to fuel premium expansion ahead. Therefore, we have raised our 2021 share-net estimate by $0.30, to $4.45.

Our 2022 earnings-per-share forecast enters the fold this week, checking in at $4.85. We feel further risk-reduction measures should pave the way for a slightly better underwriting margin next year. Meantime, a moderate uptick in investment income, coupled with various rate hikes in the company's core P&C coverages, ought to aid the bottom line. Too, a more-pronounced economic recovery might set the table for firmer pricing fundamentals in the commercial coverage category. Finally, we think written premiums in the excess & surplus and personal lines will begin to gain steam over future quarters.

The practice of weather prediction remains a tricky science. It's important to note that the insurer's key markets are subject to sizable weather-related catastrophe events. More specifically, an earlier string of hurricanes, tornadoes, hail storms, and wildfires wreaked havoc on its loss ratios. Thus, management will likely opt to further pump up reserve levels on the balance sheet down the line (which drag down profits, to an extent).

These shares, though timely, offer below-average appreciation potential for the stretch to 2024-2026. Also, the stock's dividend yield remains rather unexciting when compared to others in this space. The equity seems fairly valued on a P/E basis at this juncture, in our view.

Kenneth J. DeFranco, Jr. *March 5, 2021*

(A) Diluted egs. Excludes cap'l gains/losses beginning in 2005: '05, 9¢. Excl. loss from discontinued ops.: '08, 1¢; '09, 15¢; '10, 7¢; '11, 1¢. Next earnings report due early May. **(B)** Dividends historically paid in early March, June, September, December. ■ Div'd reinvestment plan available.
(C) In mill., adj. for stock split.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	75

SIRIUS XM HOLDINGS NDQ-SIRI

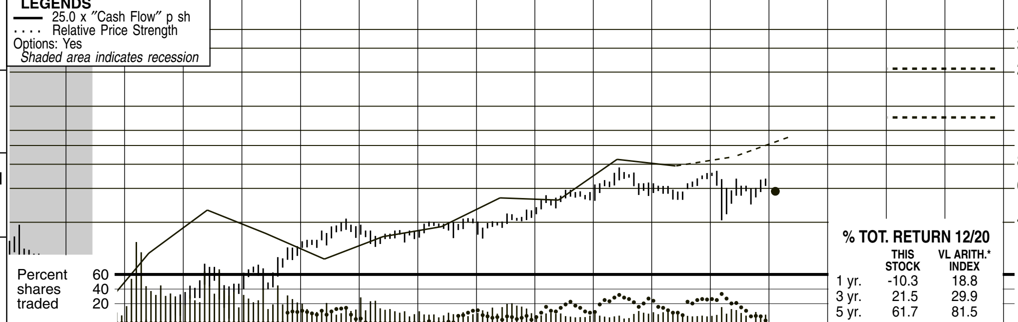
RECENT PRICE	5.80	P/E RATIO	21.5 (Trailing: 25.2; Median: 34.0)	RELATIVE P/E RATIO	1.00	DIV'D YLD	1.0%	VALUE LINE

TIMELINESS 3 Lowered 12/25/20
SAFETY 3 Raised 1/29/21
TECHNICAL 1 Raised 1/22/21
BETA 1.00 (1.00 = Market)

High:	0.8	1.7	2.4	3.0	4.2	3.9	4.2	4.6	5.9	7.7	7.2	7.4
Low:	0.1	0.6	1.3	1.8	2.9	3.0	3.3	3.3	4.4	5.2	5.2	4.1

Target Price Range
2023 | 2024 | 2025

LEGENDS
—— 25.0 x "Cash Flow" p sh
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
\$5-\$11	\$8 (35%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	25	(+330%)	45%
Low	14	(+140%)	26%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	269	258	257
to Sell	269	279	277
Hld's(000)	808823	730036	668021

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-10.3	18.8
3 yr.	21.5	29.9
5 yr.	61.7	81.5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
.05	.18	.44	.63	.46	.64	.72	.80	.65	.62	.74	.89	1.06	1.20	1.33	1.77	*1.90*	*2.00*	Revenues per sh	*2.40*
d.48	d.56	d.70	d.31	d.09	.04	.11	.19	.14	.10	.13	.15	.21	.21	.34	.31	*.35*	*.45*	"Cash Flow" per sh	*.90*
d.57	d.65	d.79	d.39	d.25	d.10	.03	.07	.07	.06	.08	.09	.15	.14	.26	.20	*.25*	*.30*	Earnings per sh A	*.75*
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	.01	.04	.05	.05	.06	*.06*	Div'ds Decl'd per sh D	*.10*
.02	.04	.07	.04	.04	.06	.08	.04	.02	.03	.02	.03	.04	.06	.08	.08	*.10*	*.10*	Cap'l Spending per sh	*.05*
.78	.24	d.27	d.54	d.01	.00	.05	.19	.77	.45	.23	d.03	d.17	d.34	d.42	d.17	*d.25*	*d.10*	Book Value per sh B	*.50*
1276.9	1346.2	1434.6	1471.1	3651.7	3882.7	3933.2	3753.2	5262.4	6096.2	5638.7	5147.6	4740.9	4527.7	4345.6	4412.0	*4225.0*	*4200.0*	Common Shs Outst'g C	*4000.0*
- -	- -	- -	- -	- -	- -	35.9	26.4	33.4	NMF	42.9	43.0	27.0	37.5	24.7	30.7	*24.0*		Avg Ann'l P/E Ratio	*25.0*
- -	- -	- -	- -	- -	- -	2.28	1.66	2.13	NMF	2.26	2.17	1.42	1.89	1.33	1.66	*1.21*		Relative P/E Ratio	*1.40*
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	.2%	.8%	.7%	.8%	1.0%		Avg Ann'l Div'd Yield	*.5%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt \$7,847 mill. **Due in 5 Yrs** \$3,200 mill.
LT Debt \$7,845 mill. **LT Interest** \$360.0 mill.
(Tot. Interest Covered: 4.1x)
(NMF of Total Cap'l)
Leases, Uncapitalized Annual rentals \$72.0 mill.

No Defined Benefit Pension Plan

Pfd Stock None
Common Stock 4,249,501,448 shares
as of 10/20/20

MARKET CAP: \$24.6 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
2817.0	3014.5	3402.0	3799.1	4181.1	4570.1	5017.2	5425.1	5770.7	7794.0	*8000*	*8350*	Revenues (\$mill)	*9500*
26.2%	31.3%	33.5%	42.6%	45.0%	31.7%	33.9%	35.7%	35.1%	27.1%	*30.0%*	*32.0%*	Operating Margin	*50.0%*
273.7	267.9	266.3	253.3	266.4	272.2	269.0	298.6	300.7	468.0	*475*	*485*	Depreciation (\$mill)	*500*
163.2	427.0	470.9	377.2	493.2	509.7	745.9	647.9	1175.9	914.0	*1100*	*1300*	Net Profit (\$mill)	*3000*
2.8%	3.2%	.8%	40.8%	40.6%	42.9%	31.7%	48.8%	17.2%	23.6%	*30.0%*	*22.0%*	Income Tax Rate	*21.0%*
5.8%	14.2%	13.8%	9.9%	11.8%	11.2%	14.9%	11.9%	20.4%	11.7%	*13.8%*	*15.6%*	Net Profit Margin	*31.6%*
d1358	d970.6	d486.4	d1320	d764.0	d1935	d2026	d2351	d2325	d2290	*d2820*	*d2550*	Working Cap'l (\$mill)	*d850*
3021.8	3012.4	2431.0	3093.8	4493.9	5443.6	5842.8	6741.2	6884.5	7842.0	*8000*	*8000*	Long-Term Debt (\$mill)	*8000*
207.6	704.1	4039.6	2745.7	1309.8	d166.5	d792.0	d1524	d1817	d736.0	*d1000*	*d325*	Shr. Equity (\$mill)	*2000*
9.6%	15.6%	8.0%	8.2%	10.8%	12.5%	18.0%	15.7%	26.7%	15.6%	*15.5%*	*17.0%*	Return on Total Cap'l	*33.5%*
78.6%	60.6%	11.7%	13.7%	37.7%	- -	- -	- -	37.7%	- -	*NMF*	*NMF*	Return on Shr. Equity	*NMF*
78.6%	60.6%	11.7%	13.7%	37.7%	- -	- -	- -	37.7%	- -	*NMF*	*NMF*	Retained to Com Eq	*NMF*
- -	- -	- -	- -	- -	- -	6%	29%	17%	25%	*23%*	*19%*	All Div'ds to Net Prof	*13%*

CURRENT POSITION ($MILL.)

	2018	2019	9/30/20
Cash Assets	54.4	106.0	33.0
Receivables	98.0	670.0	582.0
Inventory (FIFO)	22.2	11.0	10.0
Other	303.6	216.0	204.0
Current Assets	478.2	1003.0	829.0
Accts Payable	735.1	1151.0	1088.0
Debt Due	3.4	2.0	2.0
Other	2064.2	2140.0	1924.0
Current Liab.	2802.7	3293.0	3014.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	9.0%	11.5%	*9.0%*
"Cash Flow"	- -	12.0%	*21.0%*
Earnings	- -	22.5%	*24.5%*
Dividends	- -	- -	*14.0%*
Book Value	- -	- -	*NMF*

Cal-endar	QUARTERLY REVENUES (\$ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1294.0	1347.6	1379.6	1403.9	5425.1
2018	1375.1	1432.3	1467.4	1495.9	5770.7
2019	1744.0	1977.0	2011.0	2062.0	7794.0
2020	1952.0	1874.0	2025.0	*2149*	*8000*
2021	*2000*	*2025*	*2075*	*2250*	*8350*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.04	.04	.06	d.01	.14
2018	.06	.06	.07	.06	.26
2019	.03	.06	.05	.05	.20
2020	.07	.05	.06	*.07*	*.25*
2021	*.08*	*.06*	*.06*	*.10*	*.30*

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.01	.01	.01	.011	.041
2018	.011	.011	.011	.012	.045
2019	.012	.012	.012	.013	.049
2020	.013	.013	.015	.015	.056
2021					

BUSINESS: Sirius XM Holdings, Inc. broadcasts a wide variety of programming (music, sports, talk, news, comedy, etc.) in the U.S. through two audio entertainment systems: SiriusXM and Pandora. As of 12/31/19, SiriusXM (and 360L) had about 34.9 million subscribers and Pandora had 6.2 mill. subscribers. It offers programming through satellite radio, streaming media through mobile, web, and connected devices. Revenues are supported by subscriptions and ad revenues. It has 4,354 employees. Officers/directors own less than 1% of stock; Liberty Media Corp., 71.74% (4/20 proxy). Inc.: DE. Chairman: Gregory B. Maffei. CEO: Jennifer Witz. Address: 1221 Avenue of the Americas, 35th Floor New York, NY 10020. Tel.: 212-584-5100. Internet: www.siriusxm.com.

Overall, Sirius likely put in a decent performance for 2020. Despite facing a difficult operating backdrop, as coronavirus and market headwinds hindered advertising revenues, the satellite radio operator likely registered top- and bottom-line advances. Indeed, contributions from recent acquisitions and market-share growth spurred revenues. And management's careful cost controls and strategic improvements helped widen margins, aiding profits. Too, stock buybacks boosted per-share comparisons. All told, share earnings likely increased 25%, on a 3% revenue gain last year.

The company ought to gain steam in the near term. Sirius surpassed its self-pay subscriber guidance in 2020, and closed the year with 30.9 million accounts, and anticipates they will increase another 2%-3% this year. Likewise, the integration of acquisitions, combined with other growth measures, builds our optimism about the company's prospects. Nevertheless, Sirius will probably record a \$1 billion noncash impairment charge associated with the Pandora addition (completed in February, 2019), which may hinder its earnings growth. Still, we imagine the top and bottom lines will advance a respective 3%-5% and 20% in 2021.

Sirius has been widening its audiences. We imagine the media conglomerate's recent foray into the podcast space, including Stitcher and SimpleCast, and investment in SoundCloud will be accretive to near-term earnings. Too, the company's focus on acquisitions or strategic partnerships, most recently with the auto industry and with other media makers, will better position Sirius for the long haul. Looking ahead, management will likely concentrate on bolstering its original branded content. And it may create a premium service to better monetize its library. Meanwhile, it will likely rely on technological investments to strengthen its streaming platforms.

These neutrally ranked shares hold wide long-term appreciation potential. What's more, we have raised the Safety rank on this issue to 3 (Average). Still, the company merits a below-average score for Financial Strength, due to its highly leveraged balance sheet.

Orly Seidman *January 29, 2021*

(A) Fully diluted earnings. Excludes non-recurring gains/(losses): '15, \$0.01, '12, \$0.44; '10, (\$0.02); '09, (\$0.05); '08, (\$2.20); '05, (\$0.03). Next earnings report due early Feb.
(B) Includes intangibles. In 2019, \$7.31 billion, or \$1.66 per share.
(C) In millions.
(D) Excl. special dividend of \$0.05, paid 12/28/12. Quarterly dividend instituted on 11/1/16 and historically paid in late February, May, August, and November.

Company's Financial Strength	C++
Stock's Price Stability	85
Price Growth Persistence	90
Earnings Predictability	65

BIO-TECHNE CORP. NDQ-TECH

RECENT PRICE 377.00 | P/E RATIO NMF (Trailing: NMF; Median: 35.0) | RELATIVE P/E RATIO NMF | DIV'D YLD 0.4% | VALUE LINE

TIMELINESS 2 Raised 12/11/20
SAFETY 2 Lowered 9/7/18
TECHNICAL 4 Lowered 2/19/21
BETA .80 (1.00 = Market)

High:	69.8	86.4	76.0	94.8	97.1	114.6	117.4	136.4	206.0	223.3	326.4	415.0	
Low:	55.6	62.0	63.1	62.6	82.5	83.9	79.9	95.7	128.1	134.6	155.2	310.6	

Target Price Range: 2024 | 2025 | 2026

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$293-$604	$449 (20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	320	(-15%)	-3%
Low	240	(-35%)	-10%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	173	195	204
to Sell	161	175	166
Hld's(000)	36599	36163	35990

Percent shares traded: 24, 16, 8

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	55.3	26.6
3 yr.	135.8	29.4
5 yr.	309.9	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
4.62	5.15	5.66	6.66	7.09	7.27	7.80	8.54	8.43	9.67	12.17	13.40	15.07	17.10	18.82	19.21	*21.25*	*23.20*	Sales per sh A	*27.30*
1.87	2.04	2.33	2.87	3.03	3.18	3.26	3.39	3.39	3.52	3.90	3.95	3.95	4.53	4.59	6.10	*7.15*	*8.45*	"Cash Flow" per sh	*9.20*
1.62	1.85	2.15	2.64	2.78	2.94	3.02	3.04	3.05	3.00	2.89	2.80	2.34	2.78	2.47	3.85	*5.00*	*6.25*	Earnings per sh A B	*7.00*
- -	- -	- -	- -	.75	1.03	1.07	1.11	1.18	1.23	1.27	1.28	1.28	1.28	1.28	1.28	*1.28*	*1.32*	Div'ds Decl'd per sh C	*1.52*
.30	.12	.20	.42	.18	.13	.10	.16	.61	.37	.54	.45	.41	.56	.67	1.35	*1.00*	*.70*	Cap'l Spending per sh	*.75*
6.93	8.64	11.09	12.61	12.26	13.55	15.78	18.31	20.02	21.49	22.80	23.60	25.42	28.69	30.73	35.92	*36.25*	*36.90*	Book Value per sh D	*40.90*
38.64	39.38	39.46	38.64	37.24	37.03	37.15	36.83	36.83	37.00	37.15	37.25	37.36	37.61	37.93	38.45	*40.00*	*42.00*	Common Shs Outst'g E	*44.00*
24.5	29.9	25.6	25.2	23.1	21.7	22.3	23.0	22.6	28.4	32.9	34.2	45.6	48.5	NMF	NMF	*Bold figures are*		Avg Ann'l P/E Ratio	*40.0*
1.30	1.61	1.36	1.52	1.54	1.38	1.40	1.46	1.27	1.49	1.66	1.80	2.29	2.62	NMF	NMF	*Value Line*		Relative P/E Ratio	*2.20*
- -	- -	- -	- -	1.2%	1.6%	1.6%	1.6%	1.7%	1.4%	1.3%	1.3%	1.2%	.9%	.7%	.6%	*estimates*		Avg Ann'l Div'd Yield	*.5%*

CAPITAL STRUCTURE as of 12/31/20
Total Debt $231.5 mill. **Due in 5 yrs** $12.5 mill.
LT Debt $219.0 mill. **LT Interest** $6.0 mill.
(13% of Cap'l)

Leases, Uncapitalized: Annual rentals $12.9 mill.

