KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Michael A. Miller**

439. Please provide copies of credit reports for AWWC and KAWC from the major credit rating agencies (S&P, Moody's, and Fitch) published since January 1, 2008.

Response:

KAW is not rated by S&P, Moody's or Fitch. Please see the attached reports for AWW and AWCC.

For the electronic version, refer to KAW_R_AGDR1#439_042610.pdf.

Research Update:

American Water Works, Sub Ratings Remain On CreditWatch; IPO Timing Still Uncertain

Rationale

On Jan. 29, 2008, Standard & Poor's Ratings Services said that its 'A-' corporate credit rating on water and wastewater utility company American Water Works Co. Inc. (AWW) and its funding subsidiary, American Water Capital Corp. (AWCC) will remain on CreditWatch with negative implications. Standard & Poor's placed the ratings on CreditWatch on Nov. 15, 2007, after parent RWE AG (A+/Negative/A-1) postponed AWW's equity offering. The reaffirmation of the CreditWatch listing follows recent statements by RWE's management that the AWW spin-off could still be delayed beyond April and possibly occur in late 2008. We still believe the postponement of the IPO distracts AWW's management and could stall necessary improvements to the company's financial profile, which depends on the successful execution of a number of rate cases across several states. Additional delays to the IPO or AWW's inability to achieve improved financial performance in 2008 is likely to result in a downgrade.

As of Sept. 30, 2007, AWW's pro forma total debt, including capitalized operating leases and tax-effected pension and postretirement obligations, was $5.7 billion.

The ratings on the Voorhees, N.J.-based AWW reflect our assessment of the company's stand-alone credit quality based on its proposed post-IPO business plan, which includes improvements in the utility's financial profile above current levels. AWW has received all regulatory approvals necessary for its divestiture from RWE AG. The ratings are also based on our expectation of regulatory support to fund the company's sizable capital-spending requirements through rate cases or supportive policies, such as infrastructure surcharges, forward-looking test years, and single tariff pricing.

AWW's excellent business risk profile is characterized by an excellent competitive position with high barriers to entry; a diverse and supportive regulatory environment that provides reasonably allowed ROEs, incentives for infrastructure improvements and support for acquiring small water companies; an above-average service territory that provides some market, cash flow, and regulatory diversification; a stable customer base that is predominantly residential and commercial; and the relatively low operating risk of regulated and nonregulated operations. AWW's aggressive financial profile, uncertainties associated with its planned equity and equity unit offerings, elevated capital-spending requirements for infrastructure replacement, increased compliance costs with water-quality standards, and the company's reliance on acquisitions to provide growth partly offset these strengths.

RWE indirectly owns AWW. Through RWE's regulated subsidiaries, AWW provides water and wastewater services to more than 3.3 million customers in 20 states. AWW's regulated utility subsidiaries represent almost 90% of total revenues, but have provided almost 100% of adjusted EBIT for the past three years. The company's nonregulated subsidiaries consist of water and wastewater

Research Update: American Water Works, Sub Ratings Remain On CreditWatch; IPO Timing Still Uncertain

facility management and maintenance, as well as design and construction consulting services related to water and wastewater plants. We view these nonregulated segments as having modest incremental risk to AWW due to their lack of cash flow contribution and modest expected capital requirements.

AWW's financial metrics are weak for the rating and partly result from agreements with some state regulators not to file rate cases for up to three years. This was a condition of RWE's acquisition of AWW. As evidenced by the filing of 11 rate cases in 2007, we expect AWW to actively pursue additional rate cases as determined by its rising operating costs, capital-spending plans, and pension and other postretirement obligations. We anticipate that current rate case activity may lead to annual revenue increases of up to $175 million, if granted. Another reason for the weak performance is AWW's significant goodwill impairments over the past three years. The impairments, which have totaled more than $1 billion, were based on slower-than-expected growth in RWE's North American water segment, privatization of water utilities in North America, and valuation of its nonregulated businesses. Based on indicative market values, an impairment of up to $300 million could be reported in fourth-quarter 2007.

Adjusted funds from operations (FFO) to total debt is still below 10%, which is weak for the rating. In addition, significant rate relief is necessary for the company to earn its authorized rate of return of about 10%. We expect adjusted FFO, which is subpar at $475 million for the 12 months ended Sept. 30, 2007, to benefit from continued customer growth and rate increases in several key states. After AWW issued $1.5 billion of senior notes, which the company used to redeem RWE intercompany preferred stock, adjusted debt to capital increased to 56% as of Sept. 30, 2007, from 48% as of June 30, 2007. The increase in leverage is partly due to the intermediate equity treatment of the preferred stock, compared with the 100% debt treatment of the newly issued debt.

As a condition of the regulatory approvals for the sale, RWE has agreed that AWW's capital structure will consist of at least 45% common equity at the time of the IPO. As of Sept. 30, 2007, common equity consisted of 47% of AWW's total book capitalization. RWE must infuse additional cash equity if leverage increases from current levels.

Short-term rating factors

The 'A-2' short-term ratings on AWW and AWCC reflect sizable borrowing capacity under the company's revolving credit facility and stable cash flows from regulated subsidiaries. However, AWW's cash uses include high levels of capital spending, substantial upcoming debt maturities, and expectations that the company will institute a common stock dividend after it completes the proposed IPO. Capital expenditures are projected at $4 billion to $4.5 billion during the next five years for infrastructure replacements, new facility construction, maintenance of water-quality and environmental standards, and system reliability.

With cash from operations for the past 12 months of only $390 million, AWW's cash flow generation is insufficient to meet its ongoing operating and capital needs, and will require additional access to the capital markets over the intermediate term. Scheduled debt maturities of $196 million in 2008, $55

Research Update: American Water Works, Sub Ratings Remain On CreditWatch; IPO Timing Still Uncertain

million in 2009, and $54 million in 2010 are fairly sizable. AWW is expected to implement a dividend policy with its equity issuance, roughly matching the average dividend yield of other companies in its peer group, which is about 2%. As such, annual dividend payments could exceed $100 million.

As of Sept. 30, 2007, AWW had $151 million in unrestricted cash, about $415 million available under its $800 million revolving credit facility, which matures on Sept. 15, 2011, and a $10 million short-term working-capital line of credit. Financial covenants include a maximum debt to capital (with adjustments) of 70% and restrictions on liens, distributions, debt incurred at AWW, and asset sales.

Ratings List

Ratings Remain On CreditWatch Negative

American Water Works Co. Inc.
  Corp. credit rating   A-/Watch Neg

American Water Capital Corp.
  Corp. credit rating   A-/Watch Neg
  Senior unsecured debt   A-/Watch Neg
  Preferred stock   BBB/Watch Neg

Complete ratings information is available to subscribers of RatingsDirect, the real-time Web-based source for Standard & Poor's credit ratings, research, and risk analysis, at www.ratingsdirect.com. All ratings referenced herein can be found on Standard & Poor's public Web site at www.standardandpoors.com; select your preferred country or region, then Ratings in the left navigation bar, followed by Credit Ratings Search.

STANDARD &POOR'S

RATINGSDIRECT®

May 20, 2008

Research Update:

American Water Capital's Senior Notes Rated 'A-'; 'A-' Corp Rating Remains On Watch Neg

Primary Credit Analyst:
Kenneth L Farer, New York (1) 212-438-1679;kenneth_farer@standardandpoors.com

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Research Update:

American Water Capital's Senior Notes Rated 'A-'; 'A-' Corp Rating Remains On Watch Neg

Rationale

On May 20, 2008, Standard & Poor's Ratings Services assigned its 'A-' senior unsecured rating to American Water Capital Corp.'s (AWCC) proposed $750 million of notes due 2017 and $750 million of notes due 2037. The new notes do not include certain transfer restrictions included in the original notes. Otherwise, the terms of the new notes are substantially identical to the existing notes. The ratings on the existing notes will be withdrawn on completion of the exchange offer. The 'A-' rating on the company remains on CreditWatch with negative implications.

As of March 31, 2008, parent American Water Works Co. Inc.'s (AWW) total debt, including capitalized operating leases and tax-effected pension and postretirement obligations, was $5.7 billion.

AWW's excellent business risk profile is characterized by its excellent competitive position, its diverse and supportive regulatory environment, and its stable, above-average service territory. AWW's regulatory framework includes reasonably allowed ROEs and various cost-recovery mechanisms, including incentives for infrastructure improvements. The company's geographic diversity provides it with some market, cash flow, and regulatory diversification. In addition, we view AWW's operating risks associated with its regulated and nonregulated operations as fairly low. AWW's aggressive financial profile, uncertainties associated with planned equity and equity unit offerings, elevated capital-spending requirements for infrastructure replacement, increased compliance costs with water-quality standards, and the company's reliance on acquisitions to provide growth partly offset these strengths.

AWW provides water and wastewater services to more than 3.3 million customers in 20 states. AWW's regulated utility subsidiaries represent almost 90% of total revenues, but have provided almost 100% of adjusted EBIT for the past three years. The company's nonregulated subsidiaries consist of water and wastewater facility management and maintenance, as well as design and construction consulting services related to water and wastewater plants. We view these nonregulated segments as having modest incremental risk to AWW due to their lack of cash flow contribution and modest expected capital requirements.

AWW's financial metrics are weak for the rating. The deterioration of the financial profile partly resulted from RWE's agreements to not file rate cases for up to three years following its AWW acquisition in 2004, as well as significant goodwill impairments. AWW has since filed a number of rate cases, which collectively total about $300 million to cover rising operating costs, capital expenditures, and pension and other postretirement obligations. The goodwill impairments, which have totaled more than $1 billion over the past three years, resulted principally from slower-than-expected growth and

privatization of water utilities in North America, lower valuations of nonregulated businesses, and lower post-IPO valuation of the company. As a condition of the regulatory approvals for the IPO, RWE has agreed that AWW's capital structure will consist of at least 45% common equity at the time of the IPO. To achieve the required minimum equity percentage, RWE contributed about $250 million to AWW.

Adjusted funds from operations (FFO) was $514 million for the 12 months ended March 31, 2008. FFO to total debt was 9%, which is weak for the rating. To achieve FFO to total debt of 12%, AWW must increase its cash generation by about $150 million, pro forma for the $200 million private placement to be completed in the second quarter and a $245 million equity infusion from RWE. The uncertainties associated with the timing of the company's rate cases, one of which is outstanding from 2006, and its significant capital plans are significant risks that may prevent adequate improvements to the company's financial profile to maintain the current rating. Adjusted debt to capital increased to 60% as of March 31, 2008, from 49% as of the previous year. A portion of the increased leverage metric is attributed to the issuance of unsecured notes to redeem the company's outstanding preferred stock, which we consider to have intermediate equity characteristics.

Short-term credit factors

The 'A-2' short-term ratings on AWW and AWCC reflect sizable borrowing capacity under the company's revolving credit facility and stable cash flows from regulated subsidiaries. However, AWW's cash uses include high levels of capital spending, substantial upcoming debt maturities, and expectations that the company will institute a common stock dividend after it completes the proposed IPO. Capital expenditures are projected at $4 billion to $4.5 billion during the next five years for infrastructure replacements, new facility construction, maintenance of water-quality and environmental standards, and system reliability.

With cash from operations for the past 12 months of only $550 million, AWW's cash flow generation is insufficient to meet its ongoing operating and capital needs, and will require additional access to the capital markets over the intermediate term. Scheduled debt maturities of $196 million in 2008, $55 million in 2009, and $54 million in 2010 are also fairly sizable. Contingent on board approval, AWW is expected to declare dividends equal to about $128 million per year, starting in the third quarter. This equals a 3.8% dividend yield at recent market prices, which is materially higher than the average dividend yield of other companies in its peer group of about 2%.

As of March 31, 2008, AWW had $9 million in unrestricted cash, about $420 million available under its $800 million revolving credit facility, which matures on Sept. 15, 2011, and a $10 million short-term working-capital line of credit. Financial covenants include a maximum debt to capital (with adjustments) of 70% and restrictions on liens, distributions, debt incurred at AWW, and asset sales.

Research Update: American Water Capital's Senior Notes Rated 'A-'; 'A-' Corp Rating Remains On Watch Neg

Ratings List

Ratings Assigned

American Water Capital Corp.
 $750 mil. senior unsecured notes due 2017   A-/Watch Neg
 $750 mil. senior unsecured notes due 2037   A-/Watch Neg

Complete ratings information is available to subscribers of RatingsDirect, the
real-time Web-based source for Standard & Poor's credit ratings, research, and
risk analysis, at www.ratingsdirect.com. All ratings affected by this rating
action can be found on Standard & Poor's public Web site at
www.standardandpoors.com; select your preferred country or region, then
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The McGraw-Hill Companies

STANDARD &POOR'S

RATINGSDIRECT®

June 19, 2008

Research Update:

American Water Works, Capital Corp Downgraded To 'BBB+', Off CreditWatch; Outlook Stable

Primary Credit Analyst:
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Research Update:

American Water Works, Capital Corp Downgraded To 'BBB+', Off CreditWatch; Outlook Stable

Rationale

On June 19, 2008, Standard & Poor's Ratings Services lowered its corporate credit ratings on American Water Works Co. Inc. (AWW) and its funding subsidiary American Water Capital Corp. (AWCC) to 'BBB+' from 'A-'. At the same time, we removed the ratings from CreditWatch with negative implications. The outlook is stable.

The downgrade primarily reflects our concern that the pace and extent of cash flow improvement will be considerably slower than we previously expected. Despite an 8% increase in revenues in the first quarter of 2008, key credit metrics, including adjusted funds from operations (FFO) to total debt of around 9%, FFO interest coverage under 3x, and adjusted debt to total capital of 60%, were unchanged from the prior quarter and are weak for the 'A-' rating. Over the intermediate term, the company will be engaged in a greater number of rate proceedings than we expected, as AWW seeks to phase in rate increases incrementally to avoid rate shock while prudently financing capital spending of up to $1 billion per year over the next several years. This is likely to result in sizable back-to-back rate filings in a number of states and make achieving financial metrics appropriate for the 'A' category a longer term proposition. Funding from the secondary equity market could be more challenging as RWE AG's attempts to divest its holdings will compete with offerings by AWW, which may slow improvements in leverage.

Notwithstanding the medium-term weakness in AWW's financial profile, these risks are partially offset against AWW's excellent business risk profile. A favorable competitive position, diverse and supportive regulatory environment, and stable, above-average service territory characterize AWW's business risk profile. AWW's regulatory framework includes reasonably allowed ROEs and various cost-recovery mechanisms, including incentives for infrastructure improvements. The company's geographic diversity provides it with some market, cash flow, and regulatory diversification. In addition, we view AWW's operating risks associated with its regulated and nonregulated operations as fairly low. AWW's aggressive financial profile, uncertainties associated with planned equity offerings, elevated capital-spending requirements for infrastructure replacement, increased compliance costs with water-quality standards, and the company's reliance on acquisitions to provide growth partly offset these strengths.

AWW provides regulated water and wastewater services to more than 3.3 million customers in 20 states. AWW's regulated utility subsidiaries represent almost 90% of total revenues, but have provided almost 100% of adjusted EBIT for the past three years. The company's nonregulated subsidiaries consist of water and wastewater facility management and maintenance, as well as design

Research Update: American Water Works, Capital Corp Downgraded To 'BBB+', Off CreditWatch; Outlook Stable

and construction consulting services related to water and wastewater plants.
We view these nonregulated segments as having modest incremental risk to AWW
due to their lack of cash flow contribution and modest expected capital
requirements.