No Defined Benefit Pension Plan
Preferred Stock None
Common Stock 38,798,834 shares
as of 2/1/21

MARKET CAP: $14.6 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
290.0	314.6	310.6	357.8	452.2	499.0	563.0	643.0	714.0	738.7	*850*	*975*	Sales ($mill) A	*1200*
59.2%	56.8%	55.0%	50.0%	40.7%	38.7%	35.1%	31.2%	31.5%	19.9%	*25.0%*	*35.5%*	Operating Margin	*40.0%*
8.7	12.5	12.3	19.2	37.2	42.8	60.0	64.5	78.2	82.7	*85.0*	*90.0*	Depreciation ($mill)	*95.0*
112.3	112.3	112.6	110.9	107.7	104.5	87.7	106.1	96.1	151.7	*200*	*265*	Net Profit ($mill)	*310*
31.9%	30.7%	29.9%	31.3%	30.1%	29.2%	32.0%	15.8%	14.2%	17.1%	*25.0%*	*25.0%*	Income Tax Rate	*25.0%*
38.7%	35.7%	36.2%	31.0%	23.8%	20.9%	15.6%	16.5%	13.5%	20.5%	*23.5%*	*27.1%*	Net Profit Margin	*25.8%*
212.2	310.7	377.4	443.0	208.5	199.7	212.5	318.9	310.6	414.2	*425*	*475*	Working Cap'l ($mill)	*550*
- -	- -	- -	7.0	73.0	91.5	343.8	339.0	492.7	344.2	*200*	*200*	Long-Term Debt ($mill)	*200*
586.1	674.4	737.5	795.3	846.9	879.3	949.6	1079.1	1165.6	1381.2	*1450*	*1550*	Shr. Equity ($mill)	*1800*
19.2%	16.7%	15.3%	13.8%	11.8%	10.9%	7.1%	7.9%	6.9%	9.3%	*12.5%*	*15.5%*	Return on Total Cap'l	*15.5%*
19.2%	16.7%	15.3%	14.0%	12.7%	11.9%	9.2%	9.8%	8.2%	11.0%	*14.0%*	*17.0%*	Return on Shr. Equity	*17.0%*
12.4%	10.6%	9.4%	8.2%	7.2%	6.5%	4.3%	5.4%	4.1%	7.4%	*10.5%*	*13.5%*	Retained to Com Eq	*13.5%*
35%	37%	39%	41%	44%	46%	54%	45%	50%	32%	*26%*	*21%*	All Div'ds to Net Prof	*22%*

CURRENT POSITION ($MILL.)

	2019	2020	12/31/20
Cash Assets	166.0	270.8	283.0
Receivables	137.5	122.5	128.2
Inventory (FIFO)	91.0	103.1	106.5
Other	18.1	24.5	24.2
Current Assets	412.6	520.9	541.9
Accts Payable	16.2	23.0	24.2
Debt Due	12.5	12.5	12.5
Other	73.2	71.1	80.8
Current Liab.	101.9	106.6	117.5

ANNUAL RATES

of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Sales	10.0%	12.5%	*9.5%*
"Cash Flow"	5.5%	7.0%	*12.0%*
Earnings	1.0%	.5%	*12.5%*
Dividends	8.0%	1.0%	*3.0%*
Book Value	9.5%	8.0%	*4.5%*

Fiscal Year Ends	QUARTERLY SALES ($ mill.) A Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	144.6	154.2	163.9	180.3	643.0
2019	162.9	174.5	184.9	191.7	714.0
2020	183.2	185.0	194.7	175.8	738.7
2021	204.1	224.3	*200*	*221.6*	*850*
2022	*250*	*270*	*225*	*230*	*975*

Fiscal Year Ends	EARNINGS PER SHARE A B Sep.30	Dec.31	Mar.31	Jun.30	Full Fiscal Year
2018	.42	.35	.94	1.07	2.78
2019	.45	.43	1.15	.42	2.47
2020	.37	1.08	.92	1.48	3.85
2021	.83	1.62	*1.05*	*1.50*	*5.00*
2022	*1.15*	*1.80*	*1.30*	*2.00*	*6.25*

Cal-endar	QUARTERLY DIVIDENDS PAID C Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.32	.32	.32	.32	1.28
2018	.32	.32	.32	.32	1.28
2019	.32	.32	.32	.32	1.28
2020	.32	.32	.32	.32	1.28
2021	.32				

BUSINESS: Bio-Techne Corp. is a holding company. R&D Systems manufactures and sells more than 11,000 cytokines, enzymes, antibodies, and related biotech products (76% of '20 sales), used for research and clinical diagnostics. Clinical Controls (24%) are used to calibrate blood analysis instruments. Int'l sales accounted for 45.2% of '20 business; R&D, 8.8% of sales. 2020 deprec. rate: 23.4%. Acquired Genzyme's R&D products. Has 15.0% stake in ChemoCentryx (cytokine-related drugs). Has 2,250 employees. Off. & dir. own 4.1% of stock; All others aggregate, 24.6% (9/20 proxy). Chairman: R. Baumgartner. CEO: Charles Kummeth. Inc.: Minnesota. Address: 614 McKinley Pl., N.E., Minneapolis, MN 55413. Telephone: 612-379-8854. Internet: www.bio-techne.com.

Investor sentiment toward Bio-Techne stock is evident. At the recent quotation, these shares have increased roughly 25% in value since our December report and have recently flirted with their historical high. We are not too surprised with buyers' enthusiasm. Indeed, the equity has recovered lost ground and has been on a steady upward ascent since COVID-19-induced lows in early 2020. Several reasons for this are cited below.

A solid second-quarter fiscal 2021 performance (years end June 30th) likely emboldened investors. In the December period, sales and earnings (on an adjusted basis) increased 21% and 50%, respectively. Strong demand in the company's Proteins Sciences segment was a main contributor to the top line, adding $172.2 million, which represented a 22% year-over-year gain. The healthy revenue stream, cost-containment actions, and the creation of value-added products and services helped drive the commendable bottom-line progress, too.

We are optimistic that business fundamentals will improve through year-end and into fiscal 2022. Demand is partly heightened since many of Bio-Techne's tissue, biopsy, and other samples within the Proteins segment are used by customers for the discovery of therapies. At present, one of the most significant research arenas is the development of a vaccine for COVID-19. Although some vaccines have already been created, there is room for further candidates due to this highly unmet clinical need. Thus, we have raised our fiscal 2021 sales and earnings estimates to $850 million and $5.00 a share respectvely (our prior forecasts were $830 million and $4.60 a share). Moreover, the top and bottom lines should advance at a double-digit pace next year, too.

Longer-term prospects appear ill-defined. The diagnostic arena in which Bio-Techne operates is highly competitive and deferrable. However, we are confident that the company will continue to capture greater market share in high-growth segments through acquisitions and portfolio additions.

For now, investors may want to pass since the equity is trading well above our 3- to 5-year Target Price Range.

Nira Maharaj *March 5, 2021*

(A) Fiscal year ends the Friday closest to on June 30th.
(B) Diluted earnings. Excl. nonrecur. gain (losses): '17, ($0.31); '18, $0.53; '20, $1.97. May not sum due to rounding. Next earnings report due early May.
(C) Dividends paid in early March, June, September and December.
(D) Includes intangibles: In 2020: $1,244.8 million; $31.59/sh.
(E) In millions.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	70
Earnings Predictability	65

TETRA TECH, INC. NDQ-TTEK

RECENT PRICE 136.33 | P/E RATIO 39.0 (Trailing: 40.3, Median: 18.0) | RELATIVE P/E RATIO 1.82 | DIV'D YLD 0.5% | VALUE LINE 412

TIMELINESS 2 Raised 2/12/21
SAFETY 3 New 12/18/98
TECHNICAL 3 Lowered 1/22/21
BETA .90 (1.00 = Market)

High:	28.2	25.5	28.0	31.5	30.9	28.2	44.3	50.9	72.6	90.3	127.2	143.4
Low:	18.0	17.3	21.4	22.2	23.0	23.0	22.8	38.8	44.7	48.5	63.6	113.2

Target Price Range 2024 | 2025 | 2026

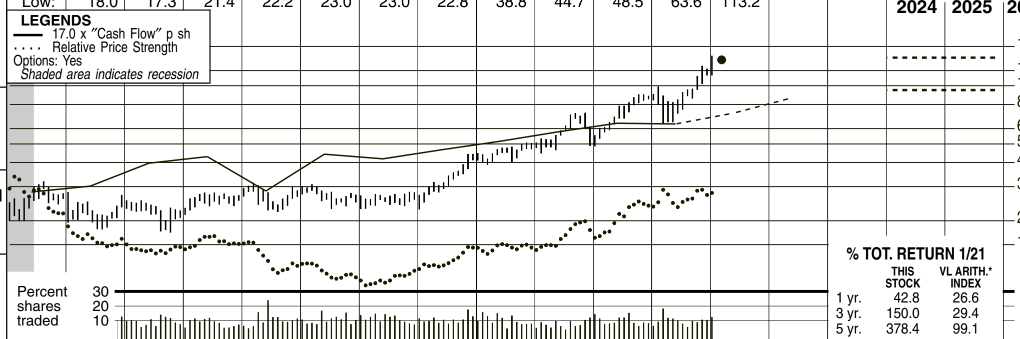
18-Month Target Price Range
Low-High: $90-$169 | Midpoint (% to Mid): $130 (-5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	140	(+5)	1%
Low	95	(-30%)	-8%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	132	129	126
to Sell	183	173	169
Hld's(000)	44933	44634	44704



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	42.8	26.6
3 yr.	150.0	29.4
5 yr.	378.4	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
15.76	16.62	17.35	20.80	22.63	23.65	28.68	31.68	31.57	29.72	28.94	33.82	36.40	39.76	43.79	43.66	*49.45*	*49.85*	Revenues per sh A C	*68.40*
.41	.88	1.03	1.33	1.66	1.78	2.33	2.53	1.68	2.60	2.46	2.74	3.03	3.40	3.76	3.73	*4.25*	*5.10*	"Cash Flow" per sh	*7.85*
.12	.66	.79	1.02	1.22	1.23	1.43	1.63	.70	1.66	1.66	1.88	2.14	2.64	3.17	3.26	*3.50*	*4.00*	Earnings per sh A B	*6.50*
--	--	--	--	--	--	--	--	--	.14	.30	.34	.38	.44	.54	.64	*.74*	*.78*	Div'ds Decl'd per sh E	*1.00*
.17	.20	.23	.30	.32	.35	.30	.39	.43	.31	.41	.21	.17	.18	.30	.23	*.30*	*.35*	Cap'l Spending per sh	*.40*
5.34	6.15	7.12	8.54	10.55	12.11	13.68	15.96	15.56	16.17	14.42	15.24	16.62	17.47	18.13	19.28	*20.80*	*22.55*	Book Value per sh	*29.85*
57.05	57.68	58.39	59.88	61.26	61.76	62.50	63.84	64.13	62.59	59.38	57.04	55.87	55.35	54.57	53.80	*53.00*	*52.00*	Common Shs Outst'g D	*47.50*
NMF	25.9	24.5	22.1	19.7	18.6	15.9	15.0	37.7	16.5	15.4	15.6	19.9	20.6	21.0	25.9	Bold figures are		Avg Ann'l P/E Ratio	*18.0*
NMF	1.40	1.30	1.33	1.31	1.18	1.00	.95	2.12	.87	.78	.82	1.00	1.11	1.12	1.33	Value Line		Relative P/E Ratio	*1.00*
--	--	--	--	--	--	--	--	--	.5%	1.2%	1.2%	.9%	.8%	.8%	.8%	estimates		Avg Ann'l Div'd Yield	*.9%*

CAPITAL STRUCTURE as of 12/27/20
Total Debt $302.2 mill. **Due in 5 Yrs** $302.2 mill.
LT Debt $276.0 mill. **LT Interest** $12.0 mill.
(Total int. earned 19.2x) (21% of Cap'l)

Leases, Uncapitalized Annual rentals $75.1 mill.

Pension Assets-9/20: $35.1 mill. **Oblig** $35.0 mill.

Common Stock 54,228,923 shs. as of 1/19/21

MARKET CAP: $7.4 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1792.3	2022.2	2024.8	1859.9	1718.7	1929.2	2034.0	2200.7	2389.6	2348.6	*2620*	*2800*	Revenues ($mill) A C	*3250*
11.3%	10.1%	6.4%	8.0%	11.7%	11.5%	11.5%	12.0%	10.9%	11.3%	*12.0%*	*13.5%*	Operating Margin	*15.5%*
55.7	56.9	62.6	54.5	44.2	45.6	45.8	38.6	28.8	24.6	*40.0*	*55.0*	Depreciation ($mill)	*65.0*
90.0	104.4	45.0	108.3	101.8	110.9	123.6	149.3	176.5	176.0	*185*	*210*	Net Profit ($mill)	*310*
33.8%	34.9%	34.0%	24.7%	31.9%	32.6%	30.3%	27.2%	19.1%	23.5%	*26.0%*	*25.0%*	Income Tax Rate	*25.0%*
5.0%	5.2%	2.2%	5.8%	5.9%	5.7%	6.1%	6.8%	7.4%	7.5%	*7.1%*	*7.5%*	Net Profit Margin	*9.5%*
307.4	355.5	388.5	394.7	373.4	454.3	504.3	432.3	309.8	206.3	*245*	*265*	Working Cap'l ($mill)	*590*
144.9	81.0	203.4	192.8	181.0	331.5	341.3	264.7	263.9	242.4	*265*	*280*	Long-Term Debt ($mill)	*315*
854.7	1019.0	997.8	1012.1	856.3	869.3	928.5	967.0	989.3	1037.3	*1105*	*1170*	Shr. Equity ($mill)	*1420*
9.3%	9.8%	4.1%	9.4%	10.2%	9.7%	10.2%	12.8%	14.7%	14.3%	*14.0%*	*15.5%*	Return on Total Cap'l	*19.5%*
10.5%	10.2%	4.5%	10.7%	11.9%	12.8%	13.3%	15.4%	17.8%	17.0%	*17.0%*	*18.0%*	Return on Shr. Equity	*22.0%*
10.5%	10.2%	4.5%	9.8%	9.8%	10.5%	11.0%	12.9%	14.8%	13.6%	*13.5%*	*14.5%*	Retained to Com Eq	*18.5%*
--	--	--	8%	18%	18%	18%	16%	17%	20%	*21%*	*19%*	All Div'ds to Net Prof	*16%*

CURRENT POSITION ($MILL.)	2019	2020	12/27/20
Cash Assets	120.7	157.5	163.4
Receivables	768.8	649.1	673.8
Other	190.3	193.2	198.2
Current Assets	1079.8	999.8	1035.4
Accts Payable	206.6	111.8	135.4
Debt Due	12.6	49.3	26.2
Other	550.8	632.4	593.1
Current Liab.	770.0	793.5	754.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	6.5%	7.0%	*8.5%*
"Cash Flow"	8.5%	10.0%	*13.5%*
Earnings	10.0%	17.5%	*13.5%*
Dividends	--	30.0%	*11.0%*
Book Value	6.0%	3.5%	*13.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A C Dec.Per.	Mar.Per.	Jun.Per.	Sep.Per.	Full Fiscal Year
2018	544.8	532.8	570.4	552.7	2200.7
2019	553.3	585.4	623.2	627.7	2389.6
2020	614.0	584.5	560.3	589.8	2348.6
2021	605.2	*664.8*	*670*	*680*	*2620*
2022	*685*	*695*	*705*	*715*	*2800*

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.Per.	Mar.Per.	Jun.Per.	Sep.Per.	Full Fiscal Year
2018	.65	.54	.71	.75	2.64
2019	.70	.70	.89	.88	3.17
2020	.84	.73	.78	.91	3.26
2021	.96	*.80*	*.85*	*.89*	*3.50*
2022	*1.05*	*.90*	*.95*	*1.10*	*4.00*

Cal-endar	QUARTERLY DIVIDENDS PAID E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.09	.10	.10	.10	.39
2018	.10	.12	.12	.12	.46
2019	.12	.15	.15	.15	.57
2020	.15	.17	.17	.17	.66
2021	.17				

BUSINESS: Tetra Tech, Inc. is an international provider of engineering and management consulting services to public agencies and private corporations. The company operates in the water, environment, infrastructure, resource management, energy, and global development arenas. Revenue breakdown for 2020: federal government, 33%; U.S. commercial, 22%; International, 30%; State & Local Government, 15%. Employees: About 20,000. Officers & directors own 1.7% of common stock; BlackRock, Inc., 12.4%; Vanguard Group, 10.0%; (1/21 proxy). Chairman, CEO, and President: Dan Batrack. Incorporated: Delaware. Address: 3475 East Foothill Boulevard, Pasadena, California 91107. Telephone: 626-351-4664. Internet: www.tetratech.com.

Tetra Technologies recorded mixed fiscal first-quarter results (ended December 27, 2020). Revenues were slightly down around $605.2 million, aided by increased demand from the U.S. federal and state business lines. Most notably, projects expanded in municipal water programs. However, project delays occurred in the United States, which was hurt by travel restrictions limiting business. Meanwhile, revenues were weaker in Asia and the United Kingdom. Thanks to strong orders from the Department of Defense, Department of Energy, and U.S. E.P.A., gross margins improved in the government services group. Meantime, costs declined due to reduced travel and other expenses, allowing earnings to increase to $0.96 per share during the quarter.

The company should register better results going forward. Tetra Tech will convert its backlog of $3.19 billion into sales, especially as the worldwide economy recovers from the coronavirus pandemic. Greater amounts will likely be spent on clean infrastructure, as several nations made pledges to make their economies greener. All told, we think the company will earn $3.50 per share in fiscal 2021.

The long-term outlook is bright here. Revenues will likely expand at a decent rate in the years ahead, as projects delayed by COVID-19 finally come into play. Moreover, the company continues to make inroads with the U.S. government. On point, we think that an infrastructure deal appears likely during the Biden Administration. Overall, we project earnings will advance to $4.00 per share in 2022 and $6.50 by 2024-2026.

The dividend adds some appeal. The payout is well covered by earnings and has ample room to grow, but the yield does not compare well to others in the *Survey*. Also of note, the company bought back around $15 million in stock in the fiscal first quarter and will likely reduce the share count while supporting share-net growth.

Shares of Tetra Tech are ranked Above Average (2) for Timeliness. This stock is trading well within our 3- to 5-year Target Price Range. The price-to-earnings ratio is also well above its historical levels. We suggest most investors wait for a price dip.

John E. Seibert III *February 19, 2021*

(A) Fisc. year ends around Sept. 30th. (B) Dil. egs. Excl. extra. and nonrec. gains/(losses): '05, ($1.87); '06 (3¢); '09, 21¢; '10, 1¢; '15, ($1.01); '16, (26¢); '17, 9¢; '18, (22¢); '19, (33¢); '20, (10¢). Results may not sum due to rounding. Next egs. report due early May. (C) Reported rev's. net of sub. costs. Rev's. from 2005 on excl. wireless comm's. unit. Revenue before 2006 do not reflect the elimination of inter-segment revenue. (D) In mill. (E) Div. initiated June 2014. Paid by early March. June, Sept., and mid-Dec.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	65
Earnings Predictability	70

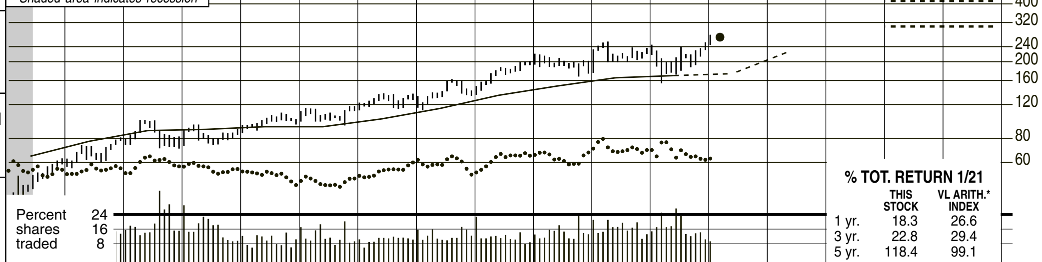
WATERS CORP. NYSE-WAT

RECENT PRICE **268.81** | P/E RATIO **28.3** (Trailing: 33.6; Median: 21.0) | RELATIVE P/E RATIO **1.38** | DIV'D YLD **Nil** | VALUE LINE

TIMELINESS 1 Raised 2/5/21
SAFETY 2 Raised 5/27/11
TECHNICAL 4 Lowered 1/15/21
BETA .95 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	81.0	100.0	94.5	108.9	117.7	137.4	162.5	202.0	220.2	255.2	252.7	276.8
Low:	56.0	70.9	73.0	85.0	93.6	111.8	112.0	134.7	167.9	175.0	154.4	244.8

LEGENDS
— 16.0 x "Cash Flow" p sh
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range
2024 | 2025 | 2026

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$183-$362	$273 (0%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	415	(+55%)	*11%*
Low	305	(+15%)	*3%*

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	199	231	209
to Sell	320	254	254
Hld's(000)	58854	56935	55190

% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	18.3	26.6
3 yr.	22.8	29.4
5 yr.	118.4	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
11.00	12.63	14.59	16.09	15.92	17.89	20.38	20.62	22.45	23.93	25.07	27.09	29.10	33.10	38.45	*38.12*	*38.70*	*43.05*	Sales per sh	*52.95*
2.61	2.77	3.18	4.00	4.04	4.84	5.50	5.58	5.76	5.75	6.31	7.16	8.38	9.34	10.32	*10.59*	*11.00*	*14.25*	"Cash Flow" per sh	*19.45*
1.99	2.25	2.62	3.25	3.34	4.06	4.69	5.19	5.20	5.07	5.65	6.41	7.49	8.05	8.69	8.36	*9.35*	*12.75*	Earnings per sh A	*17.10*
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	*Nil*	*Nil*	Div'ds Decl'd per sh	*Nil*
.48	.51	.60	.71	1.00	.68	.94	1.17	1.40	1.10	1.23	1.19	1.08	1.31	2.62	2.62	*1.60*	*1.65*	Cap'l Spending per sh	*2.00*
2.69	3.57	5.80	6.75	9.02	11.64	13.50	16.42	20.79	22.79	25.27	28.77	28.16	21.44	d3.46	d3.46	*5.20*	*17.65*	Book Value per sh B	*66.15*
105.34	101.37	100.98	97.89	94.12	91.85	90.83	89.39	84.82	83.15	81.47	80.02	79.34	73.12	62.59	*62.05*	*62.25*	*62.35*	Common Shs Outst'g C	*62.50*
21.1	19.6	24.3	17.7	14.4	16.7	17.9	16.0	18.8	21.1	22.3	21.7	23.2	24.4	25.4	24.9	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	*21.0*
1.12	1.06	1.29	1.07	.96	1.06	1.12	1.02	1.06	1.11	1.12	1.14	1.17	1.32	1.35	1.25	*estimates*		Relative P/E Ratio	*1.15*
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			Avg Ann'l Div'd Yield	*Nil*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $1571.3 mill. **Due in 5 Yrs** $300.0 mill.
LT Debt $1421.3 mill **LT Interest** $49.1 mill.
(Total interest coverage: 12.4x) (103% of Capital)
Leases, Uncapitalized Annual rentals $29.5 mill.
Pension Assets-12/19 $96.8 mill.
Oblig. $125.6 mill.

Preferred Stock None

Common Stock 61,925,972 shs.
as of 10/23/20

MARKET CAP: $16.6 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1851.2	1843.6	1904.2	1989.3	2042.3	2167.4	2309.1	2419.9	2406.6	2365.4	*2410*	*2685*	Sales ($mill)	*3310*
32.7%	30.9%	29.7%	28.9%	30.7%	31.2%	34.0%	33.0%	31.7%	34.0%	*37.5%*	*37.5%*	Operating Margin	*37.5%*
66.4	37.4	38.2	46.4	45.3	51.7	61.5	58.0	53.8	135.4	*105*	*110*	Depreciation ($mill)	*145*
433.0	461.4	450.0	431.6	469.1	521.5	603.7	625.2	592.2	521.6	*580*	*780*	Net Profit ($mill)	*1070*
15.0%	5.4%	8.2%	12.0%	13.4%	13.1%	11.8%	14.5%	12.7%	14.6%	*14.5%*	*14.5%*	Income Tax Rate	*14.5%*
23.4%	25.0%	23.6%	21.7%	23.0%	24.1%	26.1%	25.8%	24.6%	22.1%	*24.1%*	*23.7%*	Net Profit Margin	*32.3%*
1340.2	1753.5	2068.8	2272.1	2649.4	3115.2	3663.9	2214.3	721.2	721.2	*705*	*735*	Working Cap'l ($mill)	*735*
700.0	1045.0	1190.0	1240.0	1493.0	1702.0	1897.5	1148.2	1580.8	*1470*	*1695*	*1695*	Long-Term Debt ($mill)	*1720*
1226.6	1467.4	1763.2	1894.7	2058.9	2301.9	2233.8	1567.3	d216.3	232.1	*325*	*1100*	Shr. Equity ($mill)	*4135*
22.9%	18.6%	15.7%	14.2%	13.7%	13.6%	14.9%	23.9%	45.2%	30.6%	*28.0%*	*25.5%*	Return on Total Cap'l	*18.5%*
35.3%	31.4%	25.5%	22.8%	22.8%	22.7%	27.0%	39.9%	39.9%	NMF	*NMF*	*28.0%*	Return on Shr. Equity	*26.0%*
35.3%	31.4%	25.5%	22.8%	22.8%	22.7%	27.0%	39.9%	39.9%	NMF	*NMF*	*28.0%*	Retained to Com Eq	*26.0%*
--	--	--	--	--	--	--	--	--	--	*Nil*	*Nil*	All Div'ds to Net Prof	*Nil*

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	1735.2	337.1	397.1
Receivables	568.3	587.7	494.4
Inventory	291.6	320.6	326.9
Other	68.1	67.1	73.3
Current Assets	2663.2	1312.5	1291.7
Accts Payable	68.2	49.0	60.4
Debt Due	0.2	100.4	150.0
Other	380.5	441.9	511.8
Current Liab.	448.9	591.3	722.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	8.0%	8.5%	*4.5%*
"Cash Flow"	9.5%	10.5%	*5.5%*
Earnings	10.0%	9.5%	*6.0%*
Dividends	--	--	*Nil*
Book Value	8.0%	-5.0%	*7.5%*

Cal-endar	QUARTERLY SALES ($ mill.) Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	530.7	596.2	578.0	715.0	2419.9
2019	513.9	599.2	577.3	716.2	2406.6
2020	464.9	520.0	593.8	786.7	2365.4
2021	*515*	*580*	*580*	*735*	*2410*
2022	*564*	*645*	*645*	*831*	*2685*

Cal-endar	EARNINGS PER SHARE A Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2018	1.59	1.95	1.92	2.59	8.05
2019	1.51	2.08	2.07	3.12	8.69
2020	.86	1.98	2.03	3.49	8.36
2021	*1.83*	*2.20*	*2.20*	*2.92*	*9.15*
2022	*2.30*	*3.00*	*3.00*	*4.45*	*12.75*

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	NO CASH DIVIDENDS BEING PAID				
2018					
2019					
2020					
2021					

BUSINESS: Waters Corp. manufactures, distributes, and services high-performance and ultra-performance liquid chromatography (HPLC and UPLC) and mass spectrometry systems, chemistry consumables, and related products through its Waters division (88% of '19 sales) and thermal analysis, rheometry, and calorimetry instruments through its TA division (12%). HPLC and UPLC are used to identify and analyze the components of a variety of chemicals and materials. Acquired Thar Instruments 2/09. Vanguard, 11.8% of common stock; MFS Co. 9.1%; BlackRock, 8.3%; Off. & dir., 1.5% (4/20 proxy). Chairman: Flemming Ornskov, MD; President & CEO: Udit Batra, Ph.D. Inc.: DE. Address: 34 Maple Street, Milford, MA 01757. Tel: 508-482-2314. Internet: www.waters.com.

Waters Corp. reported much better-than-expected fourth-quarter results. Net sales of $786.7 increased 9.8% from the previous year level, while net income on a GAAP basis was $218.3 million, or $3.49 per diluted share. Contributing to the strong showing was an increase in sales to the pharmaceutical market, which were up 17.3% to $460.4 million. Sales in China were particularly strong, increasing 21.3% year to year. Essentially, performance has recovered from the second quarter trough, when sales declined 13.2% due to the pandemic. Results were uneven, segment by segment. Sales of instrument systems, which have been weak most of the year, recovered, growing 6.3% to $400.4 million, while chemistry consumables were increased 17.2%, to $131.6 million. The impact of COVID-19 on academic and governmental labs remains clear, as sales in this market were down 13.2%. Still, we expect the recovery to gain momentum as we move through the year, as reflected by our top and bottom-line estimates for 2021 of $2.41 billion and $9.15 per share.

Four months into the job, CEO Udit Batra has a lengthy list of items needed to improve performance. He notes that sales have ceased to grow as the company has modestly ceded market share in recent years. Waters has yet to catch up to key recent changes in the market, including e-commerce for consumables, the increased focus on biologics, and the emergence of mid-size and small contract research organizations. This is despite the fact that the product offerings in mass spectometry and liquid chromatography, as well as thermal analytics, are strong. The research and technological leadership remains, but there have been missteps in commercial execution. Notable successes are routine, including the recently introduced BioAccord Mass Spec/LC system. He believes growth will return with better execution. This is reflected in our newly introduced 2022 sales and share-net estimates of $2.69 billion and $12.75.

Waters shares are ranked 1 (Highest) for Timeliness and have worthwhile 3- to 5-year appreciation potential, as well. Investors seem fully aligned with the changes Mr. Batra is seeking.