AWW's financial metrics are acceptable for the 'BBB+' rating. RWE's
agreements to not file rate cases for up to three years following its AWW
acquisition in 2003, as well as significant goodwill impairments, resulted in
a deterioration of the financial profile. AWW has since filed a number of rate
cases, which total about $300 million to cover rising operating costs, capital
expenditures, and pension and other postretirement obligations.

Adjusted FFO was $514 million for the 12 months ended March 31, 2008. FFO
to total debt was 9%, which are somewhat weak, but acceptable, for the rating.
The uncertainties associated with the timing of the company's rate cases and
the substantially higher capital plans are significant risks that may prevent
adequate improvements to the company's financial profile. Adjusted debt to
capital was 60% at March 31, 2008, from 49% as of the previous year. A portion
of the increased leverage metric is attributed to the $750 million goodwill
impairment related to a post-IPO valuation test and the issuance of unsecured
notes to redeem the company's outstanding preferred stock, which we consider
to have intermediate equity characteristics.

Short-term credit factors

The 'A-2' short-term ratings on AWW and AWCC reflect sizable borrowing
capacity under the company's revolving credit facility and stable cash flows
from regulated subsidiaries. However, AWW's cash uses include high levels of
capital spending, substantial upcoming debt maturities, and expectations that
the company will institute a common stock dividend. Capital expenditures are
projected at $4 billion to $4.5 billion during the next five years for
infrastructure replacements, new facility construction, maintenance of
water-quality and environmental standards, and system reliability.

With cash from operations for the past 12 months of only $550 million,
AWW's cash flow generation is insufficient to meet its ongoing operating and
capital needs, and will require additional access to the capital markets over
the intermediate term. Scheduled debt maturities of $196 million in 2008, $55
million in 2009, and $54 million in 2010 are also fairly sizable. Contingent
on board approval, AWW is expected to declare dividends equal to about $128
million per year, starting in the third quarter. This equals a 3.8% dividend
yield at recent market prices, which is materially higher than the average
dividend yield of other companies in its peer group of about 2%.

As of March 31, 2008, AWW had $9 million in unrestricted cash, about $420
million available under its $800 million revolving credit facility, which
matures on Sept. 15, 2011, and a $10 million short-term working-capital line
of credit. Financial covenants include a maximum debt to capital (with
adjustments) of 70% and restrictions on liens, distributions, debt incurred at
AWW, and asset sales.

Outlook

The stable outlook reflects our expectation that AWW will be granted
supportive rate increases over the intermediate term to address rising costs
and increased capital spending plans. The current rating can accommodate some
acquisitions, assuming management funds the acquisitions in a balanced manner.
The outlook could be revised to negative if financial performance stalls or
deteriorates, which could result from substantial debt-financing of capital
expenditures or acquisitions or if rate increases or allowed returns are set
at levels substantially below the requested figures and significantly slower
to be resolved than currently expected. Although less likely in the near term,
the outlook could be revised to positive if higher-than-expected rate
increases or favorable cost recovery mechanisms allow for adjusted FFO to
total debt of closer to 12% and adjusted leverage between 50% to 55%.

Ratings List

Ratings Lowered, Off CreditWatch

American Water Works Co. Inc.

	To	From
Corp. credit rating	BBB+/Stable/A-2	A-/Watch Neg/A-2

American Water Capital Corp.

Corp. credit rating	BBB+/Stable/A-2	A-/Watch Neg/A-2
Senior unsecured debt	BBB+/Stable/A-2	A-/Watch Neg/A-2
Preferred stock	BBB-	BBB/Watch Neg

Complete ratings information is available to subscribers of RatingsDirect, the
real-time Web-based source for Standard & Poor's credit ratings, research, and
risk analysis, at www.ratingsdirect.com. All ratings affected by this rating
action can be found on Standard & Poor's public Web site at
www.standardandpoors.com; select your preferred country or region, then
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My Credit Profile
American Water Capital Corp., NJ - 'BBB+/Stable/A-2'

Research Update: Rating On American Water Works, Capital Corp. Affirmed At 'BBB+'; $50M Sr. Notes Rated 'BBB+'

Rationale

On Nov. 14, 2008, Standard & Poor's Ratings Services assigned its 'BBB+' unsecured debt rating to American Water Capital Corp.'s (AWCC) $50 million senior unsecured monthly notes due Dec. 1, 2038. At the same time, Standard & Poor's affirmed its 'BBB+' corporate credit rating on AWCC and its parent, American Water Works Co. Inc. (AWW; BBB+/Stable/A-2). The company will use proceeds from the debt issue to reduce short-term borrowings.

AWW's excellent business risk profile is supported by a favorable competitive position, a diverse and supportive regulatory environment, and a stable, above-average service territory. AWW's regulatory framework includes reasonably allowed returns on equity and various cost-recovery mechanisms, including incentives for infrastructure improvements. The company's geographic diversity provides it with some market, cash flow, and regulatory diversification. In addition, we view AWW's operating risks associated with its regulated and nonregulated operations as fairly low.

AWW's aggressive financial profile, uncertainties associated with planned equity offerings, elevated capital-spending requirements for infrastructure replacement, increased compliance costs with water-quality standards, and the company's reliance on acquisitions to provide growth partly offset these strengths.

AWW provides regulated water and wastewater services to more than 3.3 million customers in 20 states. AWW's regulated utility subsidiaries represent almost 90% of total revenues, but have provided almost 100% of adjusted EBIT for the past three years. The company's nonregulated subsidiaries engage in water and wastewater facility management and maintenance, as well as design and construction consulting services related to water and wastewater plants. We view these nonregulated segments as having modest incremental risk to AWW due to their lack of cash flow contribution and modest expected capital requirements.

AWW's financial metrics are acceptable for the 'BBB+' rating. Former parent RWE AG's agreements to not file rate cases for up to three years following its AWW acquisition in 2003, as well as significant goodwill impairments, resulted in a deterioration of the financial profile. In 2008, AWW was granted $78 million of rate increases and has filed requests for an additional $260 million. The company has requested the rate increases to cover

My Credit Profile

rising operating costs, capital expenditures, and pension and other postretirement obligations.

Adjusted FFO was $584 million for the 12 months ended Sept. 30, 2008. FFO to total debt was 10.3%, which is acceptable for the rating. The uncertainties associated with the timing of the company's rate cases and the substantially higher capital plans are significant risks that may prevent adequate improvements to the company's financial profile. Adjusted debt to capital was 58% at Sept. 30, 2008, slightly higher than 55% as of year-end 2007. A portion of the increased leverage metric is attributed to the $750 million goodwill impairment related to a post-IPO valuation test and the issuance of unsecured notes to redeem the company's outstanding preferred stock, which we consider to have intermediate equity characteristics.

Short-term credit factors

The 'A-2' short-term ratings on AWW and AWCC reflect sizable borrowing capacity under the company's revolving credit facility and stable cash flows from regulated subsidiaries. However, AWW's cash uses include high levels of capital spending, substantial upcoming debt maturities, and expectations that the company will institute a common stock dividend. Capital expenditures are projected at around $5 billion during the next five years for infrastructure replacements, new facility construction, maintenance of water-quality and environmental standards, and system reliability.

With cash from operations for the past 12 months of only $584 million, AWW's cash flow generation is insufficient to meet its ongoing operating and capital needs, and will require additional access to the capital markets over the intermediate term. Scheduled debt maturities of $96 million in 2008, $55 million in 2009, and $54 million in 2010 are also fairly sizable. AWW declared a $32 million dividend for the quarter ending Sept 30, 2008. This equates to a dividend yield of about 4%, which is comparable to its peer group.

As of Nov. 4, 2008, AWW had $462 million available under its $800 million revolving credit facility. A majority (85%) of the revolving credit facility matures on Sept. 15, 2013, with the balance due Sept. 15, 2012. The company also has access to a $10 million short-term working-capital line of credit. Financial covenants include a maximum debt to capital (with adjustments) of 70% and restrictions on liens, distributions, debt incurred at AWW, and asset sales.

Outlook

The stable outlook reflects our expectation that AWW will be granted supportive rate increases over the intermediate term to address rising costs and increased capital spending plans. The current rating can accommodate some acquisitions, assuming management funds the acquisitions in a balanced manner. The outlook could be revised to negative if financial performance stalls or deteriorates, which could result from substantial debt-financing of capital expenditures or acquisitions or if rate increases or allowed returns are set at levels substantially below the requested figures and significantly slower to be resolved than currently expected. Although less likely in the near term, we could revise the outlook to positive if higher-than-expected rate increases or favorable cost recovery mechanisms allow for adjusted FFO to total debt of closer to 12% and adjusted leverage between 50% to 55%.

Ratings List

Ratings Affirmed

American Water Works Co. Inc.
  Corp. credit rating   BBB+/Stable/A-2

American Water Capital Corp.
  Corp. credit rating   BBB+/Stable/A-2
  Senior unsecured debt   BBB+

New Rating

American Water Capital Corp.
  Senior unsecured debt   BBB+

Complete ratings information is available to subscribers of RatingsDirect, the
real-time Web-based source for Standard & Poor's credit ratings, research, and
risk analysis, at www.ratingsdirect.com. All ratings affected by this rating
action can be found on Standard & Poor's public Web site at
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Ratings in the left navigation bar, followed by Credit Ratings Search.

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My Credit Profile
American Water Works Co. Inc., DE - 'BBB+/Stable/A-2'

Bulletin: Rating On American Water Works Not Affected By Common Stock Offering

Publication date:	01-Jun-2009
Primary Credit Analyst:	Kenneth L Farer, New York (1) 212-438-1679; kenneth_farer@standardandpoors.com

NEW YORK (Standard & Poor's) June 1, 2009--Standard & Poor's Ratings Services said today that American Water Works Co. Inc.'s (AWW) announcement that it will sell 26 million shares of its common stock will not affect the 'BBB+' corporate credit rating and stable outlook on the company and its subsidiaries. In its announcement, AWW stated that RWE A.G. is offering 11.5 million of the shares. After this transaction is complete, RWE's ownership in AWW should be about 49%. AWW will use the sale proceeds from its 14.5 million shares (about $250 million before transaction expenses) to reduce short-term debt. This announcement is consistent with our expectation for the rating and the company's previously stated plans to raise up to $300 million in equity in 2009.

STANDARD &POOR'S

Corporate & Government Ratings   55 Water Street
New York, NY 10041-0003

August 27, 2009

Ms. Ellen Wolf
Senior Vice President & CFO
American Water Works Co. Inc.
1025 Laurel Oak Road
P.O. Box 1770
Voorhees, NJ 08043

Re: *AMERICAN WATER CAPITAL CORP.*
$26,000,000 County of Owen, Kentucky Waterworks System Revenue Bonds,
Series B (Kentucky-American Water Company Project) due September 1, 2039

Dear Ms. Wolf:

Pursuant to your request for a Standard & Poor's rating on the above-referenced obligations, we have reviewed the information submitted to us and, subject to the enclosed *Terms and Conditions*, have assigned a rating of "BBB+".

The rating is not investment, financial, or other advice and you should not and cannot rely upon the rating as such. The rating is based on information supplied to us by you or by your agents but does not represent an audit. We undertake no duty of due diligence or independent verification of any information. The assignment of a rating does not create a fiduciary relationship between us and you or between us and other recipients of the rating. We have not consented to and will not consent to being named an "expert" under the applicable securities laws, including without limitation, Section 7 of the U.S. Securities Act of 1933. The rating is not a "market rating" nor is it a recommendation to buy, hold, or sell the obligations.

This letter constitutes Standard & Poor's permission to you to disseminate the above-assigned rating to interested parties. Standard & Poor's reserves the right to inform its own clients, subscribers, and the public of the rating.

Standard & Poor's relies on the issuer and its counsel, accountants, and other experts for the accuracy and completeness of the information submitted in connection with the rating. This rating is based on financial information and documents we received prior to the issuance of this letter. Standard & Poor's assumes that the documents you have provided to us are final. If any subsequent changes were made in the final documents, you must notify us of such changes by sending us the revised final documents with the changes clearly marked.

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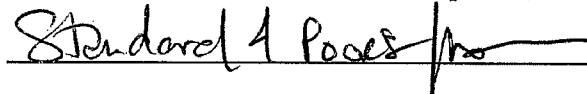
subsequent changes were made in the final documents, you must notify us of such changes by sending us the revised final documents with the changes clearly marked.

To maintain the rating, Standard & Poor's must receive all relevant financial information as soon as such information is available. Placing us on a distribution list for this information would facilitate the process. You must promptly notify us of all material changes in the financial information and the documents. Standard & Poor's may change, suspend, withdraw, or place on CreditWatch the rating as a result of changes in, or unavailability of, such information. Standard & Poor's reserves the right to request additional information, if necessary, to maintain the rating. Please send all information to Kenneth Farer at Standard & Poor's Corporate Ratings, 55 Water Street, New York, NY 10041.

Standard & Poor's is pleased to have the opportunity to be of service to you. For more information please visit our website at www.standardandpoors.com. If we can be of help in any other way, please contact us. Thank you for choosing Standard & Poor's and we look forward to working with you again.

Very truly yours,

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Analytical Contact: Kenneth Farer
Phone:212-438-1679

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Applicable To
U.S. Corporate Ratings**

Scope of Rating. The Company understands and agrees that (i) an issuer rating reflects Standard & Poor's current opinion of the Company's overall financial capacity to pay its financial obligations as they come due, (ii) an issue rating reflects Standard & Poor's current opinion of the likelihood that the Company will make payments of principal and interest on a timely basis in accordance with the terms of the obligation, (iii) a rating is an opinion and is not a verifiable statement of fact, (iv) ratings are based on information supplied to Standard & Poor's by the Company or by its agents and upon other information obtained by Standard & Poor's from other sources it considers reliable, (v) Standard & Poor's does not perform an audit in connection with any rating and a rating does not represent an audit by Standard & Poor's, (vi) Standard & Poor's relies on the Company, its accountants, counsel, and other experts for the accuracy and completeness of the information submitted in connection with the rating and surveillance process, (vii) Standard & Poor's undertakes no duty of due diligence or independent verification of any information, (viii) Standard & Poor's does not and cannot guarantee the accuracy, completeness, or timeliness of the information relied on in connection with a rating or the results obtained from the use of such information, (ix) Standard & Poor's may raise, lower, suspend, place on CreditWatch, or withdraw a rating at any time, in Standard & Poor's sole discretion, and (x) a rating is not a "market" rating nor a recommendation to buy, hold, or sell any financial obligation.

Publication. Standard & Poor's reserves the right to publish, disseminate, or license others to publish or disseminate the rating and the rationale for the rating unless the Company specifically requests that the rating be assigned and maintained on a confidential basis. If a confidential rating subsequently becomes public through disclosure by the Company or a third party other than Standard & Poor's, Standard & Poor's reserves the right to publish it. As a matter of policy, Standard & Poor's publishes ratings for all public issues in the U.S. market and 144A issues with registration rights. Standard & Poor's may publish explanations of Standard & Poor's ratings criteria from time to time and nothing in this Agreement shall be construed as limiting Standard & Poor's ability to modify or refine Standard & Poor's criteria at any time as Standard & Poor's deems appropriate.

Information to be Provided by the Company. The Company shall meet with Standard & Poor's for an analytic review at any reasonable time Standard & Poor's requests. The Company also agrees to provide Standard & Poor's promptly with all information relevant to the rating and surveillance of the rating including information on material changes to information previously supplied to Standard & Poor's. The rating may be affected by Standard & Poor's opinion of the accuracy, completeness, timeliness, and reliability of information received from the Company or its agents. Standard & Poor's undertakes no duty of due diligence or independent verification of information provided by the Company or its agents. Standard & Poor's reserves the right to withdraw the rating if the Company or its agents fails to provide Standard & Poor's with accurate, complete, timely, or reliable information.