Glenn Pierr Johnson *February 12, 2021*

(A) Diluted earnings. Excludes non-recurring gains (losses): '04, ($0.10); '05, ($0.25); '06, ($0.12); '08 ($0.04); '18 ($0.40). Figures may not sum due to rounding. Next earnings report due late July.
(B) Includes intangibles. In 2019: $596.3 mill., $9.53/sh.
(C) In millions.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	80
Earnings Predictability	100

WEST PHARM. NYSE-WST

RECENT PRICE 297.02 | P/E RATIO NMF (Trailing: NMF; Median: 31.0) | RELATIVE P/E RATIO NMF | DIV'D YLD 0.2% | VALUE LINE

TIMELINESS 1 Raised 6/26/20
SAFETY 2 Raised 11/22/13
TECHNICAL 3 Raised 2/5/21
BETA .85 (1.00 = Market)

High:	22.4	24.0	28.0	50.6	55.3	64.6	86.5	103.4	125.1	152.1	305.0	312.1
Low:	16.4	17.8	18.7	27.3	39.1	48.7	53.9	78.0	82.7	93.1	124.5	280.0

Target Price Range 2024 | 2025 | 2026

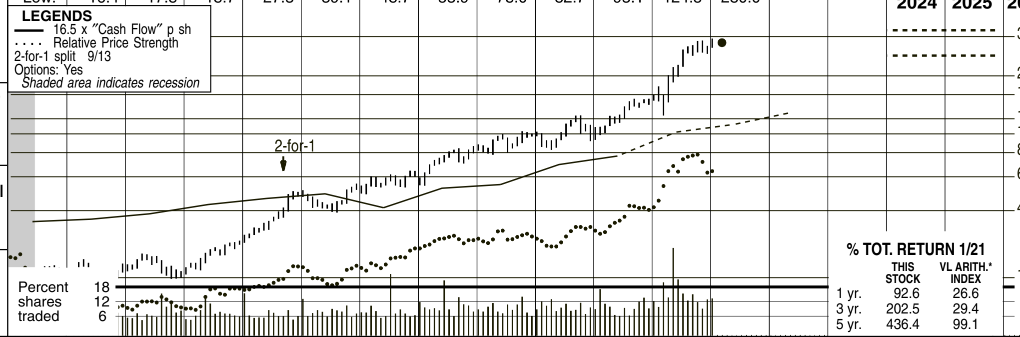
18-Month Target Price Range
Low-High: $206-$409; Midpoint (% to Mid): $308 (5%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	345	(+15%)	4%
Low	255	(-15%)	-3%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	232	287	289
to Sell	203	225	256
Hld's(000)	66961	68671	67658



% TOT. RETURN 1/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	92.6	26.6
3 yr.	202.5	29.4
5 yr.	436.4	99.1

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
11.98	13.88	15.79	16.07	16.00	16.59	17.69	19.02	19.44	19.91	19.36	20.64	21.64	23.18	24.83	28.85	32.20	37.05	Sales per sh	46.45
1.58	1.79	2.15	2.18	2.13	2.19	2.34	2.61	2.81	2.97	2.51	3.17	3.32	4.20	4.66	6.20	6.80	7.85	"Cash Flow" per sh	9.65
.70	.97	1.19	1.19	1.06	1.05	1.17	1.38	1.57	1.75	1.30	1.91	1.99	2.74	3.21	4.60	5.15	5.85	Earnings per sh A	7.35
.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.46	.50	.54	.58	.62	.66	.70	.84	Div'ds Decl'd per sh B ■	1.25
.93	1.37	2.00	2.12	1.59	1.07	1.42	1.97	2.16	1.68	1.82	2.33	1.77	1.41	1.71	1.90	2.00	2.00	Cap'l Spending per sh	2.25
5.71	6.30	7.51	7.45	8.77	9.39	9.72	10.94	12.88	13.40	14.16	15.29	17.32	18.84	21.23	24.50	28.75	32.40	Book Value per sh C	40.70
58.43	65.80	64.60	65.40	66.00	66.60	67.40	66.60	70.40	71.40	72.30	73.10	73.90	74.10	74.10	73.50	73.00	72.50	Common Shs Outst'g D	70.00
19.0	19.6	18.8	18.0	17.1	18.1	17.8	17.2	23.7	26.1	43.8	38.1	45.6	37.0	39.5	48.8	Bold figures are		Avg Ann'l P/E Ratio	41.0
1.01	1.06	1.00	1.08	1.14	1.15	1.12	1.09	1.33	1.37	2.21	2.00	2.29	2.00	2.10	2.38	Value Line		Relative P/E Ratio	2.30
1.7%	1.3%	1.2%	1.4%	1.7%	1.7%	1.7%	1.6%	1.0%	.9%	.8%	.7%	.6%	.6%	.5%	.3%	estimates		Avg Ann'l Div'd Yield	.4%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $255.7 mill. Due in 5 Yrs $90.0 mill.
LT Debt $253.4 mill. LT Interest $8.3 mill.
(13% of Cap'l)

Leases, Uncapitalized Annual rentals $12.1 mill.

Pension Assets-12/19 $244.1 mill. Oblig. $287.9 mill.

Pfd Stock None
Common Stock 73,927,188 shares as of 10/19/20
MARKET CAP: $22.0 billion (Large Cap)

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		24-26
1192.3	1266.4	1368.4	1421.4	1399.8	1509.1	1599.1	1717.4	1839.9	2120	2350	2685	Sales ($mill)	3250
16.2%	16.8%	18.1%	18.8%	19.6%	20.7%	20.3%	20.2%	21.7%	25.0%	26.0%	26.5%	Operating Margin	26.5%
75.7	76.9	85.2	84.8	86.1	88.1	94.3	104.4	103.4	105	112	120	Depreciation ($mill)	150
82.0	97.1	112.3	127.1	95.6	143.6	150.7	206.9	241.7	350	385	450	Net Profit ($mill)	525
24.8%	27.3%	27.3%	27.9%	22.7%	28.7%	36.4%	17.2%	20.2%	20.0%	22.0%	23.0%	Income Tax Rate	25.0%
6.9%	7.7%	8.2%	8.9%	6.8%	9.5%	9.4%	12.0%	13.1%	16.5%	16.4%	16.8%	Net Profit Margin	16.2%
228.8	295.5	413.8	406.8	359.4	400.9	464.0	610.7	717.1	900	1150	1300	Working Cap'l ($mill)	1750
299.3	378.8	371.3	309.5	228.9	226.2	197.0	196.0	255.0	240	225	200	Long-Term Debt ($mill)	125
654.9	728.9	906.4	956.9	1023.9	1117.5	1279.9	1396.3	1573.2	1800	2100	2350	Shr. Equity ($mill)	2850
9.5%	9.5%	9.5%	10.7%	8.1%	11.0%	10.5%	13.3%	13.5%	17.0%	16.5%	16.5%	Return on Total Cap'l	17.0%
12.5%	13.3%	12.4%	13.3%	9.3%	12.9%	11.8%	14.8%	15.4%	19.5%	18.5%	19.0%	Return on Shr. Equity	18.5%
9.0%	9.9%	9.4%	10.2%	6.2%	9.6%	8.7%	11.8%	12.5%	17.0%	16.0%	16.5%	Retained to Com Eq	15.5%
28%	26%	24%	23%	34%	25%	26%	20%	19%	14%	13%	14%	All Div'ds to Net Prof	17%

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	337.4	439.1	519.4
Receivables	288.2	319.3	373.0
Inventory (LIFO)	214.5	235.7	294.9
Other	54.3	64.6	51.0
Current Assets	894.4	1058.7	1238.3
Accts Payable	130.4	156.8	180.3
Debt Due	.1	2.3	2.3
Other	153.2	182.5	265.1
Current Liab.	283.7	341.6	447.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '24-'26
Sales	4.0%	3.5%	11.0%
"Cash Flow"	6.5%	7.5%	14.0%
Earnings	9.0%	11.0%	17.0%
Dividends	7.0%	8.5%	12.0%
Book Value	9.0%	9.0%	12.0%

Cal-endar	QUARTERLY SALES ($ mill.) Mar.Per	Jun.Per	Sep.Per	Dec.31	Full Year
2018	415.7	447.5	431.7	422.5	1717.4
2019	443.5	469.7	456.1	470.6	1839.9
2020	491.5	527.2	548.0	553.3	2120
2021	575	580	585	610	2350
2022	650	675	650	710	2685

Cal-endar	EARNINGS PER SHARE A Mar.Per	Jun.Per	Sep.Per	Dec.31	Full Year
2018	.58	.75	.73	.69	2.74
2019	.73	.88	.75	.84	3.21
2020	.99	1.21	1.09	1.31	4.60
2021	1.10	1.35	1.25	1.45	5.15
2022	1.30	1.50	1.40	1.65	5.85

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.13	.13	.13	.14	.53
2018	.14	.14	.14	.15	.57
2019	.15	.15	.15	.16	.61
2020	.16	.16	.16	.17	.65
2021	.17				

BUSINESS: West Pharmaceutical Services manufactures systems and component parts (stoppers, seals, syringe components) used in the delivery of injectible drugs. Also supplies packaging and delivery system components to food processors and makers of personal care products. Its West Monarch Analytical Labs division provides testing services that help drug companies meet closure/packaging regulatory guidelines. Foreign sales: 55.7% of '19 total; R&D: 2.1%. Has about 8,200 employees. Officers & directors own about 1.6% of common; BlackRock, 11.0%; Vanguard, 10.1%, T. Rowe Price, 9.2% (3/20 Proxy). President & CEO: Eric M. Green. Inc.: PA. Address: 530 Herman O. West Drive, Exton, PA 19341. Telephone: 610-594-2900. Internet: www.westpharma.com.

West Pharmaceutical Services probably wrapped up 2020 in strong fashion. While the company was not due to report its fourth-quarter results until after this Issue went to press, we see no reason to suspect that the top- and bottom-line strength enjoyed in the first nine months came to an end. Indeed, West likely continued to benefit from increased demand for components used in treatments as well as potential vaccines undergoing testing. Guidance further underpins our optimism, with management looking for the top line to come in between $2.10 billion and $2.22 billion for all of 2020, thanks to a 14%-15% organic sales advance. The midpoint of the range points to a 17% increase, up a few percentage points from the trailing nine-month average. It also said that it expects share earnings to tally $4.50 to $4.55, which at the midpoint suggests a 45% jump. The company has consistently reported quarterly bottom-line beats, so our EPS estimate stands above the upper ends of leadership's outlook.

We look for the momentum to continue over the next couple of years. The ongoing COVID-19 pandemic has shown that West is well situated to benefit from the healthy industry trends that we think are likely to persist. The company generates solid cash flow, too, which should aid in any growth initiatives. In this vein, we see 2021 EPS coming in at $5.15, representing a 10%-15% increase, on an 11% top-line gain. Our initial 2022 forecast calls for similar growth trends.

These shares have rallied in recent months and are trading just shy of their high-water mark. They are favorably ranked for Timeliness and may appeal to momentum accounts, but those with a longer-term investment horizon are advised to be careful here. Yes, we like the company's growth prospects, but the stock is trading within our 2024-2026 Target Price Range and thus offers below-average three- to five-year price appreciation potential. It remains expensive on a price-to-earnings basis, too. We think patient investors would be wise to await a pullback before committing funds here. West pays a dividend, but the yield is well below average and probably not enough to entice prospective investors.

Andre J. Costanza *February 12, 2021*

(A) Diluted earnings. Excl. nonrec. gains/(losses): '05, (6¢); '07, (16¢); '08, 6¢; '09, 01¢; and '10, (11¢); GAAP as of 2015. May not add due to rounding. Next earnings report due late April. (B) Dividends historically paid early Feb, May, Aug., and Nov. ■ Dividend reinvestment plan available. (C) Incl. intangibles. On 12/31/19: $137.6 mill., $1.86/share. (D) In millions, adjusted for splits.

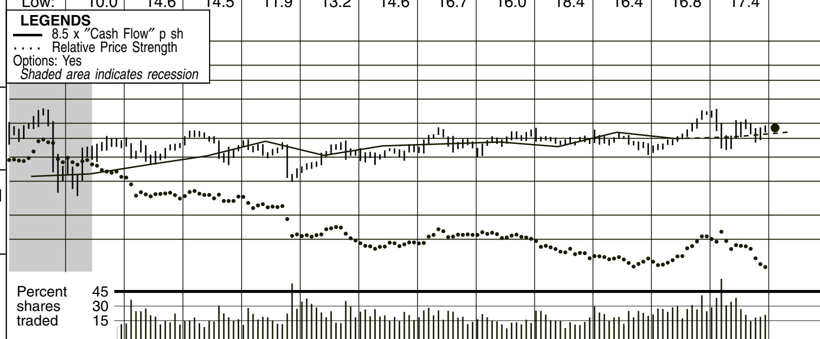
Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	100
Earnings Predictability	60

WESTERN UNION NYSE-WU

RECENT PRICE	22.71	P/E RATIO	11.5 (Trailing: 13.1 / Median: 12.0)	RELATIVE P/E RATIO	0.53	DIV'D YLD	4.0%	VALUE LINE

TIMELINESS 2 Raised 12/25/20
SAFETY 3 New 11/24/06
TECHNICAL 4 Lowered 1/22/21
BETA .80 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	20.6	20.3	22.0	19.8	19.5	18.7	22.8	22.3	22.7	22.2	28.0	28.5
Low:	10.0	14.6	14.5	11.9	13.2	14.6	16.7	16.0	18.4	16.4	16.8	17.4



Target Price Range
2023 | 2024 | 2025
64 48 40 32 24 20 16 12 8 6

18-Month Target Price Range
Low-High: $17-$36 — Midpoint (% to Mid): $27 (15%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+55%)	14%
Low	25	(+10%)	6%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	262	217	244
to Sell	297	323	269
Hld's(000)	432924	428590	418396

% TOT. RETURN 12/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-14.7	18.8
3 yr.	29.7	29.9
5 yr.	47.3	81.5

The Western Union Company, a leader in global money transfer processes and services was spunoff in a 100% tax-free offering to the shareholders of First Data Corp. on September 29, 2006. Approximately 765 million shares of common stock were distributed.

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
7.94	8.87	9.90	10.04	10.75	10.92	11.26	12.04	12.67	12.66	11.85	13.10	Revenues per sh	16.15
1.72	1.91	2.28	1.92	2.16	2.21	2.26	2.14	2.53	2.35	2.40	2.55	"Cash Flow" per sh	3.25
1.42	1.57	1.74	1.43	1.59	1.62	1.66	1.60	1.87	1.71	1.85	1.95	Earnings per sh A	2.45
.25	.31	.43	.50	.50	.62	.64	.70	.76	.80	.90	.94	Div'ds Decl'd per sh D	1.06
.08	.09	.11	.15	.13	.19	.14	.15	.31	.12	.10	.15	Cap'l Spending per sh	.25
.89	1.44	1.64	2.00	2.49	2.80	1.87	d1.07	d.70	d.09	d.05	d.05	Book Value per sh B	.45
654.00	619.40	572.10	552.20	521.50	502.40	481.50	459.00	441.20	418.00	411.20	390.00	Common Shs Outst'g C	340.00
12.0	12.1	9.7	11.5	10.5	12.0	11.8	12.3	10.4	12.5	12.9		Avg Ann'l P/E Ratio	12.0
.76	.76	.62	.65	.55	.60	.62	.62	.56	.68	.65		Relative P/E Ratio	.65
1.5%	1.6%	2.5%	3.0%	3.0%	3.2%	3.3%	3.6%	3.9%	3.7%	4.0%		Avg Ann'l Div'd Yield	3.6%
5192.7	5491.4	5664.8	5542.0	5607.2	5483.7	5422.9	5524.3	5589.9	5292.1	4880	5100	Revenues ($mill)	5500
29.4%	29.6%	28.6%	24.7%	25.2%	25.4%	24.3%	21.7%	24.8%	24.7%	24.0%	24.0%	Operating Margin	25.0%
175.9	192.6	246.1	262.8	271.9	270.2	263.2	262.9	264.7	257.7	230	240	Depreciation ($mill)	270
949.9	992.7	1056.6	798.4	852.4	837.8	824.2	718.0	851.9	724.6	755	760	Net Profit ($mill)	835
20.5%	24.9%	12.8%	13.9%	12.0%	11.0%	9.7%	11.5%	14.1%	20.4%	16.0%	16.0%	Income Tax Rate	16.0%
18.3%	18.1%	18.7%	14.4%	15.2%	15.3%	15.2%	13.0%	15.2%	13.7%	15.5%	14.9%	Net Profit Margin	15.1%
1280.4	533.5	1002.0	1217.3	609.8	308.6	d618.4	d1185	d645.5	d171.1	d360	d295	Working Cap'l ($mill)	d205
3289.9	3583.2	4029.2	4213.0	3720.4	3225.6	2786.1	3033.6	3308.7	3229.3	750	800	Long-Term Debt ($mill)	1000
582.7	894.8	940.6	1104.7	1300.4	1404.9	902.2	d491.4	d309.8	d39.5	d25.0	d15.0	Shr. Equity ($mill) B	150
26.7%	24.2%	23.1%	16.9%	18.7%	19.9%	24.4%	31.0%	30.9%	27.2%	NMF	NMF	Return on Total Cap'l	NMF
NMF	NMF	NMF	72.3%	65.5%	59.6%	91.4%	NMF	NMF	NMF	NMF	NMF	Return on Shr. Equity	NMF
NMF	NMF	NMF	47.2%	45.2%	37.1%	56.8%	NMF	NMF	NMF	NMF	NMF	Retained to Com Eq	NMF
17%	20%	24%	35%	31%	38%	38%	45%	40%	47%	49%	48%	All Div'ds to Net Prof	43%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $3036.5 mill. **Due in 5 Yrs** $2000 mill.
LT Debt $3036.5 mill. **LT Interest** $50.0 mill.
(Total interest coverage: 7.6x)
(NMF of Cap'l)

Leases, Uncapitalized Annual rentals $44.1 mill.

Pension Assets 12/19 $237.1 mill.
Oblig. $248.5 mill.

Common Stock 411,120,751 shares

MARKET CAP: $9.3 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	973.4	1450.5	1251.4
Receivables	- -	- -	- -
Inventory	- -	- -	- -
Other	3813.8	3296.7	3589.4
Current Assets	4787.2	4747.2	4840.8
Accts Payable	564.9	601.9	457.2
Debt Due	- -	- -	- -
Other	4867.8	4316.4	4515.9
Current Liab.	5432.7	4918.3	4973.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	5.5%	4.0%	4.5%
"Cash Flow"	5.0%	2.0%	5.5%
Earnings	3.5%	1.5%	6.0%
Dividends	32.0%	9.5%	6.0%
Book Value	- -	- -	NMF

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1302	1379	1405	1438	5524.3
2018	1389	1411	1388	1401	5589.9
2019	1337	1340	1307	1308	5292.1
2020	1190	1115	1307	1268	4880
2021	1250	1270	1280	1300	5100

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.33	.35	.51	.41	1.60
2018	.46	.47	.46	.48	1.87
2019	.39	.45	.49	.38	1.71
2020	.42	.39	.57	.47	1.85
2021	.46	.47	.52	.50	1.95

Cal-endar	QUARTERLY DIVIDENDS PAID D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.175	.175	.175	.175	.70
2018	.190	.190	.190	.190	.76
2019	.200	.200	.200	.200	.80
2020	.225	.225	.225	.225	.90
2021					

BUSINESS: The Western Union Company is a leader in global money movement and payment services. Services are available through a global network of roughly 510,000 agent locations in more than 200 countries. About 90% of locations are outside of the United States. Spunoff from First Data Corp. on 9/29/06. Consumer segment accounted for about 83% of '19 revenues; Business Solutions, 7%; other, 10%. International consisted of 62% of revenues. Employs 11,500. President & CEO: Hikmet Ersek. Chairman: Jack Greenberg. BlackRock owns 13.8% of common stock; Vanguard, 12.6%; FMR LLC, 7.5% (4/20 proxy). Incorporated: DE. Address: 7001 East Belleview Avenue, Denver, Colorado 80237. Telephone: 866-405-5012. Internet: www.westernunion.com.

Western Union's financials appear to be stuck in neutral. The payments company's top and bottom lines have stalled over the past decade due to rising Web banking competitors that offer lower fees. We note that WU derives a majority of its revenue from fees that consumers pay when they send money. Thus, digital investments have been a key growth strategy in order to advance the business, especially amid COVID-19 limitations on physical interactions. Although revenues likely declined 8% in 2020, prolonged COVID-19-induced travel restrictions increased demand for Western Union's services in the September quarter. Indeed, third-quarter revenues were flat, year to year, but up 17% sequentially. The Consumer-to-Consumer (C2C) segment declined 1%. This was an improvement compared to the 8% downtick in the June quarter. In fact, C2C transactions were up 6%, led by 96% growth in digital money transfers (includes WU.com and digital partnerships). This was partially offset by lower retail money transfer as many establishments shuttered. The bottom line likely rose 8%, thanks to the new Global strategy designed to deliver $50 million in productivity savings in 2020 through headcount and lease consolidations.

There is a new partner in town. On January 19th, the company began a retail contract with Walmart to make its money transfer services available at 4,700 stores. This move gives Western Union a needed boost to its domestic business.

We look for the bottom line to advance in the newly commenced year. But overall we anticipate a better performance in 2021 despite significant macroeconomic uncertainty. Moreover, much of the growth should come from the digital push and the company's new program, which is expected to deliver $150 million in annual savings through 2022. Too, strength in international demand should help the top line partially recover.

These shares are now timely. Digital expansion plans remain a key focus, and we note that the company has the financial flexibility (Financial Strength: B+) to support this initiative. Further, 3- to 5-year appreciation potential is worthwhile. What's more, the lofty yield is a plus.

Oriatal J. Haiby — *February 5, 2021*

(A) Diluted earnings. Next earnings report due early May. Excludes nonrecurring gains/(losses): '10, (6¢); '11, 27¢; '12, (5¢); '16 ($d1.16); '17 (d$2.85); '19, 75¢.
(B) Includes intangibles. In 2019: $3061.5 million, $7.32 a share.
(C) In millions.
(D) Quarterly dividend initiated '09, Q4. '11, Q3 dividend paid during Q4. Dividends typically paid late March, June, September, and December.

Company's Financial Strength	B+
Stock's Price Stability	95
Price Growth Persistence	35
Earnings Predictability	95

AG-DR-01-051

REQUEST:

Provide copies of all articles and publications cited by Mr. D'Ascendis in his Direct Testimony.

RESPONSE:

Please see response to AG-DR-01-050.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

AG-DR-01-052

REQUEST:

Provide the native spreadsheet(s) for Mr. D'Ascendis' exhibits in Excel format with cell formulas intact.

RESPONSE:

Please see STAFF-DR-02-016 Attachment.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-053

REQUEST:

If not provided previously, provide all supporting documentation and spreadsheet analyses for Mr. D'Ascendis' size adjustment, the description of which begins on page 44 of his Direct Testimony.

RESPONSE:

Please see response to AG-DR-01-050. See also, Attachment DWD-7 from Mr. D'Ascendis' testimony.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-054

REQUEST:

Provide the most recent update to the Blue Chip Financial Forecasts in Attachment DWD-3, pages 10 and 11 of 13.

RESPONSE:

Please see AG-DR-01-054 Attachments 1 and 2.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2022 through 2027 and averages for the five-year periods 2023-2027 and 2028-2032. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

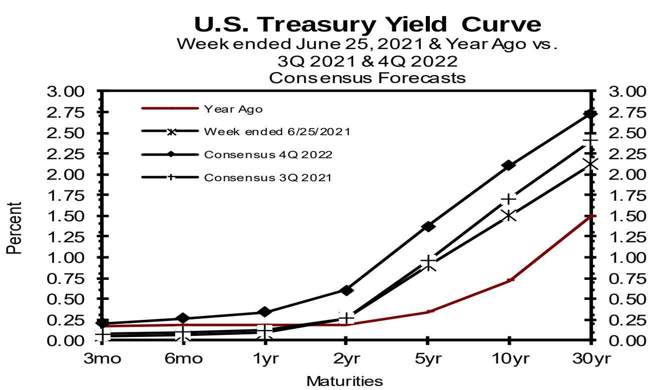
		------------------------ Average For The Year ------------------------						Five-Year Averages	
		2022	2023	2024	2025	2026	2027	2023-2027	2028-2032
1. Federal Funds Rate	CONSENSUS	**0.1**	**0.4**	**1.0**	**1.6**	**1.9**	**2.1**	**1.4**	**2.2**
	Top 10 Average	0.2	0.7	1.6	2.4	2.6	2.7	2.0	2.7
	Bottom 10 Average	0.1	0.1	0.5	0.9	1.3	1.5	0.9	1.6
2. Prime Rate	CONSENSUS	**3.3**	**3.5**	**4.2**	**4.7**	**5.0**	**5.2**	**4.5**	**5.2**
	Top 10 Average	3.4	3.8	4.7	5.4	5.7	5.8	5.1	5.8
	Bottom 10 Average	3.2	3.3	3.7	4.0	4.4	4.6	4.0	4.7
3. LIBOR, 3-Mo.	CONSENSUS	**0.4**	**0.6**	**1.3**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.5	1.0	1.8	2.4	2.7	2.9	2.2	3.0
	Bottom 10 Average	0.2	0.4	0.8	1.2	1.6	1.7	1.1	1.8
4. Commercial Paper, 1-Mo	CONSENSUS	**0.2**	**0.6**	**1.3**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.4	0.9	1.6	2.3	2.6	2.8	2.0	2.8
	Bottom 10 Average	0.1	0.3	0.9	1.3	1.8	1.9	1.2	2.0
5. Treasury Bill Yield, 3-Mo	CONSENSUS	**0.2**	**0.5**	**1.0**	**1.6**	**1.9**	**2.1**	**1.4**	**2.2**
	Top 10 Average	0.3	0.8	1.6	2.2	2.5	2.7	1.9	2.7
	Bottom 10 Average	0.1	0.2	0.6	0.9	1.3	1.5	0.9	1.6
6. Treasury Bill Yield, 6-Mo	CONSENSUS	**0.2**	**0.5**	**1.1**	**1.6**	**2.0**	**2.2**	**1.5**	**2.3**
	Top 10 Average	0.3	0.8	1.7	2.3	2.6	2.7	2.0	2.8
	Bottom 10 Average	0.1	0.3	0.6	1.0	1.4	1.6	1.0	1.7
7. Treasury Bill Yield, 1-Yr	CONSENSUS	**0.3**	**0.7**	**1.2**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.5	1.0	1.8	2.4	2.8	2.9	2.2	3.0
	Bottom 10 Average	0.2	0.3	0.7	1.1	1.5	1.7	1.1	1.8
8. Treasury Note Yield, 2-Yr	CONSENSUS	**0.5**	**0.9**	**1.5**	**2.0**	**2.3**	**2.5**	**1.8**	**2.6**
	Top 10 Average	0.7	1.3	2.1	2.7	3.0	3.1	2.5	3.3
	Bottom 10 Average	0.3	0.5	0.9	1.3	1.6	1.8	1.2	1.9
9. Treasury Note Yield, 5-Yr	CONSENSUS	**1.2**	**1.6**	**2.1**	**2.5**	**2.8**	**2.8**	**2.4**	**3.0**
	Top 10 Average	1.5	2.0	2.8	3.3	3.5	3.5	3.0	3.6
	Bottom 10 Average	0.9	1.2	1.5	1.8	2.0	2.2	1.7	2.3
10. Treasury Note Yield, 10-Yr	CONSENSUS	**2.0**	**2.4**	**2.7**	**3.0**	**3.2**	**3.3**	**2.9**	**3.3**
	Top 10 Average	2.3	2.8	3.4	3.8	4.0	3.9	3.6	4.0
	Bottom 10 Average	1.7	1.9	2.1	2.3	2.5	2.6	2.3	2.7
11. Treasury Bond Yield, 30-Yr	CONSENSUS	**2.6**	**2.9**	**3.3**	**3.6**	**3.8**	**3.8**	**3.5**	**3.9**
	Top 10 Average	3.0	3.5	4.0	4.5	4.6	4.5	4.2	4.6
	Bottom 10 Average	2.3	2.4	2.5	2.7	2.9	3.1	2.7	3.2
12. Corporate Aaa Bond Yield	CONSENSUS	**3.3**	**3.7**	**4.1**	**4.5**	**4.7**	**4.7**	**4.3**	**4.8**
	Top 10 Average	3.6	4.2	4.7	5.2	5.4	5.4	5.0	5.4
	Bottom 10 Average	3.1	3.2	3.4	3.7	3.9	4.1	3.7	4.2
13. Corporate Baa Bond Yield	CONSENSUS	**4.3**	**4.7**	**5.1**	**5.4**	**5.6**	**5.7**	**5.3**	**5.8**
	Top 10 Average	4.6	5.1	5.6	6.1	6.3	6.2	5.9	6.4
	Bottom 10 Average	4.0	4.3	4.5	4.7	4.9	5.2	4.7	5.2
14. State & Local Bonds Yield	CONSENSUS	**2.9**	**3.2**	**3.6**	**3.9**	**4.1**	**4.2**	**3.8**	**4.2**
	Top 10 Average	3.2	3.5	4.1	4.5	4.7	4.7	4.3	4.8
	Bottom 10 Average	2.6	2.9	3.1	3.4	3.7	3.7	3.3	3.8
15. Home Mortgage Rate	CONSENSUS	**3.6**	**4.0**	**4.4**	**4.7**	**4.9**	**5.0**	**4.6**	**5.0**
	Top 10 Average	4.0	4.5	5.0	5.5	5.6	5.6	5.2	5.7
	Bottom 10 Average	3.2	3.6	3.8	4.0	4.2	4.3	4.0	4.4
A. Fed's AFE Nominal $ Index	CONSENSUS	**103.7**	**103.7**	**104.0**	**103.7**	**103.6**	**103.3**	**103.7**	**103.1**
	Top 10 Average	105.3	106.0	106.8	107.0	107.3	107.5	106.9	107.9
	Bottom 10 Average	102.0	101.5	101.4	100.8	100.4	100.0	100.8	99.4

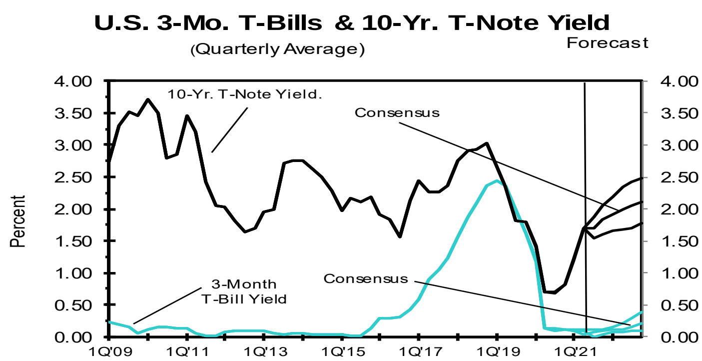
		--------------------- Year-Over-Year, % Change ---------------------						Five-Year Averages	
		2022	2023	2024	2025	2026	2027	2023-2027	2028-2032
B. Real GDP	CONSENSUS	**4.2**	**2.6**	**2.3**	**2.2**	**2.1**	**2.1**	**2.2**	**2.1**
	Top 10 Average	5.3	3.3	2.7	2.5	2.4	2.4	2.7	2.5
	Bottom 10 Average	2.9	2.0	1.9	1.8	1.8	1.7	1.8	1.7
C. GDP Chained Price Index	CONSENSUS	**2.3**	**2.3**	**2.2**	**2.1**	**2.2**	**2.1**	**2.2**	**2.1**
	Top 10 Average	2.6	2.6	2.4	2.4	2.4	2.4	2.4	2.3
	Bottom 10 Average	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9
D. Consumer Price Index	CONSENSUS	**2.4**	**2.4**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
	Top 10 Average	2.8	2.7	2.5	2.5	2.5	2.4	2.5	2.4
	Bottom 10 Average	2.1	2.1	1.9	1.9	2.0	1.9	2.0	1.9
E. PCE Price Index	CONSENSUS	**2.3**	**2.2**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**
	Top 10 Average	2.7	2.5	2.4	2.4	2.4	2.4	2.4	2.3
	Bottom 10 Average	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9