Confidential Information. For purposes of this Agreement, "Confidential Information" shall mean information received by Standard & Poor's from the Company which has been marked "Proprietary and Confidential" or in respect of which Standard & Poor's has received from the Company specific written notice of its proprietary and confidential nature. Notwithstanding the foregoing, information disclosed by the Company shall not be deemed to be Confidential Information, and Standard & Poor's shall have no obligation to treat such information as Confidential Information, if such information (i) was substantially known by Standard & Poor's at the time of such disclosure, (ii) was known to the public at the time of such disclosure, (iii) becomes known to the public (other than by Standard & Poor's act) subsequent to such disclosure, (iv) is disclosed lawfully to Standard & Poor's by a third party subsequent to such disclosure, (v) is developed independently by Standard & Poor's without reference to the Confidential Information, (vi) is approved in

writing by the Company for public disclosure, or (vii) is required by law to be disclosed by the Company or Standard & Poor's provided that notice of such required disclosure is given to the Company. Commencing on the date hereof, Standard & Poor's will use Confidential Information only in connection with the assignment and monitoring of ratings and will not directly disclose any Confidential Information to any third party. Standard & Poor's may also use Confidential Information for research and modeling purposes provided that the Confidential Information is not presented in a way that can be directly tied to the Company. The Company agrees that the Confidential Information may be used to raise, lower, suspend, withdraw, place on CreditWatch, and change the Outlook assigned to any rating if the Confidential Information is not directly disclosed.

Standard & Poor's Not an Advisor, Fiduciary, or Expert. The Company understands and agrees that Standard & Poor's is not acting as an investment, financial, or other advisor to the Company and that the Company should not and cannot rely upon the rating or any other information provided by Standard & Poor's as investment or financial advice. Nothing in this Agreement is intended to or should be construed as creating a fiduciary relationship between Standard & Poor's and the Company or between Standard & Poor's and recipients of the rating. The Company understands and agrees that Standard & Poor's has not consented to and will not consent to being named an "expert" under the applicable securities laws, including without limitation, Section 7 of the U.S. Securities Act of 1933.

Limitation on Damages. The Company agrees that Standard & Poor's, its officers, directors, shareholders, and employees shall not be liable to the Company or any other person for any actions, damages, claims, liabilities, costs, expenses, or losses in any way arising out of or relating to the rating or the related analytic services provided for in an aggregate amount in excess of the aggregate fees paid to Standard & Poor's for the rating, except for Standard & Poor's gross negligence or willful misconduct. In no event shall Standard & Poor's, its officers, directors, shareholders, or employees be liable for consequential, special, indirect, incidental, punitive or exemplary damages, costs, expenses, legal fees, or losses (including, without limitation, lost profits and opportunity costs). In furtherance and not in limitation of the foregoing, Standard & Poor's will not be liable in respect of any decisions made by the Company or any other person as a result of the issuance of the rating or the related analytic services provided by Standard & Poor's hereunder or based on anything that appears to be advice or recommendations. The provisions of this paragraph shall apply regardless of the form of action, damage, claim, liability, cost, expense, or loss, whether in contract, statute, tort (including, without limitation, negligence), or otherwise. The Company acknowledges and agrees that Standard & Poor's does not waive any protections, privileges, or defenses it may have under law, including but not limited to, the First Amendment of the Constitution of the United States of America.

Term. This Agreement shall terminate when the ratings are withdrawn. Notwithstanding the foregoing, the paragraphs above, "Confidential Information", "Standard & Poor's Not an Advisor, Fiduciary, or Expert", and "Limitation on Damages", shall survive the termination of this Agreement or any withdrawal of a rating.

Third Parties. Nothing in this Agreement, or the rating when issued, is intended or should be construed as creating any rights on behalf of any third parties, including, without limitation, any recipient of the rating. No person is intended as a third party beneficiary to this Agreement or to the rating when issued.

Binding Effect. This Agreement shall be binding on, and inure to the benefit of, the parties hereto and their successors and assigns.

Severability. In the event that any term or provision of this Agreement shall be held to be invalid, void, or unenforceable, then the remainder of this Agreement shall not be affected, impaired, or invalidated, and each such term and provision shall be valid and enforceable to the fullest extent permitted by law.

Complete Agreement. This Agreement constitutes the complete agreement between the parties with respect to its subject matter. This Agreement may not be modified except in a writing signed by authorized representatives of both parties.

Governing Law. This Agreement and the rating letter shall be governed by the internal laws of the State of New York. The parties agree that the state and federal courts of New York shall be the exclusive forums for any dispute arising out of this Agreement and the parties hereby consent to the personal jurisdiction of such courts.

August 26, 2009

Moody's Investors Service

Ok Azie
Corporate Assistant Treasurer
American Water Works Company, Inc.
1025 Laurel Oak Road
Voorhees, NJ 08043

7 World Trade Center at 250 Greenwich Street
New York, New York 10007

Dear Mr. Azie:

Per your request, Moody's has reviewed the Preliminary Official Statement dated July 29, 2009 relating to the bonds referenced below:

American Water Capital Corp.

$26,000,000
County of Owen, Kentucky
Waterworks System Revenue Bonds, 2009 Series B
(Kentucky–American Water Company Project)

Subject to final documentation, it is Moody's opinion that the above referenced bonds, which are long-term senior unsecured obligations of American Water Capital Corp., be rated Baa2. The rating outlook is stable.

It is Moody's understanding that the proceeds of the bonds will be applied, together with other moneys provided by Kentucky-American, to finance the costs of acquisition, construction, installation and equipping of major water collection, treatment and transmission facilities, including the acquisition, construction and installation of a major intake and water treatment plant at Pool No. 3 of the Kentucky River, a booster station and related water transmission facilities, all located within the corporate boundaries of Owen County, Kentucky, as well as for the costs of issuing the bonds.

Moody's ratings may be changed or withdrawn at any time without prior written notice. The ratings and any revisions or withdrawals thereof are publicly disseminated by Moody's through normal print and electronic media and in response to oral requests to Moody's rating desk.

If we can be of further assistance, please feel free to contact us.

Sincerely,

James O'Shaughnessy
Analyst

My Credit Profile

STANDARD &POOR'S

My Credit Profile
American Water Capital Corp., NJ - 'BBB+/Stable/A-2'

Report Answers Investor Questions About U.S. Investor-Owned Water Companies

Publication date: 25-Jan-2010

Primary Credit Analyst: Kenneth L Farer, New York (1) 212-438-1679; kenneth_farer@standardandpoors.com

Secondary Credit Analyst: Jonathan Blankenheim, CFA, New York (1) 212-438-3119; jonathan_blankenheim@standardandpoors.com

Media Contact: Mimi Barker, New York (1) 212-438-5054; mimi_barker@standardandpoors.com

NEW YORK (Standard & Poor's) Jan. 25, 2010--Standard & Poor's Ratings Services forecasts generally stable credit quality in 2010 for U.S. investor-owned water utility sector, according to a report published on RatingsDirect today by Standard & Poor's Ratings Services titled "Top 10 Investor Questions: U.S. Investor-Owned Water Companies."

This view incorporates our expectation of supportive regulatory decisions and continued access to the capital markets. We expect additional regulatory filings to address increased capital spending and operating costs as well as continued access to debt and equity markets. We also expect regulatory requests for enhanced rate-making mechanisms, such as decoupling (the insulation of the utility's financial health from declining throughput on its system), that should support earnings and cash flow stability.

"Rated U.S. investor-owned water utilities continue to demonstrate above-average access to debt financing and to maintain adequate liquidity," said Standard & Poor's credit analyst Kenneth L. Farer.

During the second half of 2009, American Water Works Co. Inc. (AWW) and its subsidiaries issued more than $250 million of debt, Aqua Pennsylvania Inc. issued $75 million of first mortgage bonds, and United Water New Jersey Inc. issued $65 million of notes. In addition to debt issuance, York Water Co. issued more than 1 million common shares that raised about $15 million, and RWE AG sold its remaining interest in AWW.

We do not see the water utility sector facing much reluctance from lenders to provide financing under revolving credit facilities despite the generally weakened condition of financial institutions, consolidation and failures among lenders, and reduced risk tolerance.

The report is available to RatingsDirect on the Global Credit Portal subscribers at www.globalcreditportal.com and RatingsDirect subscribers at www.ratingsdirect.com. If you are not a RatingsDirect subscriber, you may purchase a copy of the report by calling (1) 212-438-7280 or sending an e-mail to research_request@standardandpoors.com. Ratings information can also be found on Standard & Poor's public Web site by using the Ratings search box located in the left column at www.standardandpoors.com. Members of the media may request a copy of this report by contacting the media representative provided.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Michael A. Miller**

440. Please provide the S&P and Moody's credit and bond ratings for AWWC and KAWC for the past five years.

Response:

Kentucky-American Water Company is not rated by Standard & Poor's, Moody's Investors Service or Fitch Ratings.

The credit ratings of American Water Works Company and American Water Capital Corp. for the last five years are as follows (Long-term debt/commercial paper):

	Standard & Poor's	Moody's
2010	BBB+	Baa2
2009	BBB+	Baa2
2008	BBB+	Baa2
2007	BBB+	Baa2
2006	A-	Baa1

For the electronic version, refer to KAW_R_AGDR1#440_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Michael A. Miller**

441. Please provide the breakdown in the expected return on pension plan assets for KAWC. Specifically, please provide the expected return on different assets classes (bonds, US stocks, international stocks, etc) used in determining the expected return on plan assets. Please provide all associated source documents and work papers.

Response:

Please see the response to KAW_R_AGDR1#144_042610.pdf.

For the electronic version of this response, refer to KAW_R_AGDR1#441_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Michael A. Miller

442. Please provide the authorized and earned return on common equity over the past five years for the KAWC. Please show the figures used in calculating the earned return on common equity for each year, including all adjustments to net income and/or common equity. Please provide copies of the source documents, work papers, and data in both hard copy and electronic (Microsoft Excel) formats, with all data and formulas intact.

Response:

The requested information was provided in Exhibit MAM-1 attached to the direct testimony of Michael A. Miller. For the electronic version of this exhibit please refer to KAW_R_AGDR1#2.

The source of the net income and common equity numbers used for 2000-2009 was the audited financial statements of KAW. The audited financial statements of KAW for 2004-2008 were previously supplied in Exhibit 28 of the Company's filing. The audited income statement and capital structure (balance sheet) for 2000-2003 and 2009 are attached to this response. The net income and common equity forecasts for 2010 and 2011 were taken from Exhibit 17 provided in the Company's filing. The authorized ROE was taken from Commission Orders of previous KAWC rate cases, which can be found on the KY PSC website. The 10% authorized ROE is carried forward from the Company's 2004 rate case since the cases in 2007 and 2008 resulted in settled cases and the settlement did not address a specific cost of equity capital.

For electronic version, refer to KAW_R_AGDR1#442_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY - BALANCE SHEET (DOLLARS IN THOUSANDS)

CAPITALIZATION AND LIABILITIES

	December 31, 2000	1999
Capitalization		
Common stock	$ 36,569	$ 36,569
Paid-incapital	21	21
Retained earnings	22,730	21,686
Total common stockholder's equity	59,320	58,276
Preferred stock without mandatory redemption requirements	1,570	1,570
Preferred stock with mandatory redemption requirements	5,420	5,468
Long-term debt	42,000	63,000
Total capitalization	108,310	128,314
Current liabilities		
Notes Payable to Affiliated Company	20,830	5,716
Current portion of long-term debt	13,000	4,000
Accounts payable	1,762	1,240
Taxes accrued	242	340
Interest accrued	688	832
Wages and benefits accrued	473	352
Tax collection payable	256	236
Other	421	2,633
	37,672	15,349
Regulatory and other long-term liabilities		
Customer advances for construction	9,795	9,679
Deferred income taxes	27,271	23,594
Deferred investment tax credits	1,811	1,896
Accrued pension expense	977	1,472
Accrued posfretirement benefits expense	299	299
Other	595	457
	40,748	37,397
Contributions in aid of construction	24,210	22,705
	$ 210,940	$ 203,765

The accompanying notes ore an integral port of these financial *statements.*

FINANCIAL STATEMENTS

KENTUCKY-AMERICAN WATER COMPANY - STATEMENT OF INCOME (DOLLARS IN THOUSANDS)

	For the Years Ended	
	2000	1999
Operating revenues	$ 38,720	$ 39,104
Operating expenses		
Operation and maintenance	15,467	16,262
Depreciation and amortization	5,184	4,817
Taxes on operating income		
General	1,762	1.71 1
State income	942	1,017
Federal income	3,520	3,819
	26,875	27,626
Utility operating income	11,845	11,478
Other income		
Allowance for other funds used during construction	397	720
Miscellaneous other income	12	62
	12,254	12,260
Other deductions		
Miscellaneous other deductions	1,786	358
Taxes on other income and deductions		
State income	(146)	(24)
Federal income	(568)	(92)
	1,072	242
Income before interest charges	11,182	12,018
Interest charges		
interest on long-term debt	5,123	5,192
Amortization of debt expense	42	42
Interest on bank debt	538	25
Other interest	30	6
Allowance for borrowed funds used during construction	(210)	(381)
	5,523	4,884
Net income	$ 5,659	$ 7,134

STATEMENT OF RETAINED EARNINGS		
Retained earnings at beginning of year	$ 21,686	$ 20,252
Net income	5,659	7,134
	27,345	27,386
Dividends		
Preferred stock	540	543
Common stock	4,075	5,157
	4,6 15	5,700
Retained earnings at end of year	$ 22,730	$ 21,686

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICANWATER COMPANY

Balance Sheet
(Dollars in thousands)

	December 31,	
	2001	2000
Assets		
Property, plant and equipment		
Utility plant - at original cost less accumulated depreciation	$ 200,792	$ 189,424
Utility plant acquisition adjustments, net	359	138
	201,151	189,562
Non utility property	250	250
Current assets		
Cash	1,453	803
Customer accounts receivable	1,568	1,768
Allowance for uncollectible accounts	(58)	(58)
Unbilled revenues	2,137	2,085
Prepaid tax	-	641
Materials and supplies	361	431
Deferred vacation pay	252	219
Other	258	458
	5,971	6,349
Regulatory and other long-term assets		
Deferred business service project expense	1,360	164
Regulatory asset-income taxes recoverable through rates	4,523	4,405
Debt and preferred stock expense	871	835
Deferred programmed maintenance	3,193	3,340
Preliminary survey and investigation	430	179
Other	5,802	5,856
	16,179	14,779
	$ 223,551	$ 210,940
Capitalization and Liabilities		
Capitalization		
Common stock	$ 36,569	$ 36,569
Paid-in capital	21	21
Retained earnings	24,407	22,730
Total common stockholder's equity	60,997	59,320
Preferred stock		
With mandatory redemption requirements	5,380	5,420
Without mandatory redemption requirements	1,570	1,570
Long-term debt	44,500	42,000
Total capitalization	112,447	108,310
Current liabilities		
Affiliate borrowings	24,668	20,830
Current portion of long-term debt	13,000	13,000
Accounts payable	967	1,762
Taxes accrued	261	242
Interest accrued	853	688
Tax collections payable	215	256
Accrued vacation pay	252	219
Other	2,035	675
	42,251	37,672
Regulatory and other long-term liabilities		
Customer advances for construction	9,365	9,795
Deferred income taxes	28,192	27,271
Deferred investment tax credits	1,726	1,811
Accrued pension expense	1,362	977
Accrued postretirement benefits expense	299	299
Other	392	595
	41,336	40,748
Contributions in aid of construction	27,517	24,210
	$ 223,551	$ 210,940