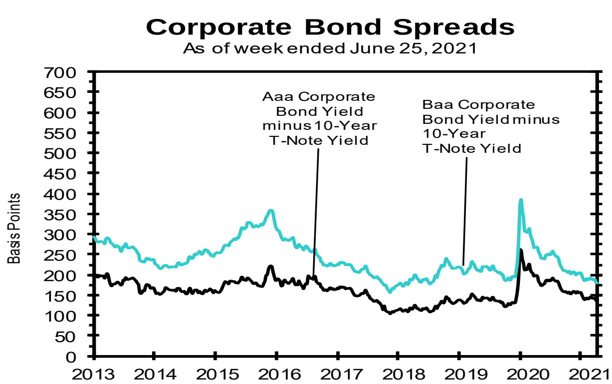
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

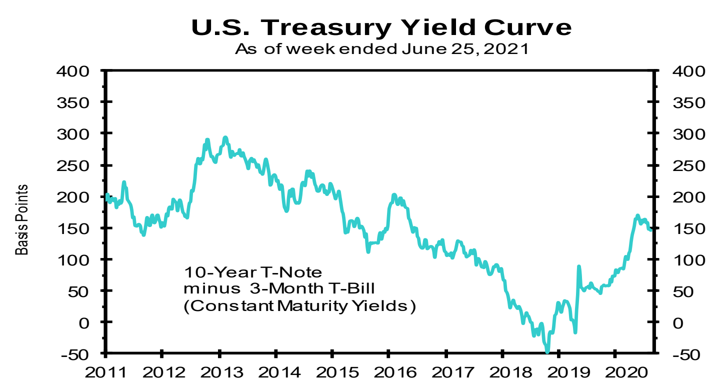
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Qtr*	3Q	4Q	1Q	2Q	3Q	4Q
Interest Rates	Jun 25	Jun 18	Jun 11	Jun 4	May	Apr	Mar	2Q 2021*	**2021**	**2021**	**2022**	**2022**	**2022**	**2022**
Federal Funds Rate	0.10	0.06	0.06	0.05	0.06	0.07	0.07	0.07	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**
LIBOR, 3-mo.	0.14	0.13	0.12	0.13	0.15	0.18	0.19	0.16	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Commercial Paper, 1-mo.	0.05	0.03	0.02	0.03	0.10	0.04	0.07	0.06	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 3-mo.	0.05	0.04	0.03	0.02	0.02	0.02	0.03	0.02	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 6-mo.	0.06	0.06	0.04	0.04	0.04	0.04	0.05	0.04	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.3**
Treasury bill, 1 yr.	0.09	0.08	0.05	0.05	0.05	0.06	0.08	0.06	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Treasury note, 2 yr.	0.26	0.20	0.15	0.15	0.16	0.16	0.15	0.17	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**
Treasury note, 5 yr.	0.90	0.85	0.76	0.81	0.82	0.86	0.82	0.84	**1.0**	**1.1**	**1.2**	**1.2**	**1.3**	**1.4**
Treasury note, 10 yr.	1.50	1.51	1.50	1.60	1.62	1.64	1.61	1.59	**1.7**	**1.8**	**1.9**	**2.0**	**2.1**	**2.1**
Treasury note, 30 yr.	2.12	2.14	2.19	2.28	2.32	2.30	2.34	2.26	**2.4**	**2.5**	**2.6**	**2.6**	**2.7**	**2.7**
Corporate Aaa bond	2.86	2.88	2.94	3.03	3.06	3.04	3.15	3.00	**3.0**	**3.2**	**3.2**	**3.3**	**3.4**	**3.4**
Corporate Baa bond	3.30	3.32	3.39	3.48	3.52	3.51	3.62	3.46	**3.8**	**4.0**	**4.1**	**4.1**	**4.2**	**4.3**
State & Local bonds	2.65	2.63	2.63	2.67	2.64	2.66	2.74	2.65	**2.5**	**2.6**	**2.7**	**2.7**	**2.8**	**2.8**
Home mortgage rate	3.02	2.93	2.96	2.99	2.96	3.06	3.08	3.00	**3.2**	**3.3**	**3.4**	**3.5**	**3.6**	**3.6**
	History								**Consensus Forecasts-Quarterly**					
	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	**3Q**	**4Q**	**1Q**	**2Q**	**3Q**	**4Q**
Key Assumptions	2019	2019	2020	2020	2020	2020	2021	2021**	**2021**	**2021**	**2022**	**2022**	**2022**	**2022**
Fed's AFE $ Index	110.6	110.5	111.4	112.4	107.3	105.2	103.4	102.9	**103.4**	**103.3**	**102.8**	**102.6**	**102.7**	**102.9**
Real GDP	2.6	2.4	-5.0	-31.4	33.4	4.3	6.4	9.4	**7.3**	**5.3**	**3.8**	**3.2**	**2.7**	**2.3**
GDP Price Index	1.5	1.4	1.4	-1.8	3.5	2.0	4.3	4.6	**3.0**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**
Consumer Price Index	1.3	2.6	1.0	-3.1	4.7	2.4	3.7	6.8	**3.6**	**2.2**	**2.3**	**2.5**	**2.4**	**2.2**
PCE Price Index	1.4	1.5	1.3	-1.6	3.7	1.5	3.7	5.5	**3.1**	**2.1**	**2.1**	**2.2**	**2.3**	**2.2**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index, PCE Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP, GDP Price Index and PCE Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index history is from the Department of Labor's Bureau of Labor Statistics (BLS). *Interest rate data for 2Q 2021 based on historical data through the week ended June 25. **Data for 2Q 2021 for the Fed's AFE $ Index based on data through the week ended June 25. Figures for 2Q 2021 Real GDP, GDP Chained Price Index, Consumer Price Index, and PCE Price Index are consensus forecasts based on a special question asked of the panelists this month.









Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-055

REQUEST:

If not provided previously, provide all supporting work papers and documentation for the risk premium calculations included in Attachment DWD-3. Include all source data used in the calculations. Provide all spreadsheets in Excel format with cell formulas intact.

RESPONSE:

Please see responses to AG-DR-01-050 and AG-DR-01-051.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

AG-DR-01-056

REQUEST:

If not provided previously, provide the source documents used in the equity risk premium study results in Attachment DWD-3, page 13 of 13. Provide updated allowed returns on equity from fully litigated natural gas utility rate cases through the most recent month of 2021.

RESPONSE:

Please see STAFF-DR-02-016 Attachment.

PERSON RESPONSIBLE: Dylan W. D'Ascendis

CONFIDENTIAL AG-DR-01-057
(As to Attachments only)

REQUEST:

Provide all bond rating agency reports (Standard and Poor's, Moody's, Fitch) on Duke Energy and Duke Energy Kentucky from 2019 through the most recent month in 2021.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET (As to Attachments only)

Please see AG-DR-01-057 Confidential Attachments 1 through 6.

PERSON RESPONSIBLE: Chris R. Bauer

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 1

FILED UNDER SEAL

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 2

FILED UNDER SEAL

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 3

FILED UNDER SEAL

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 4

FILED UNDER SEAL

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 5

FILED UNDER SEAL

CONFIDENTIAL PROPRIETARY TRADE SECRET

AG-DR-01-057 CONFIDENTIAL ATTACHMENT 6

FILED UNDER SEAL

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-058

REQUEST:

Provide the following:

a. The current authorized ROE for each Duke Energy operating company and the date that each ROE was authorized.

b. Provide the Commission Order authorizing each ROE listed in part a.

c. State whether each ROE was authorized pursuant to a fully litigated rate case or if it was based on a settlement.

RESPONSE:

Please see response to STAFF-DR-02-017(a).

PERSON RESPONSIBLE: Sarah E. Lawler

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-059

REQUEST:

Provide the amount, coupon, and maturity of each long-term debt instrument issued by Duke Energy Kentucky over the last 10 years.

RESPONSE:

	Amount	Coupon	Maturity Date
Debentures	45,000,000	3.42%	1/15/2026
Debentures	50,000,000	4.45%	1/15/2046
Debentures	30,000,000	3.35%	9/15/2029
Debentures	30,000,000	4.11%	9/15/2047
Debentures	30,000,000	4.26%	9/15/2057
Debentures	25,000,000	4.01%	10/15/2023
Debentures	40,000,000	4.18%	10/15/2028
Debentures	35,000,000	4.62%	12/15/2048
Debentures	40,000,000	4.32%	7/15/2049
Debentures	95,000,000	3.23%	10/1/2025
Debentures	75,000,000	3.56%	10/1/2029
Debentures	35,000,000	2.65%	9/15/2030
Debentures	35,000,000	3.66%	9/15/2050

PERSON RESPONSIBLE: Chris R. Bauer

AG-DR-01-060

REQUEST:

Provide the amount of Supplemental Executive Retirement Plan ("SERP") costs included in the test year O&M expenses. Provide the amounts broken down between DEK directly incurred costs and costs allocated separately from each other affiliate.

RESPONSE:

Please see AG-DR-01-060 Attachment.

PERSON RESPONSIBLE: Jake J. Stewart

Provide the amount of Supplemental Executive Retirement Plan ("SERP") costs included in the test year O&M expenses. Provide the amounts broken down between DEK directly incurred costs and costs allocated separately from each other affiliate.

Test period: Calendar year 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
DEK BUDGET for NQ Plans - Direct - (1/1/22 - 12/31/22)	139	139	139	139	139	139	139	139	139	139	139	139	1,668
DEK BUDGET for NQ Plans - Alloc - (1/1/22 - 12/31/22)	2,688	2,688	2,688	2,688	2,688	2,688	2,688	2,688	2,688	2,688	2,688	2,688	32,256
TOTAL DEK BUDGET for NQ Plans (1/1/22 - 12/31/22)													33,924

Assumptions:

1) Service and Non Service costs are included in the above numbers
2) Source for numbers = Towers Watson five year financial plan report
3) Direct numbers are calculated based on annual budget for DEK Gas
4) Allocated numbers are calculated based on annual budget for DEBs (using DGEP Allocation % to DEK Gas)

AG-DR-01-061

REQUEST:

Refer to the Direct Testimony of Ann Spiller at 15-16 in regards to online and mobile app payments via Speedway and for any other credit/debit card and electronic check payments.

RESPONSE:

Please see responses to AG-DR-01-062 and AG-DR-01-063.

PERSON RESPONSIBLE: Lesley G. Quick

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-062

REQUEST:

Provide the percentage of total residential customer payments via credit/debit card and electronic check assumed in the test year.

RESPONSE:

The Company is not seeking to include credit/debit card payments in base rates in this proceeding as the Commission previously denied such treatment in Case No. 2019-00271. Accordingly, there are no assumptions for the test period regarding customer payments made via these payment channels (i.e. credit/debit card and electronic check). Customers who pay by credit/debit cards continue to be responsible for paying those processing fees.

PERSON RESPONSIBLE: Lesley G. Quick

AG-DR-01-063

REQUEST:

Provide the percentage of total customer payments via credit/debit card and electronic check assumed in the test year.

RESPONSE:

The Company is not seeking to include credit/debit card payments in base rates in this proceeding as the Commission previously denied such treatment in Case No. 2019-00271. Accordingly, there are no assumptions for the test period regarding customer payments made via these payment channels (i.e. credit/debit card and electronic check). Customers who pay by credit/debit cards continue to be responsible for paying those processing fees.

PERSON RESPONSIBLE: Lesley G. Quick

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-064

REQUEST:

Provide the credit/debit card charges included in the revenue requirement during the test year. Please provide the expense amount incurred and the revenues received from customers to reimburse such costs. If none, please explain.

RESPONSE:

The costs associated with customer payments via one-time credit/debit card and electronic check are not included in the revenue requirement for the test period. Any fee associated with this payment type is paid to a third-party vendor by the customer utilizing this payment channel.

PERSON RESPONSIBLE: Jay P. Brown

AG-DR-01-065

REQUEST:

Refer to Schedule B-6 page 2 of 2 for the test year. Provide the per books ADIT summarized in column 3 and the adjustments summarized in column 4 by temporary difference. For each adjustment, provide a detailed explanation as to why it is appropriate.

RESPONSE:

Please see AG-DR-01-065 Attachment which provides the Kentucky ADIT information as per Schedule B-6 page 2 of 2.

Per footnote B on Schedule B-6 page 2 of 2, the Company elected the ratable flow through option in 1971 as provided under Section 46(f)(2); therefore, the ITC is eliminated on Schedule B-6.

The adjustment for the Accumulated Deferred Income Taxes (ADITs) of $3,275,942 is comprised of the $3,704,475 liberalized depreciation associated with facilities devoted to other than Duke Energy Kentucky customers and ($428,533) of ADITs not included in rate base. Per WPB-6d, the calculation of the liberalized depreciation associated with facilities devoted to other than Duke Energy Kentucky customers is the total liberalized depreciation ADIT multiplied by the ratio of plant devoted to other than Duke Energy Kentucky customers. The plant used by other than Duke Energy Kentucky customers has been eliminate from rate base on Sch B-2.2; therefore, a proportionate amount of the liberalized depreciation ADIT is eliminated. Please see WPB-6f for the ADITs not included in rate base by temporary difference. These are excluded because the corresponding balance sheet account which generated the ADIT is not included in rate base.

The adjustment for the Excess Deferred Taxes (EDITs) of $1,686,110 is related to the EDITs associated with the facilities devoted to other than Duke Energy Kentucky customers. Per WPB-6d, the calculation of EDITs related to the facilities devoted to other than Duke Energy Kentucky customers is the total protected EDITs multiplied by the ratio of plant devoted to other than Duke Energy Kentucky customers.