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY

Statement of Income
(Dollars in thousands)

| | Years Ended December 31, | |
	2001	2000
Operating revenues	$ 41,478	$ 38,720
Operating expenses		
Operation and maintenance	17,800	15,467
Depreciation and amortization	5,981	5,184
General Taxes	1,831	1,762
	25,612	22,413
Utility operating income	15,866	16,307
Other income (deductions)		
Allowance for other funds used during construction	300	397
Miscellaneous other income	785	12
Miscellaneous other deductions	-	(1,786)
Income before interest charges and income taxes	16,951	14,930
Interest charges		
Interest on long-term debt	4,767	5,123
Interest on bank debt	486	538
Amortization of debt expense	79	42
Other interest	55	30
Allowance for borrowed funds used during construction	(149)	(210)
Income before income taxes	11,713	9,407
Provision for income taxes		
Federal income taxes	3,711	3,374
State income taxes	992	374
Net income	$ 7,010	$ 5,659

Consolidated Statement of Retained Earnings
(Dollars in thousands)

Retained earnings at beginning of year	$ 22,730	$ 21,686
Net income	7,010	5,659
	29,740	27,345
Dividends		
Preferred stock	537	540
Common stock	4,796	4,075
	5,333	4,615
Retained earnings at end of year	$ 24,407	$ 22,730

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Balance Sheet
(Dollars in thousands)

	December 31,	
	2002	2001
Assets		
Property, plant and equipment		
Utility plant - at original cost less accumulated depreciation	$ 206,484	$ 200,792
Utility plant acquisition adjustments, net	450	359
	206,934	201,151
Non utility property	250	250
Current assets		
Cash	699	1,453
Customer accounts receivable	1,799	1,568
Allowance for uncollectible accounts	(67)	(58)
Unbilled revenues	2,118	2,137
Accounts receivable - associated companies	200	72
Materials and supplier	465	361
Deferred vacation pay	320	252
Other	640	215
	6,174	6,000
Regulatory and other long-term assets		
Deferred business service project expense	1,455	1,360
Regulatory asset-income taxes recoverable through rates	4,697	4,523
Debt and preferred stock expense	786	871
Deferred programmed maintenance	2,741	3,193
Preliminary survey and investigation	150	430
Other	8,305	5,802
	18,134	16,179
	$ 231,492	$ 223,580
Capitalization and Liabilities		
Capitalization		
Common stock	$ 36,569	$ 36,569
Paid-in capital	21	21
Retained earnings	25,178	24,407
Total common stockholder's equity	61,768	60,997
Preferred stock		
With mandatory redemption requirements	5,340	5,380
Without mandatory redemption requirements	1,570	1,570
Long-term debt	68,500	44,500
Total capitalization	137,178	112,447
Current liabilities		
Notes payable - associated companies	14,649	24,668
Current portion of long-term debt	-	13,000
Accounts payable	421	998
Accounts payable - associated companies	102	27
Taxes accrued	89	250
Interest accrued	1,457	853
Tax collections payable	315	215
Accrued vacation pay	320	252
Other	1,388	2,035
	18,741	42,298
Regulatory and other long-term liabilities		
Customer advances for construction	11,047	9,365
Deferred income taxes	31,233	28,174
Deferred investment tax credits	1,642	1,726
Accrued pension expense	1,675	1,362
Accrued postretirement benefits expense	299	299
Other	540	392
	46,436	41,318
Contributions in aid of construction		
Commitments and contingencies		
	$ 231,492	$ 223,580

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Statement of Income
(Dollars in thousands)

	Years Ended December 31,	
Operating revenues	$ 43,627	$ 41,478
Operating expenses		
Operation and maintenance	20,046	17,800
Depreciation and amortization	6,373	5,981
General taxes	2,201	1,831
	28,620	25,612
Utility operating income	15,007	15,866
Other income (deductions)		
Allowance for other funds used during construction	441	300
Miscellaneous other income	9	785
Miscellaneous other deductions	(557)	-
Income before interest charges and income taxes	14,900	16,951
Interest charges		
Interest on long-term debt	4,691	4,767
Interest on bank debt	252	486
Amortization of debt expense	87	79
Other interest	14	55
Allowance for borrowed funds used during construction	(211)	(149)
Income before income taxes	10,067	11,713
Provision for income tares		
Federal income taxes	3,186	3,711
State income taxes	859	992
Net income	6,022	7,010
Dividends on preferred stock	534	537
Net income to common stock	$ 5,488	$ 6,473

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Balance Sheets
December 31, 2009 and 2008
(Dollars in thousands)

Capitalization and Liabilities

	2009	2008
Capitalization		
Common stockholder's equity	$ 128,443	$ 93,482
Preferred stock without mandatory redemption requirements	1,456	1,456
Long-term debt, excluding current portion		
Preferred stock with mandatory redemption requirements	4,500	4,500
Long-term debt	144,990	76,700
Total capitalization	279,389	176,138
Current liabilities		
Short-term borrowings - affiliated companies	27,313	53,026
Current portion of long-term debt	3,100	3,100
Accounts payable	11,650	8,368
Accounts payable - affiliated companies	85	157
Accrued taxes, including income taxes of $792 in 2009 and $75 in 2008	3,645	291
Other	7,319	5,621
Total current liabilities	53,112	70,563
Regulatory and other long-term liabilities		
Deferred income taxes	45,643	38,187
Advances for construction	13,442	11,916
Deferred investment tax credits	1,048	1,133
Regulatory liability - cost of removal	11,085	9,755
Regulatory liability - debt extinguishment	544	674
Accrued pension expense	1,353	1,389
Accrued postretirement benefit expense	467	418
Other tax liabilities	1,882	-
Other	63	62
Total regulatory and other long-term liabilities	75,527	63,534
Contributions in aid of construction	47,606	46,815
Commitments and contingencies (see Note 17)	-	-
Total capitalization and liabilities	$ 455,634	$ 357,050

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Statements of Income
For the Years Ended December 31, 2009 and 2008
(Dollars in thousands)

	2009	2008
Operating revenues	$ 62,011	$ 60,086
Operating expenses		
Operation and maintenance	33,106	30,684
Depreciation	5,898	5,871
Amortization	515	512
General taxes	3,506	3,177
Total operating expenses	43,025	40,244
Operating income	18,986	19,842
Other income (deductions)		
Interest on long-term debt	(5,481)	(5,693)
Interest on short-term debt to affiliate	(355)	(762)
Allowance for other funds used during construction	3,306	1,330
Allowance for borrowed funds used during construction	1,591	589
Amortization of debt issuance costs	(105)	(90)
Other, net	(498)	(215)
Total other deductions	(1,542)	(4,841)
Income before income taxes	17,444	15,001
Provision for income taxes	6,832	5,993
Net income	10,612	9,008
Dividends on preferred stock	78	78
Net income available to common stockholder	$ 10,534	$ 8,930

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: Michael A. Miller

443. Please provide copies of the financial statements (balance sheet, income statement, statement of cash flows, and the notes to the financial statements) for KAWC for 2007, 20008, and 2009. Please include 2009 financial statements when they become available. Please provide copies of the financial statements in both hard copy and electronic (Microsoft Excel) formats, with all data and formulas intact.

Response:

The 2007 and 2008 audited financial statements of KAW were provided as part of Exhibit 28 of the Company's filing. The 2009 audited financial statements of KAW are attached to this response.

For electronic version, refer to KAW_R_AGDR1#443_042610.pdf.

Kentucky-American Water Company

(a wholly-owned subsidiary of American Water Works Company, Inc.)

Financial Statements

As of and for the years ended December 31, 2009 and 2008

PRICEWATERHOUSE COPERS 🅿

Report of Independent Auditors

To the Board of Directors and Stockholder of
Kentucky-American Water Company

In our opinion, the accompanying balance sheets and statements of capitalization and the related statements of income, of changes in common stockholder's equity and of cash flows present fairly, in all material respects, the financial position of Kentucky-American Water Company (a wholly-owned subsidiary of American Water Works Company, Inc.) at December 31, 2009 and 2008, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

PricewaterhouseCoopers LLP

March 25, 2010

KENTUCKY-AMERICAN WATER COMPANY
Balance Sheets
December 31, 2009 and 2008
(Dollars in thousands)

<div align="center">Assets</div>

	2009	2008
Property, plant and equipment		
Utility plant - at original cost, net of accumulated depreciation	$ 432,713	$ 339,774
Utility plant acquisition adjustments	284	305
Non-utility property	270	270
Total property, plant and equipment	433,267	340,349
Current assets		
Cash and cash equivalents	176	234
Customer accounts receivable	2,612	2,342
Allowance for uncollectible accounts	(277)	(273)
Unbilled revenues	3,231	2,900
State income tax receivable	997	-
Federal income tax refund due from affiliated company	-	889
Accounts receivable - affiliated companies	3,443	-
Other accounts receivable	763	412
Materials and supplies	645	577
Other	313	418
Total current assets	11,903	7,499
Regulatory and other long-term assets		
Regulatory assets	10,411	9,076
Other	53	126
Total regulatory and other long-term assets	10,464	9,202
Total assets	$ 455,634	$ 357,050

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Balance Sheets
December 31, 2009 and 2008
(Dollars in thousands)

Capitalization and Liabilities

	2009	2008
Capitalization		
Common stockholder's equity	$ 128,443	$ 93,482
Preferred stock without mandatory redemption requirements	1,456	1,456
Long-term debt, excluding current portion		
Preferred stock with mandatory redemption requirements	4,500	4,500
Long-term debt	144,990	76,700
Total capitalization	279,389	176,138
Current liabilities		
Short-term borrowings - affiliated companies	27,313	53,026
Current portion of long-term debt	3,100	3,100
Accounts payable	11,650	8,368
Accounts payable - affiliated companies	85	157
Accrued taxes, including income taxes of $792 in 2009 and $75 in 2008	3,645	291
Other	7,319	5,621
Total current liabilities	53,112	70,563
Regulatory and other long-term liabilities		
Deferred income taxes	45,643	38,187
Advances for construction	13,442	11,916
Deferred investment tax credits	1,048	1,133
Regulatory liability - cost of removal	11,085	9,755
Regulatory liability - debt extinguishment	544	674
Accrued pension expense	1,353	1,389
Accrued postretirement benefit expense	467	418
Other tax liabilities	1,882	-
Other	63	62
Total regulatory and other long-term liabilities	75,527	63,534
Contributions in aid of construction	47,606	46,815
Commitments and contingencies (see Note 17)	-	-
Total capitalization and liabilities	$ 455,634	$ 357,050

The accompanying notes are an integral part of these financial statements.

KENTUCKY-AMERICAN WATER COMPANY
Statements of Income
For the Years Ended December 31, 2009 and 2008
(Dollars in thousands)

	2009	2008
Operating revenues	$ 62,011	$ 60,086
Operating expenses		
Operation and maintenance	33,106	30,684
Depreciation	5,898	5,871
Amortization	515	512
General taxes	3,506	3,177
Total operating expenses	43,025	40,244
Operating income	18,986	19,842
Other income (deductions)		
Interest on long-term debt	(5,481)	(5,693)
Interest on short-term debt to affiliate	(355)	(762)
Allowance for other funds used during construction	3,306	1,330
Allowance for borrowed funds used during construction	1,591	589
Amortization of debt issuance costs	(105)	(90)
Other, net	(498)	(215)
Total other deductions	(1,542)	(4,841)
Income before income taxes	17,444	15,001
Provision for income taxes	6,832	5,993
Net income	10,612	9,008
Dividends on preferred stock	78	78
Net income available to common stockholder	$ 10,534	$ 8,930

The accompanying notes are an integral part of these financial statements.

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KENTUCKY-AMERICAN WATER COMPANY
Statements of Cash Flows
For the Years Ended December 31, 2009 and 2008
(Dollars in thousands)

	2009	2008
Cash flows from operating activities		
Net income	$ 10,612	$ 9,008
Adjustments		
Depreciation and amortization	6,413	6,383
Amortization of removal costs, net of salvage	1,521	1,420
Amortization of debt issuance costs	105	90
Provision for deferred income taxes	7,679	2,617
Amortization of deferred investment tax credits	(85)	(85)
Provision for losses on accounts receivable	526	384
Allowance for other funds used during construction	(3,306)	(1,330)
Pension and non-pension post retirement benefits	2,821	1,504
Other, net	(1,175)	(299)
Changes in assets and liabilities		
Accounts receivable and unbilled revenues	(1,123)	(1,086)
Federal income tax refund due from affiliated company	889	(889)
Other current assets	(316)	(494)
Pension and non-pension post retirement benefits contribution	(2,857)	(2,289)
Accounts payable	1,901	(77)
Accrued taxes, including federal income	4,243	(2,019)
Other current liabilities	2,935	(194)
Net cash provided by operating activities	30,783	12,644
Cash flows from investing activities		
Capital expenditures	(95,605)	(56,234)
Removal costs from property, plant and equipment retirements, net of salvage	(42)	(62)
Net cash used in investing activities	(95,647)	(56,296)
Cash flows from financing activities		
Proceeds from issuance of long-term debt to affiliate	67,949	-
Repayment of long-term debt to affiliate	(3,100)	(3,100)
Debt issuance costs to affiliate	(1,000)	(9)
Net borrowings (repayments) of short-term borrowings-affiliated companies	(25,713)	33,767
Advances and contributions for construction net of refunds of $946 in 2009 and $2,123 in 2008	2,350	2,918
Capital contributions	32,500	16,000
Redemption of preferred stock	-	(7)
Dividends paid	(8,180)	(6,081)
Net cash provided by financing activities	64,806	43,488
Net decrease in cash and cash equivalents	(58)	(164)
Cash and cash equivalents at beginning of year	234	398
Cash and cash equivalents at end of year	$ 176	$ 234
Cash paid during the year for:		
Interest, net of capitalized amount	$ 7,351	$ 6,658
Income taxes	$ 5,637	$ 4,653
Non-cash investing activity		
Capital expenditures acquired on account but unpaid as of year end	$ 6,366	$ 4,946
Non-cash financing activity		
Long term debt	$ 3,441	$ -
Capital contribution (See Note 13)	$ 29	$ 68

The accompanying notes are an integral part of these financial statements.

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KENTUCKY-AMERICAN WATER COMPANY
Statements of Capitalization
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

	Call Price Per Share	2009	2008
Stockholder's equity			
Common stock - no par value, authorized 2,000,000 shares		$ 36,569	$ 36,569
1,567,391 shares issued and outstanding in 2009 and 2008			
Paid-in capital		56,656	24,127
Retained earnings		35,218	32,786
Total common stockholder's equity		128,443	93,482
Preferred stocks - $100 par value			
Cumulative preferred stocks without mandatory redemption requirements:			
5.75% series, 3,888 shares outstanding in 2009 and 2008	$ 101.00	389	389
5.50% series, 4,860 shares outstanding in 2009 and 2008	$ 100.50	486	486
5.00% series, 5,808 shares outstanding in 2009 and 2008	$ 100.00	581	581
		1,456	1,456
Long-term debt			
Preferred stocks - $100 par value			
Cumulative preferred stocks with mandatory redemption requirements:			
8.47% series, 45,000 shares outstanding in 2009 and 2008			
due for redemption 2036	$ 100.00	4,500	4,500
		4,500	4,500
General mortgage bonds			
6.96% series due 2023		7,000	7,000
7.15% series due 2027		7,500	7,500
6.99% series due 2028		9,000	9,000
Notes payable to affiliate			
6.87% series due 2011		6,200	9,300
6.59% series due 2037		47,000	47,000
6.25% series A due 2039		45,390	-
5.625% Series B due 2039		26,000	-
		152,590	84,300
Less: Current portion of long-term debt and preferred stock		(3,100)	(3,100)
Long-term debt, net of current portion		149,490	81,200
Total capitalization		$ 279,389	$ 176,138

The accompanying notes are an integral part of these financial statements.

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KENTUCKY-AMERICAN WATER COMPANY
Statements of Changes in Common Stockholder's Equity
For the Years Ended December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

	Common Stock		Paid-in	Retained	
	Shares	Par Value	Capital	Earnings	Total
Balance at December 31, 2007	1,567,391	$ 36,569	$ 8,056	$ 29,859	$ 74,484
Net income	-	-	-	9,008	9,008
Capital contributions	-	-	16,068	-	16,068
Redemption of preferred stock	-	-	3	-	3
Dividends paid					
Preferred stock	-	-	-	(78)	(78)
Common stock	-	-	-	(6,003)	(6,003)
Balance at December 31, 2008	1,567,391	$ 36,569	$ 24,127	$ 32,786	$ 93,482
Net income	-	-	-	10,612	10,612
Capital contributions	-	-	32,529	-	32,529
Dividends paid					
Preferred stock	-	-	-	(78)	(78)
Common stock	-	-	-	(8,102)	(8,102)
Balance at December 31, 2009	1,567,391	$ 36,569	$ 56,656	$ 35,218	$ 128,443

The accompanying notes are an integral part of these financial statements.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 1: Organization and Operation

Kentucky-American Water Company (the "Company") provides water service to approximately 118,800 (unaudited) customers and wastewater service to approximately 700 (unaudited) customers. These services are provided in 12 (unaudited) communities located in 10 (unaudited) counties in the state of Kentucky. As a public utility operating in Kentucky, the Company functions under rules and regulations prescribed by the Kentucky Public Service Commission (the "Commission"). The Company is a wholly-owned subsidiary of American Water Works Company, Inc. ("AWW").

Note 2: Significant Accounting Policies

Use of Estimates
The preparation of financial statements in conformity with accounting principles generally accepted in the United States ("U.S. GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from these estimates. The Company considers benefit plans assumptions, the carrying value of long-lived assets, including regulatory assets and liabilities, revenue recognition and accounting for income taxes to be its critical accounting estimates. The Company's significant estimates that are particularly sensitive to change in the near term are amounts reported for pension and other postemployment benefits and contingency-related obligations.

Regulation
The Company is subject to regulation by the Commission and the local governments of the state of Kentucky (collectively the "Regulators"). These Regulators have allowed recovery of costs and credits which the Company has recorded as regulatory assets and liabilities. Accounting for future recovery of costs and credits as regulatory assets and liabilities is in accordance with authoritative guidance provided by U.S. GAAP. Regulated utilities defer costs and credits on the balance sheet as regulatory assets and liabilities when it is probable that those costs and credits will be recognized in the rate making process in a period different from the period in which they would have been reflected in operations by a non-regulated company. These deferred regulatory assets and liabilities are then reflected in the statement of income in the period in which the costs and credits are reflected in the rates charged for service.

Property, Plant and Equipment
Property, plant and equipment consist primarily of utility plant. Additions to utility plant and replacements of retirement units of property are capitalized. Costs include material, direct labor and such indirect items as engineering and supervision, payroll taxes and benefits, transportation and an allowance for funds used during construction. Repairs and maintenance are charged to current operations.

KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

When units of property are replaced, retired or abandoned, the recorded value thereof is credited to the asset account and charged to accumulated depreciation. To the extent the Company recovers cost of removal or other retirement costs through rates, a regulatory asset or liability may occur where timing differences exist between when the Company incurs costs of removal and when the Company recovers such costs in rates. Removal costs, net of salvage, are recorded as reductions to the regulatory liability or an increase to the regulatory asset, as applicable.

The cost of utility property, plant and equipment is depreciated using the straight-line average remaining life using the composite method.

Computer software is either purchased or internally developed and their costs are capitalized as a unit of property. The assets were fully amortized at December 31, 2009 and 2008.

Utility plant acquisition adjustments represent the difference between the fair value of plant at the date of purchase and its original cost when first devoted to public service (less accumulated depreciation) and are amortized to expense over the remaining useful lives of the corresponding purchased plant assets. Amortization of utility plant acquisition adjustments was $21 and $22 for 2009 and 2008, respectively. The remaining lives range from 2 to 36 years.

Cash and Cash Equivalents
Substantially all of the Company's cash is invested in interest-bearing accounts. The Company considers all highly liquid investments with maturities of three months or less when purchased to be cash equivalents. There were no cash equivalents held at December 31, 2009 or 2008.

Accounts Receivable
The majority of the Company's accounts receivable is due from utility customers. Customer accounts receivable represent amounts billed to the Company's water and wastewater customers on a cycle basis. Credit is extended based on the guidelines of the applicable Regulators and generally, collateral is not required.

Allowance for Uncollectible Accounts
Allowance for uncollectible accounts are maintained for estimated probable losses resulting from the Company's inability to collect receivables from customers. Accounts that are outstanding longer than the payment terms are considered past due. A number of factors are considered in determining the allowance for uncollectible accounts, including the length of time receivables are past due and previous loss history. The Company writes-off accounts when they become uncollectible

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

The following table summarizes the changes in the Company's allowance for uncollectible accounts:

	2009	2008
Balance as of January 1	$ 273	$ 223
Provision charged to expense	526	384
Accounts written-off	(598)	(429)
Recoveries of accounts previously written-off	76	95
Balance as of December 31	$ 277	$ 273

Materials and Supplies
Materials and supplies are stated at the lower of cost or net realizable value. Cost is determined using the average cost method.

Advances and Contributions in Aid of Construction
The Company may receive advances and contributions from customers, home builders, real estate developers, and others to fund construction necessary to extend service to new areas. Advances for construction are refundable for limited periods of time as new customers begin to receive service or other contractual obligations are fulfilled. Advances which are which are no longer refundable are reclassified to contributions in aid of construction. Contributions in aid of construction are permanent collections of plant assets or cash for a particular construction project. For ratemaking purposes, the amount of such advances and contributions generally serves as a rate base reduction, since they represent non-investor supplied funds.

The Company depreciates utility plant funded by contributions and amortizes these amounts as a reduction to depreciation expense, producing a result which is functionally equivalent to reducing the original cost of the utility plant for the contributions. Amortization of contributions in aid of construction was $1,397 and $1,019 for the years ended December 31, 2009 and 2008, respectively. For the years ended December 31, 2009 and 2008, non-cash advances and contributions received were $58 and $296, respectively.

Recognition of Revenues
Revenues are recognized as water and wastewater services are provided and include amounts billed to customers on a cycle basis and unbilled amounts based on estimated usage from the date of the latest meter reading to the end of the accounting period. Other operating revenues are recognized when services are performed.

The Company accounts for sales tax collected from customers and remitted to taxing authorities on a net basis.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

Income Taxes
      AWW and its subsidiaries participate in a consolidated federal income tax return for U.S. tax purposes. Members of the consolidated group are charged with the amount of federal income tax expense determined as if they filed separate returns. Federal income tax expense for financial reporting purposes is provided on a separate return basis.

      Certain income and expense items are accounted for in different time periods for financial reporting than for income tax reporting purposes. Deferred income taxes have been provided on the difference between the tax bases of assets and liabilities and the amounts at which they are carried in the financial statements. These deferred income taxes are based on the enacted tax rates anticipated to be in effect when such temporary differences are projected to reverse. Anticipated tax rates are the currently enacted tax rates, as the Company is not aware of any tax rate changes. In addition, regulatory assets and liabilities are recognized for the effect on revenues expected to be realized as the tax effects of temporary differences previously flowed through to customers reverse.

      Investment tax credits have been deferred and are being amortized to income over the average estimated service lives of the related assets.

      The Company recognizes accrued interest and penalties related to tax positions as a component of income tax expense.

Allowance for Funds Used During Construction ("AFUDC")
      AFUDC is a non-cash credit to income with a corresponding charge to utility plant, which represents the cost of borrowed funds and a return on equity funds devoted to plant under construction. AFUDC is recorded to the extent permitted by the Regulators.

Environmental Costs
      The Company's water and wastewater operations are subject to federal, state, and local requirements relating to environmental protection, and as such the Company periodically becomes subject to environmental claims in the normal course of business. Environmental expenditures that relate to current operations or provide a future benefit are expensed or capitalized as appropriate. Remediation costs that relate to an existing condition caused by past operations are accrued when it is probable that these costs will be incurred and can be reasonably estimated. There were no remediation costs accrued at December 31, 2009 and 2008.

Long-Lived Assets
      Long-lived assets and certain identifiable intangible assets held and used by the Company are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. If the sum of the future cash flows

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

expected to result from the use of the assets and their eventual disposition is less than the carrying amount of the assets, an impairment loss is recognized. Measurement of an impairment loss would be based on the fair value of the assets. A regulatory asset is charged to earnings if and when future recovery in rates of that asset is no longer probable.

New Accounting Standards

Fair Value Measurements

In January 2010, the Financial Accounting Standards Board ("FASB") issued authoritative guidance that requires new disclosures of (i) the amounts of significant transfers into and out of Level 1 and Level 2 of the fair value hierarchy and the reasons for those transfers and (ii) information in the reconciliation of recurring Level 3 measurements (those using significant unobservable inputs) about purchases, sales, issuances, and settlements on a gross basis. This update also clarifies existing fair value disclosures about the level of disaggregation and about inputs and valuation techniques used to measure fair value. This guidance is effective for interim and annual periods beginning after December 15, 2009, except for the requirement to disclose information about purchases, sales, issuances and settlements in the reconciliation of Level 3 measurements, which does not become effective until interim and annual periods beginning after December 15, 2010. As this guidance clarifies and provides for additional disclosure requirements only, the adoption of this guidance is not expected to have an impact on the Company's results of operations, financial position or cash flows.

In August 2009, the FASB issued authoritative guidance clarifying the measurement of the fair value of liabilities. The amendments reduce potential ambiguity in financial reporting when measuring the fair value of liabilities and help to improve consistency in the application of authoritative guidance. This update is effective for the first reporting period, including interim periods, beginning after issuance, which for the Company was October 1, 2009. The adoption of this guidance did not have an impact on the Company's results of operations, financial position or cash flows.

In April 2009, the FASB provided additional guidance on fair value measurements in inactive markets when the volume and level of activity for the asset and liability have significantly decreased. This amendment also includes guidance on identifying circumstances that indicate a transaction is not orderly. This guidance is effective for interim reporting periods ending after June 15, 2009. The adoption of this guidance did not have an impact on the Company's results of operations, financial position or cash flows.

In February 2008, the FASB issued guidance that allowed a one-year deferral of adoption of the guidance for nonfinancial assets and nonfinancial liabilities (such as intangible assets, property, plant and equipment and goodwill) that are required to be measured at fair value on a periodic basis (such as at acquisition or impairment). The Company elected to use this deferral

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

option and accordingly, adopted this guidance for the Company's nonfinancial assets and liabilities valued on a non-recurring basis on January 1, 2009. The adoption of this guidance did not have a significant impact on the Company's results of operations, financial position or cash flows.

Accounting Standards Codification

In June 2009, the FASB issued authoritative guidance that establishes the FASB Accounting Standards Codification ("Codification") as the source of authoritative U.S. GAAP recognized by the FASB to be applied by non-governmental entities. Rules and interpretive releases of the Securities and Exchange Commission ("SEC") under authority of federal securities laws are also sources of authoritative GAAP for SEC registrants. All other non-grandfathered, non-SEC accounting literature not included in the Codification is non-authoritative. This guidance is effective for interim and annual periods ending after September 15, 2009. The adoption of this guidance did not have an impact on the Company's results of operations, financial position or cash flows.

Consolidation of Variable Interest Entities

In June 2009, the FASB issued authoritative guidance that replaces the quantitative-based risk and rewards calculation for determining which reporting entity has a controlling financial interest in a variable interest entity with a qualitative approach. This revised guidance also requires additional disclosures about a reporting entity's involvement in variable interest entities. This guidance is effective for the Company beginning January 1, 2010. The Company does not believe the adoption of this update to have a significant impact on the Company's results of operations, financial position or cash flows.

Subsequent Events

In May 2009 and clarified in February 2010, the FASB issued authoritative guidance that establishes general standards of accounting for and disclosure of events that occur after the balance sheet date but before financial statements are issued or are available to be issued. This standard sets forth: (i) the period after the balance sheet date during which management of a reporting entity should evaluate events or transactions, (ii) the circumstances under which an entity should recognize events or transactions and (iii) the disclosures that an entity should make about events or transactions that occurred after the balance sheet date. This guidance is effective for interim and annual periods ending after June 15, 2009. The adoption of this guidance did not have an impact on the Company's results of operations, financial position or cash flows. The Company performed an evaluation of subsequent events for the accompanying financial statements through March 25, 2010, the date this Report was issued, to determine whether the circumstances warranted recognition and disclosure of those events or transactions in the financial statements as of December 31, 2009.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 2 (continued)

Recognition and Presentation of Other-Than-Temporary Impairments
In April, 2009, the FASB amended authoritative guidance related to the impairment of certain debt securities and will require an entity to assess whether it (i) has the intent to sell the debt security or (ii) more likely than not will be required to sell the debt security before its anticipated recovery. If either of these conditions is met, the entity must recognize an other-than-temporary impairment. If an entity is able to meet the criteria to assert that it will not have to sell the security before recovery, impairment charges related to credit losses would be recognized in earnings, while impairment charges related to non-credit losses (for example, liquidity risk) would be reflected in other comprehensive income. The amended guidance is effective for interim reporting periods ending after June 15, 2009. The adoption of this guidance did not have an impact on the Company's results of operations, financial position or cash flows.

Contingencies Acquired in a Business Combination
In April 2009, the FASB amended and clarified the authoritative guidance related to accounting for the initial recognition and measurement, subsequent measurement and accounting, and related disclosures arising from contingencies in a business combination. Assets acquired and liabilities assumed in a business combination that arise from contingencies should be recognized at fair value on the acquisition date if fair value can be determined during the measurement period. If fair value can not be determined, companies should account for the acquired contingencies using existing guidance. This guidance is effective for the Company for business combinations finalized after January 1, 2009.

Reclassifications
Certain reclassifications have been made to conform previously reported data to the current presentation.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 3: Utility Plant

The components of utility plant by category at December 31 are as follows:

	Range of Remaining Useful Lives	2009	2008
Land and other non-depreciable assets	-	4,630	4,739
Sources of supply	35 to 67 Years	17,792	13,698
Treatment and pumping	32 to 63 Years	56,414	56,386
Transmission and distribution	23 to 72 Years	187,589	183,244
Services, meters and fire hydrants	38 to 72 Years	85,741	80,676
General structures and equipment	5 to 52 Years	29,063	27,119
Wastewater assets	5 to 50 Years	3,637	3,624
Construction work in progress	-	138,797	54,501
		523,663	423,987
Less: Accumulated depreciation		(90,950)	(84,213)
		$ 432,713	$ 339,774

The provision for depreciation expressed as a percentage of the aggregate average depreciable asset balances was 2.07% in 2009 and 2.17% in 2008.