PERSON RESPONSIBLE: John R. Panizza
Jay P. Brown

3/9/2021 1:49:50 PM

Ernst and Young LLP

Deferred Balances Report - Fed/State/FBOS (Reporting)

2021.02Base, 75088_U DE Kentucky Gas_Utility

Code	Name	ADIT as of Dec 2022
190001/2	ADIT: Prepaid: Taxes	
AT_OTH_190_NC_R&D_CREDIT	Other Noncurrent After-Tax DTA for R&D Credit	495,634
T11A02	Bad Debts - Tax over Book	6,763
T11B16	OFFSITE GAS STORAGE COSTS	492,550
T13B19	Leased Meters - Elec & Gas	13,993
T15A95	Unamortized Debt Premium	(1,833)
T17A02	Accrued Vacation	150,335
T17A54	MGP Sites	166,582
T19A89	GAS SUPPLIER REFUNDS	5,181
T19A94	UNBILLED REVENUE - FUEL	875,874
T19B02	Cares Act Reserve	10,049
T20A41	Rate Refunds	84,609
T20C02	Demand Side Management (DSM) Defer	(324,078)
T22A07	Charitable Contribution Carryover	42,969
T22A28	Retirement Plan Expense - Underfunded	1,774,934
T22A29	Non-qualified Pension - Accrual	8,779
T22B13	ANNUAL INCENTIVE PLAN COMP	(11,663)
T22B15	PAYABLE 401 (K) MATCH	1,752
T22E02	OPEB Expense Accrual	189,949
T22E06	FAS 112 Medical Expenses Accrual	19,207
Total 190001/2		4,001,586
282100/1	ADIT: PP&E	
AFUDC Debt	AFUDC Debt	(311,677)
AFUDC Equity	AFUDC Equity	(609,180)
ARO	ARO	(583,252)
CIAC	CIAC	943,201
Depr Cap Trans Equip	Depr Cap Trans Equip	(27,307)
Depreciation Lag	Depreciation Lag	48
Disallow Meals & Entertainmnt	Disallow Meals & Entertainmnt	(5,335)
Hardware Capitalized	Hardware Capitalized	8,473
Highway Bill	Highway Bill	(8,135)
ITC Basis Reduction	ITC Basis Reduction	(6,441)
Leased Meter Adjust	Leased Meter Adjust	(3,725,981)
Meters & Trans	Meters & Trans	114,214
Method/Life	Method/Life	(71,691,382)
Misc Diffs	Misc Diffs	67,871
Non-cash Overheads	Non-cash Overheads	648,914
Percentage Repair Allowance	Percentage Repair Allowance	(406,602)
PR Tax	PR Tax	(3,181)
Purch Res	Purch Res	(13,533)
Sect. 174 Adjust	Sect. 174 Adjust	(25,560)
Software Capitalized	Software Capitalized	14,731
Tax Dept Adjust	Tax Dept Adjust	(99,274)
TIC	TIC	562,911
Total 282100/1		**(75,156,477)**
283100/1	ADIT: Other	
T15A24	Loss on Reacquired Debt-Amort	6,602
T15B17	Reg Liab RSLI & Other Misc Dfd Costs	(298,963)
T15B28	Reg Asset - Rate Case Expense	(41,339)
T15B29	Reg Asset-Pension Post Retirement PAA-FAS87Qual and Oth	(1,948,646)
T15B37	Reg Asset-Pension Post Retirement PAA-FAS87NQ and Oth	1,428
T15B38	Reg Asset-Pension Post Retirement PAA-FAS 106 and Oth	(136,291)
T15B40	Reg Asset - Accr Pension FAS158 - FAS87NQ	368,914
T15B41	Reg Asset - Accr Pension FAS158 - FAS 106/112	11,049
T17A01	Vacation Carryover - Reg Asset	(87,666)
T20A40	Non-Current Portion of Reg Asset	0
T22A23	Retirement Plan Expense - Overfunded	(850,808)
Total 283100/1		**(2,975,721)**
Total		**(74,130,612)**
As per B-6 Page 2 of 2		(72,948,025)
Variance		**1,182,587**
Variance Explanation:		
Proration Adjustment		1,273,377
13 Month average adjustment		(90,790)
		1,182,587

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-066

REQUEST:

Provide a description and all documentation of the Company's accounting for plant additions and retirements, including cost of removal, including, but not limited to, allocation of expenditures between plant additions and cost of removal when replacing sections of mains or accounting for such costs as maintenance expense. If the Company relies on studies to allocate such costs, then provide a copy of all such studies used for this purpose and provide an illustration as to how such allocations are actually used and applied in the accounting process. Address any differences between terminal and interim retirements and terminal and interim net salvage.

RESPONSE:

Replacing sections of mains is an addition to plant in service if the section of main replaced is larger than 12" in length. Sections smaller than 12" in length are charged to expense. The Company does not allocate costs related to main replacement between expense and capital. Classification of additions to plant or expense is based on the length of the section of main which is replaced. Cost of removal and salvage (if applicable) will be recorded when facilities are removed, provided the item removed is eligible to be capitalized as defined in the Units of Property catalog. There is no distinction in how the removal costs or salvage amounts are recorded between terminal or interim retirements.

PERSON RESPONSIBLE: David G. Raiford

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-067

REQUEST:

Refer to the monthly depiction of working capital amounts depicted in the electronic WP B-5's used to calculate the 13-month average calculation of items in Schedule B-5 in the electronic model attachment in Staff 1-54. Provide the monthly balances of all working capital items depicted on this schedule in the same format for all months in 2018, 2019, and 2020 and summed by year. Provide in electronic format with all formulas intact.

RESPONSE:

Please see AG-DR-01-067 Attachment. Please note that the Company provided the requested monthly balances, but because the monthly balances provided are cumulative, the company did not provide a summation by year. The December balance of each calendar year represents the balance at year-end.

PERSON RESPONSIBLE: Bryan T. Manges

DUKE ENERGY KENTUCKY, INC.
GAS DEPARTMENT
CASE NO. 2021-00190
GAS ENRICHER LIQUIDS
FOR THE PERIOD 2018 - 2020

WPB-5.1a

LINE NO.	MONTH	ACCT 151126 AMOUNT (A)	ALLOC. (B)	ALLOCATED AMOUNT
		$	%	
1	**Period**			
2	January 2018	2,006,406	35.80%	718,293
3	February	2,730,261	35.80%	977,433
4	March	2,730,261	35.80%	977,433
5	April	2,730,261	35.80%	977,433
6	May	2,730,261	35.80%	977,433
7	June	2,730,261	35.80%	977,433
8	July	2,730,261	35.80%	977,433
9	August	2,730,261	35.80%	977,433
10	September	2,730,261	35.80%	977,433
11	October	2,730,261	35.80%	977,433
12	November	3,210,649	35.80%	1,149,412
13	December 2018	3,659,201	35.80%	1,309,994
14				
15				
16	January 2019	3,224,815	35.80%	1,154,484
17	February	3,641,822	35.80%	1,303,772
18	March	3,582,060	35.80%	1,282,377
19	April	3,582,060	35.80%	1,282,377
20	May	3,582,060	35.80%	1,282,377
21	June	3,582,060	35.80%	1,282,377
22	July	3,582,060	35.80%	1,282,377
23	August	4,209,652	35.80%	1,507,055
24	September	4,716,740	35.80%	1,688,593
25	October	4,734,427	35.80%	1,694,925
26	November	4,734,427	35.80%	1,694,925
27	December 2019	4,678,216	35.80%	1,674,801
28				
29				
30	January 2020	4,655,670	35.80%	1,666,730
31	February	5,013,360	35.80%	1,794,783
32	March	5,013,360	35.80%	1,794,783
33	April	5,013,360	35.80%	1,794,783
34	May	5,013,360	35.80%	1,794,783
35	June	5,013,360	35.80%	1,794,783
36	July	5,013,360	35.80%	1,794,783
37	August	5,013,360	35.80%	1,794,783
38	September	5,013,360	35.80%	1,794,783
39	October	5,013,360	35.80%	1,794,783
40	November	5,016,755	35.80%	1,795,998
41	December 2020	4,986,469	35.80%	1,785,156
42				

(A) Source: Company Records
(B) Percent Applicable to Kentucky Customers.

DUKE ENERGY KENTUCKY, INC. WPB-5.1e
GAS DEPARTMENT
CASE NO. 2021-00190
NATURAL GAS STORAGE BALANCE (ACCT NOS. 164100 and 174273)
FOR THE PERIOD 2018 - 2020

LINE NO.	MONTH	AMOUNT (A) $
1	**Period**	
2	January 2018	2,046,089
3	February	1,490,689
4	March	970,442
5	April	995,417
6	May	1,802,411
7	June	2,359,766
8	July	2,619,274
9	August	3,142,153
10	September	3,499,203
11	October	3,156,706
12	November	2,159,576
13	December 2018	2,239,894
14		
15		
16	January 2019	1,753,312
17	February	1,211,442
18	March	601,283
19	April	1,084,838
20	May	1,793,534
21	June	1,841,540
22	July	2,271,116
23	August	2,709,390
24	September	2,950,256
25	October	2,631,025
26	November	2,729,560
27	December 2019	2,660,533
28		
29		
30	January 2020	1,918,108
31	February	1,205,286
32	March	323,004
33	April	600,157
34	May	923,714
35	June	1,240,363
36	July	1,767,789
37	August	2,074,948
38	September	2,163,369
39	October	2,515,040
40	November	2,236,907
41	December 2020	1,692,954
42		

(A) Company Records

DUKE ENERGY KENTUCKY, INC.
GAS DEPARTMENT
CASE NO. 2021-00190
MATERIAL & SUPPLIES
FOR THE PERIOD 2018 - 2020

WPB-5.1c

LINE NO.	MONTH	ACCOUNT 154100 - Gas	ACCOUNT 154100 - Elec	ACCOUNT 154200 - Elec	ACCOUNT 154410 - Gas	ACCOUNT 154990 - Elec	ACCOUNT 163110 - Gas	ACCOUNT 163110 - Elec
		$	$	$	$	$	$	$
1	**Period**							
2	January 2018	300,099	16,582,501	935,946	19,595	(30,000)	94,429	615,122
3	February	345,143	16,722,229	830,099	19,595	(30,000)	67,056	643,608
4	March	313,445	17,000,536	779,737	19,751	(30,000)	73,596	459,596
5	April	293,390	16,549,028	779,737	19,817	(30,000)	88,826	396,250
6	May	277,986	16,337,472	779,737	19,817	(30,000)	31,082	132,053
7	June	306,547	16,238,594	960,506	19,817	(30,000)	146,646	456,858
8	July	314,855	16,312,250	798,465	19,889	(30,000)	205,240	649,304
9	August	280,139	16,376,040	799,036	19,889	(30,000)	251,009	847,265
10	September	265,108	16,438,816	1,087,572	19,889	(43,260)	276,210	1,035,411
11	October	243,101	16,134,441	1,064,310	20,062	(46,873)	323,502	1,074,721
12	November	268,800	16,234,515	952,634	20,062	(46,873)	360,675	1,142,455
13	December 2018	274,915	16,291,666	940,174	20,062	(30,000)	430,765	1,557,409
14								
15								
16	January 2019	313,052	16,267,609	1,018,091	20,062	(30,000)	448,968	1,734,106
17	February	273,080	15,817,611	1,082,470	20,062	(30,000)	461,767	1,679,806
18	March	271,884	16,132,143	1,392,493	20,062	(30,000)	517,553	1,599,490
19	April	224,960	16,042,009	1,800,937	20,062	(30,000)	566,735	1,221,233
20	May	250,583	16,238,351	1,554,904	20,062	(30,000)	571,902	1,004,875
21	June	221,084	16,331,482	1,666,339	23,673	(30,000)	567,568	1,207,115
22	July	207,146	16,265,763	1,552,300	24,852	(30,000)	568,015	1,201,163
23	August	214,380	16,242,300	1,810,724	28,905	(30,000)	517,404	835,927
24	September	220,823	16,242,979	1,522,181	32,066	(30,000)	476,704	741,077
25	October	276,334	16,110,126	1,730,639	32,066	(30,000)	433,135	646,811
26	November	281,178	15,983,194	1,833,293	34,935	(30,000)	382,102	483,388
27	December 2019	275,436	15,931,044	1,581,729	48,596	(30,000)	328,248	781,551
28								
29								
30	January 2020	252,988	15,885,640	1,867,927	48,596	(30,000)	324,130	937,927
31	February	256,884	15,814,837	1,593,793	61,004	(30,000)	321,505	884,974
32	March	272,070	16,145,732	1,792,987	67,138	0	276,978	953,370
33	April	274,416	15,954,414	1,930,202	67,138	0	266,490	940,075
34	May	296,672	15,793,474	1,930,927	67,138	0	32,749	817,207
35	June	296,802	15,777,170	1,761,855	71,635	0	(24,328)	543,188
36	July	310,986	15,834,362	1,773,818	72,625	0	(144,778)	458,123
37	August	306,303	15,926,855	1,623,177	79,464	0	(465,060)	494,380
38	September	271,316	15,757,702	1,706,347	79,502	0	(571,210)	482,417
39	October	301,252	15,646,429	1,706,347	86,266	0	(516,487)	305,856
40	November	312,638	15,633,197	2,191,125	86,266	0	(499,750)	213,763
41	December 2020	312,178	15,633,843	1,581,489	48,596	0	61,405	(77,496)
42								

Note: Source is Company general ledger.

DUKE ENERGY KENTUCKY, INC.
GAS DEPARTMENT
CASE NO. 2021-00190
PREPAYMENTS
FOR THE PERIOD 2018 - 2020

WPB-5.1f

Line No.	Month	Prepaid Insurance - Gas 165075 (A) $	Prepaid Insurance - Elec 165075 (A) $	Public Utility Fees - Gas 165400 (A) $	Public Utility Fees - Elec 165400 (A) $	Collateral Asset 165520 (A) $
1	**Period**					
2	January 2018	59,308	450,083	77,353	304,229	206,871
3	February	53,917	409,167	61,883	246,383	2,531,614
4	March	48,525	368,250	46,412	188,537	3,593,634
5	April	43,133	327,333	30,941	130,692	2,667,481
6	May	37,742	286,417	15,471	72,846	1,039,005
7	June	32,350	245,500	188,328	684,816	85,892
8	July	26,958	204,583	172,634	628,998	(20,638)
9	August	21,567	163,667	156,940	576,535	(20,751)
10	September	16,175	122,750	141,246	520,717	(32,707)
11	October	10,783	81,833	125,552	464,898	(33,289)
12	November	5,392	40,917	109,858	412,606	(43,929)
13	December 2018	0	0	94,164	584,788	(44,086)
14						
15						
16	January 2019	84,027	410,848	78,470	499,015	(44,086)
17	February	76,388	373,498	62,776	387,917	(20,304)
18	March	68,749	336,149	47,082	291,819	(44,149)
19	April	61,111	298,799	31,388	195,721	(22,060)
20	May	53,472	261,449	15,694	99,623	(7,365)
21	June	45,833	224,099	199,505	685,624	(7,466)
22	July	38,194	186,749	182,880	628,782	(43,668)
23	August	30,555	149,399	166,254	571,941	(43,771)
24	September	22,916	112,049	149,629	515,099	(43,771)
25	October	15,278	74,700	133,003	458,258	(43,541)
26	November	7,639	37,350	116,378	401,416	(17,565)
27	December 2019	0	0	99,753	344,575	(44,088)
28						
29						
30	January 2020	75,559	930,309	83,127	284,208	(44,161)
31	February	68,690	845,736	66,502	227,366	(44,161)
32	March	61,821	761,162	49,876	170,525	(44,161)
33	April	54,952	676,589	33,251	113,683	(44,161)
34	May	48,083	592,015	16,625	56,841	(36,126)
35	June	41,214	507,441	204,142	708,940	(36,272)
36	July	34,345	422,868	187,130	649,862	1,414
37	August	27,476	338,294	170,118	590,784	51,247
38	September	20,607	253,721	153,106	531,705	530,304
39	October	13,738	169,147	136,095	476,183	580,653
40	November	6,869	84,574	119,083	417,105	98,452
41	December 2020	0	0	102,071	358,027	(43,330)
42						