Note 4: Regulatory Assets

Regulatory assets represent costs that are expected to be fully recovered from customers in future rates. Depending upon Commission approval certain assets are included in the Company's rate base and others are not.

The components of regulatory assets are as follows:

	2009	2008
Income taxes recoverable through rates	$ 4,215	$ 3,230
Bluegrass water project	2,124	2,537
Programmed maintenance expense	1,609	1,737
Rate proceedings expense	492	554
Debt and preferred stock expense	1,690	795
Other	281	223
	$ 10,411	$ 9,076

The Company has recorded a regulatory asset for the additional revenues expected to be realized as the tax effects of temporary differences reverse. These temporary differences are primarily related to the difference between book and tax depreciation on property placed in service before the adoption by the Commission of full normalization for rate making purposes. The regulatory asset for income taxes recoverable through rates is net of the reduction expected in future revenues as deferred taxes previously provided, attributable to the difference

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 4 (continued)

between the state and federal income tax rates under prior law and the current statutory rates, reverse over the average remaining service lives of the related assets.

The Company has recorded a regulatory asset for the Bluegrass water project source of supply costs in the amount of $2,283 to be amortized over a forty year period. Approval was granted per the Commission order dated May 9, 2001. The Company has recorded a regulatory asset for the Bluegrass water project pipeline costs in the amount of $3,551 with a ten year amortization period which was approved by the Commission per order dated November 27, 2000.

Programmed maintenance costs are deferred and amortized to current operations on a straight-line basis over a period ranging between five and fifteen years, as authorized by the Commission in their determination of rates charged for service.

Expense of rate proceedings is deferred and amortized on a straight-line basis as authorized by the Commission in their determination of rates charged for service.

Debt expense is amortized over the lives of the respective issues. Unamortized debt expense is deferred and amortized to the extent it will be recovered through future service rates. Expenses of preferred stock issues without sinking fund provisions are amortized over the life of the issuance, whereas expenses of issues with sinking fund provisions are charged to operations as shares are retired.

Note 5: Preferred Stock Without Mandatory Redemption

In the event of voluntary liquidation, the 5.75% series, the 5.50% series, and the 5.00% series are redeemable at $101 per share, $100.50 per share, $100 per share respectively. In the event of involuntary liquidation or governmental acquisition, the 5.75% series, the 5.50% series, and the 5.00% series are all paid at $100 per share, together with accrued dividends. All call prices are on 30 days' notice plus accrued dividends.

Note 6: Long-Term Debt

The general mortgage bonds are issuable in series. No bonds senior to the general mortgage bonds may be issued so long as the general mortgage bonds are outstanding. Based on the calculation methodology specified by debt agreements, the amount of bonds authorized is limited only to the extent that long-term debt cannot exceed 65% of total capitalization and net income of the Company must be equal to or greater than 1.5 times the aggregate annual interest charges on all long-term debt of the Company. At December 31, 2009 long-term debt was 54%

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 6 (continued)

of total capitalization and net income was 4.3 times the aggregate annual interest charges on all long-term debt. General mortgage bonds are collateralized by utility plant.

The general mortgage bond indentures contain clauses restricting the declaration of common stock dividends and other distributions on capital stock if common stockholder's equity falls below a specified amount. There were no restrictions at December 31, 2009 or 2008.

The senior notes payable to affiliate are unsecured and were issued to American Water Capital Corporation ("AWCC"), a subsidiary of AWW, for the principal amount. AWCC provided the funding for these notes by issuing senior notes to institutional investors at a price equal to the principal amount.

In 2009, the Company issued a long-term note payable to affiliate in the amount of $45,390 at a rate of 6.25% due in 2039 and a long-term note payable to affiliate in the amount of $26,000 at a rate of 5.625% due in 2039. Funds in the amount of $3,441 were not yet received at December 31, 2009 and are included in notes receivable-associated companies in the accompanying Balance Sheet. The proceeds were used to fund capital projects.

Maturities of long-term debt, including sinking funds, will amount to $3,100 in 2010 and 2011, $0 in 2012 through 2014, and $146,390 thereafter.

Preferred stock agreements contain provisions for redemption at various prices on thirty days notice at the Company's discretion. In the event of voluntary liquidation, the 8.47% series is paid at $100 per share, together with accrued dividends.

Note 7: Short-Term Borrowings

The Company maintains a line of credit through AWCC of $25,000 and $60,000 at December 31, 2009 and 2008, respectively. The Company may borrow from, or invest in, the line of credit. No compensating balances are required under the agreements.

The Company had short-term borrowings outstanding of $27,313 and $53,026 at December 31, 2009 and 2008 respectively. As of December 31, 2009, AWCC temporarily extended additional credit of $2,313 to the Company. The weighted average annual interest rates on the borrowings at December 31, 2009 and 2008 were .76% and 3.49%, respectively.

During 2009, the Company received a cash capital contribution of $32,500 from AWW, primarily used to pay down short-term debt.

AWW, through AWCC, has committed to make additional financing available to the Company, as needed, to pay its obligations as they come due.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 8: General Taxes

Components of general tax expense for the years presented in the statements of income are as follows:

	2009	2008
Gross receipts and franchise	$ 117	$ -
Property	2,790	2,577
Payroll	510	516
Other	89	84
	$ 3,506	$ 3,177

Note 9: Income Taxes

Components of income tax expense for the years presented in the statements of income are as follows:

	2009	2008
State income taxes:		
Current	$ 292	$ 463
Deferred		
Current	(94)	(5)
Non-current	914	419
	1,112	877
Federal income taxes:		
Current	(1,054)	2,998
Deferred		
Current	(114)	(29)
Non-current	6,973	2,232
Amortization of deferred investment tax credits	(85)	(85)
	5,720	5,116
Total income taxes	$ 6,832	$ 5,993

In December 2008, the Company as a member of the consolidated group filed a request with the Internal Revenue Service ("IRS") to change its tax accounting method for repair and maintenance costs on its utility assets. The IRS partially approved the request in October 2009, with the Company receiving final approval in February 2010, allowing the Company to take a tax deduction for costs that were previously capitalized for tax purposes. As a result, the Company recorded a deferred income tax liability for this temporary difference. In addition, the change in tax accounting method generated a net operating loss which the Company has substantially monetized.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 9 (continued)

The primary components of the net deferred tax liability at December 31, 2009 include basis differences in utility plant, partially offset by advances and contributions. No valuation allowances were required on deferred tax assets at December 31, 2009 and 2008, as management believes it is more likely than not that deferred tax assets will be realized.

As of December 31, 2009, the Company recorded state net operating loss carryforwards ("NOLs"), which will reduce future taxable income. These NOLs will begin to expire in 2028 if not utilized.

As of December 31, 2009 and 2008, the Company's reserve for uncertain tax positions is $1,875 and $0 respectively, excluding accrued interest and penalties. The Company does not expect a material change in this estimate in the next twelve months. The reserve for uncertain tax positions could increase or decrease for such things as expiration of statutes of limitations, audit settlement, tax examination activities.

The Company recognizes interest and penalties related to income tax matters in income tax expense. Accrued interest and penalties related to uncertain tax positions of $7 and $0 as of December 31, 2009 and 2008, respectively..

The federal tax returns from 2006 to 2008 remain open. The 2006 statute will expire in 2010. The Company is subject to state taxes. State tax returns from 2003 to 2008 are currently open. The statues of limitations will begin to expire in 2009.

Note 10: Rate Matters

As necessary, the Company applies to the Commission for changes in the rates charged for service. The revenues requested are based on forecasted sales, operating expenses, and investments for the first full year after the effective dates of the new rates.

The Company filed a general rate case on October 31, 2008 with the Commission for $18,495 or 31.27%. On April 1, 2009, a settlement agreement was executed by the Company and the other parties recommending an increase in rates of $10,300 or 17.33%. On June 1, 2009, the Commission issued an Order approving the settlement agreement with new rates effective June 1, 2009.

The Company filed a general rate increase on February 26, 2010 for $25,848. The Company can provide no assurances that any rate request will be granted by the Commission.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 11: Employee Benefit Plans

Savings Plan for Employees

The Company maintains a 401(k) savings plan, sponsored by AWW that allows employees to save for retirement on a tax-deferred basis. Employees can make contributions that are invested at their direction in one or more funds. The Company makes matching contributions based on a percentage of an employee's contribution, subject to certain limitations. Due to the Company's discontinuing new entrants into the defined benefit pension plan, on January 1, 2006 the Company began providing an additional 5.25% of base pay defined contribution benefit for union employees hired on or after January 1, 2001 and non-union employees hired on or after January 1, 2006. The Company expensed contributions to the plans totaling $207 for 2009, $180 for 2008. All of the Company's contributions are invested in one or more funds at the direction of the employee.

Note 12: Postretirement Benefits

Pension Benefits

The Company participates in a Company funded defined benefit pension plan sponsored by AWW covering employees hired before January 1, 2006. Benefits under the plan are based on the employee's years of service and average annual compensation for those 60 consecutive months of employment which yield the highest average. The pension plan has been closed for any employee hired on or after January 1, 2006. Union employees hired on or after January 1, 2001 had their accrued benefit frozen and will be able to receive this benefit as a lump sum upon termination or retirement. Union employees hired on or after January 1, 2001 and non-union employees hired on or after January 1, 2006 are provided with a 5.25% of base pay defined contribution plan. Pension cost of the Company is based on an allocation from AWW of the total cost related to the plan. Information regarding accumulated and projected benefit obligations is not prepared at the subsidiary level. The Company was allocated costs of $1,674 and $804 for 2009 and 2008, respectively.

AWW's funding policy is to contribute at least the minimum amount required under the Employee Retirement Income Security Act of 1974. The Company made contributions to the AWW plan of $1,710 in 2009 and $1,589 in 2008. The Company expects to contribute $1,635 to the AWW plan in 2010.

Postretirement Benefits Other Than Pensions

The Company participates in a Company funded plan sponsored by AWW that provides certain life insurance benefits for retired employees and certain health care benefits for retired employees and their dependents. The retiree welfare plans are closed for union employees hired on or after January 1, 2006, and non-union employees hired on or after January 1, 2002. Retirees and their dependents under age 65 are covered by a point-of-service managed care plan that requires co-payments or an HMO.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 12 (continued)

Employees who elect to retire prior to attaining age 65 are generally required to make contributions towards their medical coverage until attaining age 65. Retirees and their dependents age 65 and over are covered by a Medicare supplement plan. Costs of the Company are based on an allocation from AWW of the total cost related to the plan. Information regarding accumulated and projected benefit obligations is not prepared at the subsidiary level. The Company was allocated costs of $1,147 and $700 for 2009 and 2008, respectively.

The Company made contributions to trust funds established for these postretirement benefits of $1,147 in 2009 and $700 in 2008. The Company's policy is to fund postretirement benefits costs accrued. The Company expects to contribute $1,052 to the AWW plan in 2010.

Note 13: Stock Based Compensation

Stock Options and Restricted Stock Units
On February 20, 2009, AWW granted restricted stock units and stock options to certain employees of the Company under the AWW 2007 Omnibus Equity Compensation Plan ("Omnibus Plan"). The restricted stock units vest ratably over the three year performance period beginning January 1, 2009 (the "Performance Period"); however distribution of the shares is contingent upon the achievement of certain market thresholds over the performance period. The stock options vest ratably over a three year service period from January 1, 2009.

On April 22, 2008, AWW granted restricted stock awards, restricted stock units and stock options to certain employees of the Company under the Omnibus Plan. The restricted stock units and the stock options were awarded in two grants with "Grant 1" vesting on January 1, 2010 and "Grant 2" vesting January 1, 2011.

The value of restricted stock units at the date of the grant is amortized through expense over the requisite service period using the straight-line method for restricted stock units with service and/or performance vesting. The grant date fair value of restricted stock awards that have market and service conditions and vest ratably is amortized through expense over the requisite service period using the graded-vesting method. The value of stock options at the date of the grant is amortized through expense over the requisite service period using the straight-line method.

Costs of the Company are based on an allocation from AWW of the total cost for employees of the Company in the plan. The Company recorded compensation expense of $23 and $64, included in operation and maintenance expense, during the year ended December 31, 2009 and 2008 respectively. As the Company does not reimburse the cost of the awards to AWW, the offsetting entry to paid-in-capital is a capital contribution from AWW.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 13 (continued)

Employee Stock Purchase Plan
        AWW's Nonqualified Employee Stock Purchase Plan ("ESPP") was effective as of July 1, 2008. Under the ESPP, the Company's employees can use payroll deductions to acquire AWW common stock at the lesser of 90% of the fair market value as of a) the beginning or b) the end of each three-month purchase period. AWW's ESPP is considered compensatory. Costs of the Company are based on an allocation from AWW of the total cost for employees of the Company in the plan. Compensation costs of $6 and $4 were included in operation and maintenance expense for the years ended December 31, 2009 and 2008 respectively. As the Company does not reimburse the cost of the awards to AWW, the offsetting entry to paid-in-capital is a capital contribution from AWW.

Note 14: Related Party Transactions

        American Water Works Service Company, Inc. ("AWWS"), a subsidiary of AWW, provides certain management services to the Company (administration, accounting, data processing, engineering, etc.) and other operating water companies in the AWW system on an at-cost, not-for-profit basis in accordance with a management and service agreement.

Purchases of such services by the Company were accounted for as follows:

	2009	2008
Included in operation and maintenance		
expense as a charge against income	$ 8,149	$ 7,942
Capitalized primarily in utility plant	899	592
	$ 9,048	$ 8,534

        The Company provided workspace for certain associates of AWWS. Charges for direct costs and indirect overhead costs associated with these associates are billed to AWWS on an at-cost, not for profit basis, which amounted to $100 in 2009 and $14 in 2008.

        The Company has operating arrangements with American Anglian Environmental Technologies, L.P. ("AAET"), a subsidiary of AWW, for the lease of granular activated carbon at one of the Company's water treatment plants. Under the arrangements, AAET will provide carbon for a period of 36 months. The Company paid $101 in 2009 and $127 in 2008 to AAET under these arrangements.

        The Company purchased granular activated carbon from AAET, a subsidiary of AWW, at the Richmond Rd Station during 2009. The Company paid $136 in 2009 to AAET under these agreements.

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KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 14 (continued)

The Company maintains a line of credit through AWCC (See Note 7). The Company also participates in AWCC's centralized treasury function whereby the Company transfers its cash to AWCC and the Company's checks are issued out of AWCC. Under the arrangement, available cash is used to pay-down the line of credit and outstanding credits increase the Company's line of credit balance. The Company paid AWCC fees, including debt issuance cost, of $874 in 2009 and $79 in 2008 and interest expense on borrowings of $355 in 2009 and $762 in 2008. Interest expense on long-term debt due to AWCC was $3,577 in 2009 and $3,790 in 2008. Accrued interest included interest due to AWCC of $1,429 and $807 as of December 31, 2009 and 2008, respectively.

The Company pays dividends to AWW periodically. The amount of the dividend is based on a percentage of net income adjusted for certain items.

Note 15: Fair Values of Financial Instruments

The Company used the following methods and assumptions in estimating its fair value disclosures for financial instruments:

Current assets and current liabilities: The carrying amount reported in the balance sheet for current assets and current liabilities approximates their fair value.

Preferred stocks with mandatory redemption requirements and long-term debt: The fair values of the Company's preferred stocks with mandatory redemption requirements and long-term debt are estimated using discounted cash flow analyses based on the Company's current incremental financing rates for similar types of securities.