(A) Company Records

DUKE ENERGY KENTUCKY, INC.
GAS DEPARTMENT
CASE NO. 2021-00190
FUEL
FOR THE PERIOD 2018 - 2020

WPB-5.1g

Line No.	Month	Coal Stocks 151130 (A)	Coal Stocks 151131 (A)	Diesel Fuel East Bend 151140 (A)	Natural Gas Woodsdale 151660 (A)	Propane Woodsdale 151700 (A)
		$	$	$	$	$
1	**Period**					
2	January 2018	12,660,986	2,795,991	500,788	0	717,397
3	February	12,109,455	145,780	536,208	0	717,397
4	March	12,609,563	75	417,661	0	581,094
5	April	10,795,018	335,127	417,661	0	507,820
6	May	10,942,376	2,741,998	727,368	0	480,388
7	June	12,316,464	3,161,955	495,919	0	480,388
8	July	11,195,734	3,826,814	608,639	0	480,388
9	August	10,817,095	5,503,595	621,991	0	480,388
10	September	12,051,890	2,261,016	520,217	0	480,388
11	October	12,074,867	2,521,768	793,031	0	480,388
12	November	11,938,913	4,514,562	665,361	0	0
13	December 2018	10,905,448	3,450,072	732,718	0	22,387
14						
15						
16	January 2019	9,902,123	2,803,037	643,730	0	0
17	February	8,605,226	3,907,311	1,822,057	0	0
18	March	8,479,526	3,989,848	3,950,995	0	0
19	April	10,658,657	2,686,430	5,595,949	0	0
20	May	11,504,263	4,070,123	5,187,089	0	0
21	June	11,732,554	5,261,458	4,704,443	0	0
22	July	11,275,127	3,293,011	4,789,162	0	0
23	August	9,644,942	3,181,760	5,188,736	0	0
24	September	9,427,454	2,438,804	6,409,686	0	0
25	October	12,058,366	382,310	8,539,407	0	0
26	November	12,184,466	3,082,629	9,137,786	0	0
27	December 2019	10,691,568	4,219,399	9,315,012	0	0
28						
29						
30	January 2020	6,222,783	4,572,063	9,295,263	0	0
31	February	6,669,318	3,026,336	9,232,983	0	0
32	March	7,615,277	2,697,910	9,153,076	0	0
33	April	10,899,776	2,323,403	9,153,076	0	0
34	May	12,759,951	2,124,582	9,102,028	0	0
35	June	11,553,734	1,925,810	9,025,164	0	0
36	July	10,314,051	4,601,961	9,026,193	0	0
37	August	10,394,048	2,406,417	9,026,267	0	0
38	September	11,461,103	0	9,005,998	0	0
39	October	11,694,776	1,301,896	8,937,046	0	0
40	November	12,104,002	2,849,383	8,916,661	0	0
41	December 2020	11,996,537	3,980,694	8,982,329	0	0
42						

(A) Company Records

DUKE ENERGY KENTUCKY, INC.
GAS DEPARTMENT
CASE NO. 2021-00190
EMISSION ALLOWANCES
FOR THE PERIOD 2018 - 2020

WPB-5.1h

Line No.	Month	SO2 EA 158170 (A) $	NOx 158150 (A) $	NOx 158183 (A) $	Total EA Inventory $
1	**Period**				
2	January 2018	0	0	0	0
3	February	0	0	0	0
4	March	0	0	0	0
5	April	0	0	0	0
6	May	0	0	0	0
7	June	0	0	0	0
8	July	0	0	0	0
9	August	0	0	0	0
10	September	0	0	0	0
11	October	0	0	0	0
12	November	0	0	0	0
13	December 2018	0	0	0	0
14					
15					
16	January 2019	0	0	0	0
17	February	0	0	0	0
18	March	0	0	0	0
19	April	0	0	0	0
20	May	0	0	0	0
21	June	0	0	0	0
22	July	0	0	0	0
23	August	0	0	0	0
24	September	0	0	0	0
25	October	0	0	0	0
26	November	0	0	0	0
27	December 2019	0	0	0	0
28					
29					
30	January 2020	0	0	0	0
31	February	0	0	0	0
32	March	0	0	0	0
33	April	0	0	0	0
34	May	0	0	0	0
35	June	0	0	0	0
36	July	0	0	0	0
37	August	0	0	0	0
38	September	0	0	0	0
39	October	0	0	0	0
40	November	0	0	0	0
41	December 2020	0	0	0	0
42					

(A) The Company recovers emission allowance inventory in its Environmental Surcharge Mechanism.

Duke Energy Kentucky
Case No. 2021-00190
Attorney General's First Set Data Requests
Date Received: June 30, 2021

AG-DR-01-068

REQUEST:

Refer to the Direct Testimony of Jeffrey Setser at 9 wherein he states: "By the terms of the DEBS Service Agreement, compensation for any service rendered by DEBS to its utility affiliates is the fully embedded cost thereof (i.e., the sum of: (i) direct costs; (ii) indirect costs; and (iii) costs of capital)."

a. Provide a description of the "costs of capital" and a template and illustration that shows how the cost of capital is calculated, first as a percentage, and then the base to which the percentage is applied, e.g., the accounts included as the investment or base for the dollar amount of the cost of capital.

b. Provide the calculations reflected in the test year for DEBS in total and the amounts assigned/allocated to DEK.

RESPONSE:

The cost of capital uses a revenue requirement based on each jurisdiction's allowed return for the use of common assets, which are used to provide service to customers. Please see AG-DR-01-068 Attachments 1 and 2 for responses to above questions.

PERSON RESPONSIBLE: Jeffrey R. Setser

Ky PSC Case No. 2021-00190
AG-DR-01-68(a)

Purpose: To calculate return on DEBS PP&E assets using the allowable revenue requirement for each jurisdiction. The amount is calculated each month on Day 4 using the total PP&E assets less CWIP, Capital lease assets and deferred taxes associated with PP&E

SERVICE COMPANY COST ALLOCATION DETAILS
COST ALLOCATIONS IN SERVICE AGREEMENTS

SA #	Function	Function	Allocation Method	Operating Unit	Alloc Pool	St Cd	DPC 20056 Duke Power Goverence	DEP 50991 DE Progress	DEF 50992 Progress Florida	DEO 75956 KO Transmission	DEO 75953 DE Ohio (USFRELGOV)	DEO 75954 DE Ohio (USFRGSGOV)	DEO	DEK 75957 DE Kentucky (USFRELG	DEK 75958 DE Kentucky (USFRGSGOV)	DEK	DEI 75960	Comm Pwr 75961 Cinergy Sol Hldng Co Inc (GOV)	Comm	Comm Trans 75964	Gas Oper 75965	Piedmont 47151 Piedmont Gas Del	Other 10157 PanEnergy governance	Other 75963 Cinergy Ventures LLC (Gov)	Other	Total
Fac ROR	**Facilities Rate of Return Allocation**	Allocates the Service Company's portion of	*Three Factor Formula*	DURR	Facilities ROR Gvrnce	CG1	34.25%	23.53%	16.62%		3.46%	1.58%	5.04%	1.16%	0.38%	1.54%	10.27%	2.92%	2.92%	0.02%	0.01%	5.73%	0.01%	0.06%	0.07%	100.00%

Account #	Res Type	Resp Center		DPC	DEP	DEF	DEO 75956	DEO 75953	DEO 75954	DEO	DEK 75957	DEK 75958	DEK	DEI 75960	Comm Pwr 75961	Comm	Comm Trans 75964	Gas Oper 75965	Piedmont 47151	Other 10157	Other 75963	Other	Total
			Revenue Requirement (provided by each	8.95%	8.67%	7.66%	10.60%	10.34%	10.60%		8.46%	8.71%		7.86%	8.95%		8.95%	8.95%	8.65%	8.95%	8.95%		
				12	12	12	12	12	12		12	12		12	12		12	12	12	12	12		
				0.75%	0.72%	0.64%	0.88%	0.86%	0.88%		0.71%	0.73%		0.66%	0.75%		0.75%	0.75%	0.72%	0.75%	0.75%		
0931008 for expense	78000	8000 for expense																					
0456949 for income	78000	9957 for income		GO22	PCGS	PFGS	GO27	GO24	GO25		GO28	GO29		GO31	GO32		SG38	SG39	SG37	GO21	GO34		
		Budget value:	**593,992,106**	1,517,340	1,009,812	630,172	-	177,091	82,901		48,577	16,383		399,570	129,362		886	443	245,341	443	2,658		4,260,979

2022 PPE budget	51,131,749
2022 Inventory	2,195,079
2022 Pension	11,366,419
2022 Return on Assets	**64,693,247**

	DPC	DEP	DEF	DEO 75956	DEO 75953	DEO 75954	DEO	DEK 75957	DEK 75958	DEK	DEI 75960	Comm Pwr 75961	Comm	Comm Trans 75964	Gas Oper 75965	Piedmont 47151	Other 10157	Other 75963	Other	Total
PPE	1,517,340	1,009,812	630,172	-	177,091	82,901	-	48,577	16,383	-	399,570	129,362	-	886	443	245,341	443	2,658		4,260,979
Inventory	65,139	43,351	27,053	-	7,602	3,559	-	2,085	703	-	17,153	5,553	-	38	19	10,532	19	114		182,923
Pension	273,492	165,638	100,030		120,476	46,252		29,903	10,175		145,748	12,825				39,139		3,524		947,202
	1,855,972	1,218,801	757,256	-	305,169	132,712	-	80,565	27,261	-	562,471	147,740	-	924	462	295,012	462	6,296		5,391,104
									327,137.39											

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DEBS PP&E Return Calculation
2022 Budget

Net PPE	975,000,000			
CWIP	(285,000,000)	648,686,047		
DEC capital lease NBV	(55,541,919)			
Deferred taxes - PIS (below)	(40,465,975)	0.07		
Total	**593,992,106**			

Deferred taxes Federal and State	54,267,892			Source: Susie Koch EY
Sub total	54,267,892			
CWIP * 3.52%	(10,012,690)		D	
Sub-Total	44,255,202			
Deferred taxes Cap lease	(3,789,227)			
Total	40,465,975			

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Purpose: To calculate return on DEBS Inventory assets using the allowable revenue requirement for each jurisdiction. The amount is calculated each month on Day 4 using the total inventory assets in account 0154100

SERVICE COMPANY COST ALLOCATION DETAILS
COST ALLOCATIONS IN SERVICE AGREEMENTS

SA #	Function	Function	Allocation Method	Operating Unit	Alloc Pool	St Cd	DPC 20056 Duke Power Goverence	DEP 50991 DE Progress	DEF 50992 Progress Florida	DEO 75956 KO Transmission	DEO 75953 DE Ohio (USFRELGOV)	DEO 75954 DE Ohio (USFRGSGOV)	DEO	DEK 75957 DE Kentucky (USFRELG	DEK 75958 DE Kentucky (USFRGSG	DEK	DEI 75960	Comm Pwr 75961 Cinergy Sol Hldng Co Inc (GOV)	Comm	Comm Trans 75964	Gas Oper 75965	Peidmont 47151 Piedmont gas Del	Other 10157 PanEnergy governan	Other 75963 Cinergy Ventures LLC	Other	Total
Fac ROR	**Facilities Rate of Return Allocation**	Allocates the Service Company's portion of	*Three Factor Formula*	DURR	Facilities ROR Gvrnce	CG1	34.25%	23.53%	16.62%		3.46%	1.58%	5.04%	1.16%	0.38%	1.54%	10.27%	2.92%	2.92%	0.02%	0.01%	5.73%	0.01%	0.06%	0.07%	100.00%
	Account #	Res Type	Resp Center		Revenue Requirement (provided by each																					
							8.95%	8.67%	7.66%	10.60%	10.34%	10.60%		8.46%	8.71%		7.86%	8.95%		8.95%	8.95%	8.65%	8.95%	8.95%		
							12	12	12	12	12	12		12	12		12	12		12	12	12	12	12		
							0.75%	0.72%	0.64%	0.88%	0.86%	0.88%		0.71%	0.73%		0.66%	0.75%		0.75%	0.75%	0.72%	0.75%	0.75%		
	0931008 for expense	78000	8000 for expense																							
	0456949 for income	78000	9957 for income				GO22	PCGS	PFGS	GO27	GO24	GO25		GO28	GO29		GO31	GO32		SG38	SG39	SG37	GO21	GO34		
			Budget value:		25,500,000		65,139	43,351	27,053	-	7,602	3,559		2,085	703		17,153	5,553		38	19	10,532	19	114		**182,923**
																							2022 Budget			**2,195,079.02**
							65,139	43,351	27,053	-	7,602	3,559	-	2,085	703	-	17,153	5,553	-	38	19	10,532	19	114		182,923

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Purpose: To calculate return on DEBS Pension assets using the allowable revenue requirement for each jurisdiction. The amount is calculated each month on Day 4 using the total pension assets less deferred taxes.

SA #	SERVICE COMPANY COST ALLOCATION DETAILS COST ALLOCATIONS IN SERVICE AGREEMENTS Function	Function	Allocation Method	Operating Unit	Alloc Pool	St Cd	DPC 20056 Duke Power Goverence	DEP 50991 DE Progress	PEF 50992 Progress Florida	DEO 75953 DE Ohio (USFRELGOV)	DEO 75954 DE Ohio (USFRGSGOV)	DEO	DEK 75957 DE Kentucky (USFRELG	DEK 75958 DE Kentucky (USFRGSG	DEK	DEI 75960	Comm Pwr 75961 Cinergy Sol Hldng Co Inc	Piedmont 47151 Piedmont	Other 10157 PanEnergy governance	Other	Total
Fac ROR	**Labor Allocation**	Allocates the Service Company's pension dollars	*Labor Allocation*				28.21%	17.64%	12.05%	10.76%	4.03%	14.78%	3.26%	1.08%	4.34%	17.12%	1.32%	4.18%	0.36%	4.54%	100.00%

Account #	Res Type	Resp Center	Revenue Requirement (provided by each	DPC	DEP	PEF	DEO	DEO	DEO	DEK	DEK	DEK	DEI	Comm Pwr	Piedmont	Other	Other	Total
				8.95%	8.67%	7.66%	10.34%	10.60%		8.46%	8.71%		7.86%	8.95%	8.65%	8.95%		
				12	12	12	12	12		12	12		12	12	12	12		
				0.75%	0.72%	0.64%	0.86%	0.88%		0.71%	0.73%		0.66%	0.75%	0.72%	0.75%		
0931008 for expense	78000	8000 for expense																
0456949 for income	78000	9957 for income		GO22	PCGS	PFGS	GO24	GO25		GO28	GO29		GO31	GO32	SG37	GO21		
		Budget value:	**136,500,000**	287,167	173,920	105,032	126,499	48,564		31,398	10,684		153,035	13,467	41,096	3,700		994,562
															2022 Budget			**11,934,740**

2019 DEBS Labor Allocation (For 2020)

For Residual Entry & Incentive True Up	DPC	DEP	PEF	DEO	DEO	DEO	DEK	DEK	DEK	DEI	Comm Pwr	Piedmont	Other	Other	Total
	287,167	173,920	105,032	126,499	48,564	-	31,398	10,684	-	153,035	13,467	41,096	3,700		994,562

Entity	DEBS Labor %	BU	OU	
DEC	28.21%	20018	0944	
DEOH - Gas	4.03%	75028	GDOH	
DEOH - Electric	10.76%	75025	EL01	
DEK - Gas	1.08%	75088	GDKY	
DEK - Electric	3.26%	75080	EL02	
DEI	17.12%	75110	EL03	
DEP	17.64%	50120	PECO	
DEF	12.05%	50220	X60D	
CP Degs	1.32%	75290	CMPR	
Other Consol	0.33%	10046	A622	Other
Piedmont	4.18%	47108	PNGN	
CT Gas	0.01%	75528	DEPH	Other
CT Electric	0.02%	75526	DCTR	Other
	100.00%			

Source: 2019 Summary

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0931008	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
RETURN ON DEBS INVENTORY ASSET	703	703	703	703	703	703	703	703	703	703	703	703	8,440
RETURN ON DEBS PENSION	10175	10175	10175	10175	10175	10175	10175	10175	10175	10175	10175	10175	122,098
RETURN ON DEBS PPE ASSETS	16383	16383	16383	16383	16383	16383	16383	16383	16383	16383	16383	16383	196,600
													327,137