The carrying amounts and fair values of the Company's financial instruments at December 31 are as follows:

	2009		2008	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Preferred stock with mandatory redemption requirements, including current maturities	$ 4,500	$ 4,695	$ 4,500	$ 4,344
Long-term debt, including current maturities	$ 148,090	$ 158,343	$ 79,800	$ 76,489

KENTUCKY-AMERICAN WATER COMPANY
Notes to Financial Statements
December 31, 2009 and 2008
(Dollars in thousands, except per share amounts)

Note 15 (continued)

Recurring Fair Value Measurements
As of December 31, 2008 the Company does not have any assets or liabilities measured and recorded at fair value on a recurring basis.

Note 16: Operating Lease

The Company has entered into operating leases involving certain facilities and equipment. Rental expenses under operating leases were $54 in 2009 and $59 in 2008. The operating leases for equipment expire in 2013 through 2014.

At December 31, 2009, the minimum annual future rental commitments under operating leases that have initial or remaining non-cancelable lease terms in excess of one year are $24 in 2010 through 2012, $8 in 2013, $3 in 2014, and $26 thereafter.

Note 17: Commitments and Contingencies

Commitments have been made in connection with certain construction programs. The estimated capital expenditures required under legally binding contractual obligations amounted to $ 22,720 at December 31, 2009. On April 25, 2008, the Kentucky Public Service Commission approved the Company's application for a certificate of convenience and necessity to construct a 20.0 million gallon per day treatment plant on the Kentucky River and a 30.6 mile pipeline to meet Central Kentucky's water supply deficit. The Kentucky project is expected to be completed in 2010 with an estimated cost of $162,000 of which $21,030 is included in the commitment above.

The Company has entered into service agreements. As of December 31, 2009, the annual future commitment under the agreement in excess of one year is $101 in 2010 and $8 in 2011.

The Company is routinely involved in legal actions. In the opinion of management, none of these matters is expected to have a material adverse effect, if any, on the financial position, results of operations or cash flows of the Company.

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**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Michael A. Miller

444.   For the past three years, please provide the dates and amount of: (1) cash dividend payments made by KAWC to AWWC; and (2) cash equity infusions made by AWWC in into KAWC.

Response:

See attached.

For the electronic version, refer to KAW_R_AGDR1#444_042610.pdf.

Kentucky American Water Company
Dividend Payments & Equity Infusions
AGDR1#444

Dividends:

Payment

Date	2007	Date	2008	Date	2009	Date	2010
3/31/2007	971,782.42	3/31/2008	1,097,173.70	3/31/2009	1,708,456.19	3/31/2010	1,473,347.54
6/29/2007	235,108.65	6/30/2008	956,108.51	6/30/2009	1,489,021.45		
9/28/2007	1,050,151.97	9/30/2008	1,394,977.99	9/30/2009	2,006,260.48		
12/31/2007	1,912,217.02	12/31/2008	2,554,847.33	12/31/2009	2,899,673.35		

Equity Infusions (Paid-in-Capital):

Date	2007	Date	2008	Date	2009	Date	2010
	0	3/31/2008	8,000,000.00	3/31/2009	22,500,000.00		0
		6/27/2008	8,000,000.00	11/30/2009	10,000,000.00		

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Michael A. Miller

445. Please provide the SEC 10-k reports for AWWC and KAWC for 2008 and 2009. If the
      2009 10-k is not yet available, please provide it when it becomes available.

Response:

The requested information is available on the Securities and Exchange Commission
website. The information can be accessed at www.sec.gov.

For electronic version, refer to KAW_R_AGDR1#445_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Michael A. Miller

446. With respect to Exhibit MAM-3, please provide (1) all data, work papers, and copies of source documents used in the development of the capitalization amounts (13 Month Average Amounts, and adjustments as reflected in the Add (1) column, and (2) an electronic version (Microsoft Excel) of Exhibit MAM-3, and all supporting Schedules and work papers used to determine the 13-month capitalization amounts, with all data and equations left intact.

Response:

Exhibit MAM-3 is a copy of schedule J-1.1/J-1.2 which was included in the Company's filing. This schedule contains the capital structure based on the 13-month average of the capital structure for the forecasted test-year ended September 2011 used by the Company in its filing. The additional J-1 through J-4 schedules were also included in the Company's filings. Please refer to the Company's work papers provided in response to KAW_R_PSC1#1a_WP7-1 (thru 7-6)_031610 for copies of the work papers used to support Exhibit MAM-3. Electronic versions of the work papers referenced above are being provided in response to KAW_R_AGDR1#1. In the files attached to that DR see file K_COC10.XLS.

For the electronic version of this response, refer to KAW_R_AGDR1#446.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: Michael A. Miller

447. With respect to Exhibit MAM-3, please provide (1) all data, work papers, assumptions, and calculations used to determine the costs and interest rates in all pro forma financings, and other data used to determine the cost rates for short-term debt, long-term debt, and preferred stock, and (2) an electronic version (Microsoft Excel) of all supporting Schedules and work papers used to determine the senior capital costs, with all data and equations left intact.

Response:

(1) The support for the ST Debt interest rates used in Exhibit MAM-3 is contained in Exhibit MAM-6 attached to the direct testimony of Michael A. Miller filed in this case. The average actual interest rates were determined from summary sheets provided by AWCC (the source of current ST Debt financings for KAW) which are provided in the attachments to this response. The Avg. Fed Funds Rate was determined from the Value Line Publications for each month. The Value Line Data should be available to the AG from his cost of capital witness, but cannot be reproduced according to copyright restrictions. Please see the responses to KAW_R_AGDR1#2_042610 for reference to the electronic version of Exhibits MAM-3 and MAM-6. The monthly spreads and average spreads are simply mathematical calculations. The forecasted Fed Funds rates were determined from the Value Line publication referenced on Exhibit MAM-6. The ST Interest Rate determined on Exhibit MAM-6 and used in Exhibit MAM-3, and used in determining the WACC used to determine KAW's revenue requirement, are straightforward calculations.

(2) The support for the LT interest rates used on the two pro-forma LT Debt financings shown on Schedule J-3 of the Company's filings (the schedule used to determine the average LT Debt rate used on Schedule J-1.1/J1.2 and Exhibit MAM-3) is contained in Exhibit MAM-5 attached to the direct testimony of Michael A. Miller filed in this case. Please see the responses to KAW_R_AGDR1#2_042610 for reference to the electronic version of Exhibits MAM-3, MAM-5 and MAM-6. The information used to calculate the average spreads for BBB-rated utility bonds was obtained from the Value Line publications referenced in Exhibit MAM-5. The Value Line Data should be available to the AG from his cost of capital witness, but cannot be reproduced according to copyright restrictions. The average spreads shown on Exhibit MAM-5 are straightforward calculations. The average 2-quarter spreads between BBB-rated utility bonds and 30-year treasury notes are then added to the forecasted 30-year treasury bonds as referenced to the Value Line Publication.

(3) The support for the determination of weighted cost of preferred stock shown on Schedule J-1.1/J1.2 and Exhibit MAM-3 was determined from Schedule J-4 provided with the Company's filing. The electronic version has been provided in response to KAW_R_AGDR1#1_042610. The work papers supporting the Schedule J information were provided in response to KAW_R_ PSC1#1a_031610 (7-1 thru 7-6). For electronic copies of the work papers see the response to KAW_R_AGDR1#1_042610.

For the electronic version of this response, see KAW_R_AGDR1#447_042610.pdf.

AMERICAN WATER CAPITAL CORP.
Interest Allocation
Nov-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	174,720,168.32	(62,065.36)		($62,065.36)
AWWM_IH	-8,306,644.20	2,378.10		$2,378.10
AZ_IH	-65,250,697.31	18,993.25		$18,993.25
BFV_IH	-183,084.80	48.83		$48.83
CA_IH	-10,568,029.51	3,144.97		$3,144.97
HI_IH	1,064,432.43	(314.44)		($314.44)
IA_IH	-1,137,457.02	349.00		$349.00
IL_IH	-49,730,287.13	13,877.51		$13,877.51
IN_IH	-62,696,252.98	17,648.18		$17,648.18
KY_IH	-26,069,495.34	9,735.04		$9,735.04
LAKE_IH	6,308,225.67	(1,765.82)		($1,765.82)
LI_IH	-21,944,842.97	5,957.36		$5,957.36
MD_IH	-1,144,900.75	297.47		$297.47
MI_IH	-20,208.44	(27.74)		($27.74)
MO_IH	6,854,938.16	(2,347.61)		($2,347.61)
NJ_IH	60,568,755.44	(17,703.09)		($17,703.09)
NM_IH	-509,329.17	164.17		$164.17
OH_IH	4,285,825.89	(1,274.82)		($1,274.82)
PA_IH	-63,186,606.03	17,938.36		$17,938.36
SC_IH	-23,866,125.62	4,698.49		4,698.49
TN_IH	-14,358,781.76	3,931.04		$3,931.04
TX_IH	481,565.27	(118.24)		($118.24)
UWV_IH	-1,552,843.04	439.99		$439.99
VA_IH	-5,382,578.26	1,454.09		$1,454.09
WV_IH	-23,367,187.13	6,790.34		$6,790.34
		$22,229.07	$0.00	$22,229.07

Weighted Average Rate		0.3437%		
Prepared By:	Nicole Cataldo			
Reviewed By:	Tim Millaway			
Approved By:	Glisson Inguito			

AMERICAN WATER CAPITAL CORP.

Interest Allocation

Oct-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	236,988,897.61	(80,039.45)		($80,039.45)
AWWM_IH	-8,300,503.76	2,803.33		$2,803.33
AZ_IH	-65,659,810.42	22,175.61		$22,175.61
BFV_IH	-170,273.00	57.47		$57.47
CA_IH	-10,586,860.80	3,575.58		$3,575.58
HI_IH	1,431,524.57	(483.47)		($483.47)
IA_IH	-1,461,816.45	493.73		$493.73
IL_IH	-47,049,681.47	15,890.34		$15,890.34
IN_IH	-59,138,928.48	19,973.26		$19,973.26
KY_IH	-33,385,518.98	11,275.50		$11,275.50
LAKE_IH	5,626,154.68	(1,900.13)		($1,900.13)
LI_IH	-21,404,835.76	7,229.17		$7,229.17
MD_IH	-1,072,144.89	362.09		$362.09
MI_IH	118,421.50	(40.01)		($40.01)
MO_IH	9,083,453.93	(3,067.82)		($3,067.82)
NJ_IH	-27,192,880.95	9,183.98		$9,183.98
NM_IH	-600,970.69	202.97		$202.97
OH_IH	4,381,587.33	(1,479.84)		($1,479.84)
PA_IH	-67,230,255.82	22,706.03		$22,706.03
SC_IH	-14,345,079.53	4,844.84		4,844.84
TN_IH	-13,960,095.51	4,714.82		$4,714.82
TX_IH	358,520.91	(121.05)		($121.05)
UWV_IH	-1,499,519.86	506.45		$506.45
VA_IH	-4,886,793.65	1,650.45		$1,650.45
WV_IH	-24,692,451.37	8,339.51		$8,339.51
		$48,853.36	$0.00	$48,853.36

Weighted Average Rate		0.3922%		
Prepared By:	Nicole Cataldo			
Reviewed By:	Jeffrey Colkers			
Approved By:	Glisson Inguito			

AMERICAN WATER CAPITAL CORP.
Interest Allocation
Sep-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	295,367,274.70	(102,799.57)		($102,799.57)
AWWM_IH	-8,291,094.83	3,203.40		$3,203.40
AZ_IH	-65,661,937.18	24,745.58		$24,745.58
BFV_IH	-160,767.14	65.55		$65.55
CA_IH	-34,905,672.12	12,883.46		$12,883.46
HI_IH	893,640.04	(370.34)		($370.34)
IA_IH	-471,184.25	391.68		$391.68
IL_IH	-77,050,199.89	18,583.34		$18,583.34
IN_IH	-58,035,261.14	21,900.92		$21,900.92
KY_IH	-35,790,376.05	13,934.61		$13,934.61
LAKE_IH	4,691,035.35	(2,072.29)		($2,072.29)
LI_IH	-19,575,190.52	8,064.89		$8,064.89
MD_IH	-1,097,825.86	416.26		$416.26
MI_IH	61,940.11	(35.75)		($35.75)
MO_IH	3,960,066.67	(2,742.74)		($2,742.74)
NJ_IH	-107,025,391.58	35,588.92		$35,588.92
NM_IH	-1,199,151.92	299.82		$299.82
OH_IH	3,850,953.17	(1,371.04)		($1,371.04)
PA_IH	-85,902,238.51	33,091.91		$33,091.91
SC_IH	-11,324,534.01	5,732.95		5,732.95
TN_IH	-14,625,903.06	5,733.57		$5,733.57
TX_IH	139,980.96	(74.74)		($74.74)
UWV_IH	-1,458,597.71	572.50		$572.50
VA_IH	-4,329,841.58	1,749.23		$1,749.23
WV_IH	-23,806,285.31	9,307.27		$9,307.27
		$86,799.39	$0.00	$86,799.39

Weighted Average Rate		0.4634%		
Prepared By:	Nicole Cataldo			
Reviewed By:	Tim Millaway			
Approved By:	Jeffrey Colkers			

AMERICAN WATER CAPITAL CORP.
Interest Allocation
Aug-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	295,367,274.70	(135,832.71)		($135,832.71)
AWWM_IH	-8,291,094.83	3,813.00		$3,813.00
AZ_IH	-65,661,937.18	30,196.42		$30,196.42
BFV_IH	-160,767.14	73.94		$73.94
CA_IH	-34,905,672.12	16,052.33		$16,052.33
HI_IH	893,640.04	(410.97)		($410.97)
IA_IH	-471,184.25	216.64		$216.64
IL_IH	-77,050,199.89	35,433.62		$35,433.62
IN_IH	-58,035,261.14	26,689.09		$26,689.09
KY_IH	-35,790,376.05	16,459.16		$16,459.16
LAKE_IH	4,691,035.35	(2,157.30)		($2,157.30)
LI_IH	-19,575,190.52	9,002.20		$9,002.20
MD_IH	-1,097,825.86	504.87		$504.87
MI_IH	61,940.11	(28.47)		($28.47)
MO_IH	3,960,066.67	(1,821.15)		($1,821.15)
NJ_IH	-107,025,391.58	49,218.56		$49,218.56
NM_IH	-1,199,151.92	551.44		$551.44
OH_IH	3,850,953.17	(1,770.99)		($1,770.99)
PA_IH	-85,902,238.51	39,504.45		$39,504.45
SC_IH	-11,324,534.01	5,207.89		5,207.89
TN_IH	-14,625,903.06	6,726.11		$6,726.11
TX_IH	139,980.96	(64.35)		($64.35)
UWV_IH	-1,458,597.71	670.79		$670.79
VA_IH	-4,329,841.58	1,991.17		$1,991.17
WV_IH	-23,806,285.31	10,947.96		$10,947.96
		$111,173.70	$0.00	$111,173.70
Weighted Average Rate		0.5341%		
Prepared By:	Nicole Cataldo			
Reviewed By:	Tim Millaway			
Approved By:	Glisson Inguito			

AMERICAN WATER CAPITAL CORP.

Interest Allocation
Jul-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	298,708,904.79	(173,030.73)		($173,030.73)
AWWM_IH	-8,283,754.03	4,798.49		$4,798.49
AZ_IH	-68,421,120.45	39,633.74		$39,633.74
BFV_IH	-159,263.35	92.24		$92.24
CA_IH	-31,854,561.47	18,452.13		$18,452.13
HI_IH	263,848.09	(152.85)		($152.85)
IA_IH	-167,428.49	97.00		$97.00
IL_IH	-68,237,796.34	39,527.57		$39,527.57
IN_IH	-57,571,351.55	33,348.91		$33,348.91
KY_IH	-39,596,634.47	22,936.81		$22,936.81
LAKE_IH	4,476,736.89	(2,593.17)		($2,593.17)
LI_IH	-18,918,654.61	10,958.91		$10,958.91
MD_IH	-1,151,673.93	667.14		$667.14
MI_IH	73,551.19	(42.62)		($42.62)
MO_IH	1,097,445.70	(635.70)		($635.70)
NJ_IH	-120,025,876.21	69,526.42		$69,526.42
NM_IH	-1,564,343.91	906.14		$906.14
OH_IH	4,002,964.14	(2,318.79)		($2,318.79)
PA_IH	-88,796,492.31	51,436.47		$51,436.47
SC_IH	-11,013,741.86	6,379.82		6,379.82
TN_IH	-14,448,496.10	8,369.47		$8,369.47
TX_IH	45,833.85	(26.52)		($26.52)
UWV_IH	-1,372,473.89	795.00		$795.00
VA_IH	-4,788,146.60	2,773.63		$2,773.63
WV_IH	-25,477,495.82	14,758.15		$14,758.15
		$146,657.66	$0.00	$146,657.66

Weighted Average Rate		0.6727%		

Prepared By:	Nicole Cataldo			
Reviewed By:	Jeffery Colkers			
Approved By:	Glisson Inguito			

AMERICAN WATER CAPITAL CORP.

Interest Allocation

Jun-09

ACCT_CODE	AVG Borrowing	Interest	Interest Adjmts	Expense (Income)
AWK_IH	230,172,475.09	(153,822.71)		($153,822.71)
AWWM_IH	-8,280,164.67	5,533.44		$5,533.44
AZ_IH	-69,451,987.56	46,414.31		$46,414.31
BFV_IH	-163,912.50	109.54		$109.54
CA_IH	-29,386,173.15	19,638.60		$19,638.60
HI_IH	653,304.83	(436.60)		($436.60)
IA_IH	-2,031,559.67	1,357.63		$1,357.63
IL_IH	-67,578,992.53	45,162.57		$45,162.57
IN_IH	-32,416,077.59	21,663.46		$21,663.46
KY_IH	-60,699,247.72	40,564.86		$40,564.86
LAKE_IH	5,612,522.12	(3,750.76)		($3,750.76)
LI_IH	-18,479,362.76	12,349.62		$12,349.62
MD_IH	-1,158,071.42	773.91		$773.91
MI_IH	20,728.07	(13.81)		($13.81)
MO_IH	-36,159,657.93	24,165.24		$24,165.24
NJ_IH	-112,681,475.54	75,304.29		$75,304.29
NM_IH	-2,251,041.25	1,504.39		$1,504.39
OH_IH	5,772,877.24	(3,857.95)		($3,857.95)
PA_IH	-83,189,066.17	55,594.71		$55,594.71
SC_IH	-8,447,488.18	5,645.40		5,645.40
TN_IH	-16,406,381.20	10,964.30		$10,964.30
TX_IH	-54,747.09	36.57		$36.57
UWV_IH	-1,418,664.50	948.10		$948.10
VA_IH	-7,035,035.75	4,701.45		$4,701.45
WV_IH	-25,995,209.66	17,372.43		$17,372.43
		$227,922.99	$0.00	$227,922.99

Weighted Average Rate		0.8020%		
Prepared By:	Nicole Cataldo			
Reviewed By:	Jeffery Colkers			
Approved By:	Glisson Inguito			

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: Michael A. Miller

448. With respect to Exhibit MAM-4, please provide (1) all data, work papers, assumptions, and calculations used in the analysis of the savings associated with the financings, and (2) an electronic version (Microsoft Excel) of all supporting Schedules and work papers used in the analysis, with all data and equations left intact.

Response:

For the electronic version of Exhibit MAM-4 please see the response to KAW_R_AGDR1#1_042610. The basis point savings on the 2002 and 2004 bond issues were based on an estimated 20 basis point savings gained from the "A" S&P rating for AWCC under RWE ownership versus the "A-" rating of AWCC prior to RWE ownership. The 10 basis points saving shown for the 2009 bond issues was an estimate of the savings associated with AWCC's rating versus a stand-alone issue by KAW. The avoided issuance cost saving for the 2002, 2004 and 2007 bond issues was an estimate of a per issue 75 basis point savings in issuance costs by using AWCC unsecured LT debt versus stand-alone KAW issuance costs if KAW had issued those bonds subject to the General Mortgage Indenture in the private placement market. Historically issuance costs had ranged between 100-125 basis points when KAW issued its debt in the private placement market.

The Company made filings with the Commission in support of the two tax exempt debt issues made in 2009 that showed the savings generated by those issues versus the current taxable interest rates at the time the tax exempt debt was issued. The two filings made with the Commission supporting those savings are attached to this response.

The electronic version of this response, refer to KAW_R_AGDR1#448_042610.pdf.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:	)
	)
APPLICATION OF KENTUCKY-AMERICAN	) CASE NO. 2009-00156
WATER COMPANY FOR ISSUANCE	)
OF INDEBTEDNESS AND CONTINUED	)
PARTICIPATION WITH AMERICAN WATER	)
CAPITAL CORP.	)

RECEIVED

AUG 0 7 2009

PUBLIC SERVICE
COMMISSION
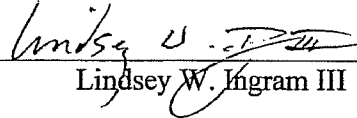
ORDERING PARAGRAPH 5 REPORT

In accordance with Ordering Paragraph 5 of the Commission's May 29, 2009 Order in this matter, Kentucky American Water provides the attached report detailing the terms and conditions of the $45,390,000 private activity bond issuance the Commission authorized in its Order. The attached also provides an analysis showing the interest rate for the bond issuance was the most reasonable at the time of issuance as proven by an annual savings of $585,531.

A.W. Turner, Jr., General Counsel
Kentucky-American Water Company
2300 Richmond Road
Lexington, Kentucky 40502

and

STOLL KEENON OGDEN PLLC
300 West Vine Street, Suite 2100
Lexington, Kentucky 40507-1801
Telephone: (859) 231-3000

BY: _____
Lindsey W. Ingram III

010311.003026/3660320.1

Kentucky American Water Company
Analysis of Interest Rate on KAWC 6.25% Series, $45.390 million bond

Bond Terms:

Type	Tax Exempt
Interest Rate	6.25% fixed
Rating	S&P-BBB+: Moody's-Baa2
Maturity Term	30 Years
Amount	$45,390,000
Pricing Date	16-Jun-09

Value Line Information:

	Tax Exempt A-rated 25/30 Yr.	Taxable BBB-rated 25/30 Yr.
Pub. Date 6/26/09		
Price Date 6/17/09	6.24%	7.54%
Basis Point Savings to Taxable Rates		1.29%
Annual Savings to Published Taxable Bond Rates		$585,531

Conclusions:

1. The tax exempt rate obtained by KAW/AWCC on June 16, 2009 was determined by a competitive market bid. The 6.25% rate obtained was essentially the same as the published 25/30 Yr. Rate for an A rated bond of Value Line priced on June 17, 2009.

2. The tax exempt rate of 6.25% obtained by KAW/AWCC was a reduction of 1.29% from the Value Line published rate for BBB rated, 25/30 year taxable issues per Value Line's pricing of June 17, 2009, generating an annual savings of $585,531 from the similar taxable bonds issued by KAW/AWCC.

Selected Yields

	Recent (6/17/09)	3 Months Ago (3/18/09)	Year Ago (6/18/08)		Recent (6/17/09)	3 Months Ago (3/18/09)	Year Ago (6/18/08)
TAXABLE							
Market Rates				**Mortgage-Backed Securities**			
Discount Rate	0.50	0.50	2.25	GNMA 6.5%	4.00	3.59	5.78
Federal Funds	0.00-0.25	0.00-0.25	2.00	FHLMC 6.5% (Gold)	3.13	3.15	5 74
Prime Rate	3.25	3.25	5.00	FNMA 6.5%	2.96	3.28	5 67
30-day CP (A1/P1)	0.42	0.49	2.65	FNMA ARM	2.53	3.60	4.31
3-month LIBOR	0.61	1.29	2 80	**Corporate Bonds**			
Bank CDs				Financial (10-year) A	6.70	7.52	6.10
6-month	0.66	0.84	1.75	Industrial (25/30-year) A	6.13	6.07	6.24
1-year	0.87	1.05	2.31	Utility (25/30-year) A	5.95	5.90	6 27
5-year	1.92	2.07	3.47	Utility (25/30-year) Baa/BBB	7.54	7.51	6 50
U.S. Treasury Securities				**Foreign Bonds (10-Year)**			
3-month	0.16	0 20	1.92	Canada	3.44	2.70	3 82
6-month	0.31	0.38	2.27	Germany	3.48	3.22	4 61
1-year	0.47	0.56	2.50	Japan	1.47	1.31	1 79
5-year	2.68	1.57	3.55	United Kingdom	3.79	3.11	5 16
10-year	3.69	2.53	4.14	**Preferred Stocks**			
10-year (inflation-protected)	1.92	1.31	1.54	Utility A	5.47	6.25	6 30
30-year	4.51	3.53	4.71	Financial A	8.72	9.76	6.92
30-year Zero	4.60	3.54	4.75	Financial Adjustable A	5 47	5 47	5 47

Treasury Security Yield Curve
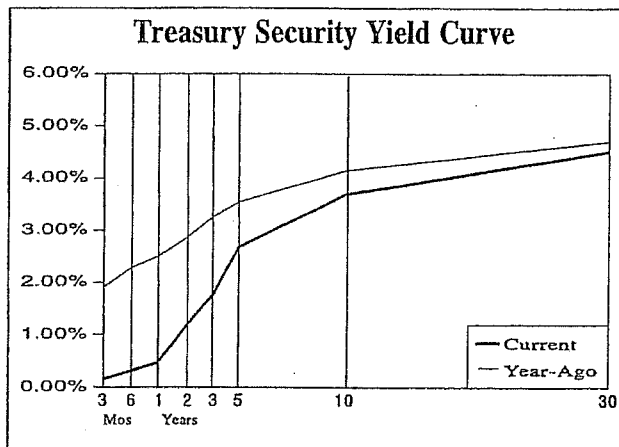
	Recent (6/17/09)	3 Months Ago (3/18/09)	Year Ago (6/18/08)
TAX-EXEMPT			
Bond Buyer Indexes			
20-Bond Index (GOs)	4.86	5.03	4.69
25-Bond Index (Revs)	5.76	5.83	5 14
General Obligation Bonds (GOs)			
1-year Aaa	0.40	0 57	1 78
1-year A	1 10	0.67	1 88
5-year Aaa	2.25	2.39	3.24
5-year A	3.65	2.99	3 34
10-year Aaa	3.33	3 45	3 89
10-year A	4.85	3.95	4.09
25/30-year Aaa	4.72	4.98	4.67
25/30-year A	6.24	5.98	4 87
Revenue Bonds (Revs) (25/30-Year)			
Education AA	6 30	6.00	4 97
Electric AA	6.35	6.10	5.02
Housing AA	6.65	6.35	5 07
Hospital AA	6.60	6.30	5.10
Toll Road Aaa	6.30	6.15	5 00

Federal Reserve Data

BANK RESERVES
(Two-Week Period; in Millions, Not Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	6/3/09	5/20/09	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	838497	877072	-38575	793290	759788	448486
Borrowed Reserves	497684	554779	-57095	565243	586617	461783
Net Free/Borrowed Reserves	340813	322293	18520	228048	173171	-13297

MONEY SUPPLY
(One-Week Period; in Billions, Seasonally Adjusted)

	Recent Levels			Growth Rates Over the Last...		
	6/1/09	5/25/09	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1597.0	1602.2	-5.2	9.4%	8.8%	15.6%
M2 (M1+savings+small time deposits)	8349.4	8356.9	-7.5	3.9%	8.4%	9.1%

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:)
)
APPLICATION OF KENTUCKY-AMERICAN)   CASE NO. 2009-00156
WATER COMPANY FOR ISSUANCE   )
OF INDEBTEDNESS AND CONTINUED   )
PARTICIPATION WITH AMERICAN WATER)
CAPITAL CORP.   )

ORDERING PARAGRAPH 5 REPORT

In accordance with Ordering Paragraph 5 of the Commission's May 29, 2009 Order in this matter, Kentucky American Water provides the attached report detailing the terms and conditions of the $26,000,000 private activity bond issuance the Commission authorized in its May 29, 2009 and August 21, 2009 Orders. The attached also provides an analysis showing the interest rate for the bond issuance was the most reasonable at the time of issuance as proven by an annual savings of $135,200.

A.W. Turner, Jr., General Counsel
Kentucky-American Water Company
2300 Richmond Road
Lexington, Kentucky 40502

and

STOLL KEENON OGDEN PLLC
300 West Vine Street, Suite 2100
Lexington, Kentucky 40507-1801
Telephone: (859) 231-3000

BY: _____
        Lindsey W. Ingram III

010311.003026/3667966.1

Kentucky American Water Company
Analysis of Interest Rate on KAWC 5.625% Series, $26.000 million bond

Bond Terms:

Type	Tax Exempt
Interest Rate	5.625% fixed
Rating	S&P-BBB+· Moody's-Baa2
Maturity Term	30 Years
Amount	$26,000,000
Pricing Date	1-Sep-09

Value Line Information:

	Tax Exempt 25-Bond Index (Rev's)	Taxable BBB-rated 25/30 Yr.
Pub. Date 9/11/09 Price Date 9/2/09	5.99%	6.14%
Basis Point Savings to Taxable Rates		0.52%
Annual Savings to Published Taxable Bond Rates		$135,200

Conclusions:

1. The tax exempt rate obtained by KAW/AWCC on September 1, 2009 was determined by a competitive market bid. The 5.625% rate obtained was lower than the 25 Yr. bond index and in line with the the 25/30 Yr. revenue bond rates published in the Value Line publication of September 11, 2009.

2. The tax exempt rate of 5.625% obtained by KAW/AWCC was a reduction of 0.52% from the Value Line published rate for BBB rated, 25/30 year taxable issues per Value Line's pricing of September 2, generating an annual savings of $135,200 from the similar taxable bonds normally issued by KAW/AWCC.

SEPTEMBER 11, 2009 VALUE LINE SELECTION & OPINION PAGE 3325

Selected Yields

	Recent (9/02/09)	3 Months Ago (6/3/09)	Year Ago (9/03/08)		Recent (9/02/09)	3 Months Ago (6/3/09)	Year Ago (9/03/08)
TAXABLE							
Market Rates				Mortgage-Backed Securities			
Discount Rate	0.50	0.50	2.25	GNMA 6.5%	3 92	3.37	5.60
Federal Funds	0.00-0.25	0.00-0.25	2.00	FHLMC 6.5% (Gold)	3.07	2.89	5.67
Prime Rate	3.25	3.25	5.00	FNMA 6.5%	2.85	2.78	5.48
30-day CP (A1/P1)	0.23	0.28	2.88	FNMA ARM	2.62	2.53	3.89
3-month LIBOR	0.33	0.64	2.81	Corporate Bonds			
Bank CDs				Financial (10-year) A	5.79	6.82	6.69
6-month	0.42	0.70	1.60	Industrial (25/30-year) A	5.43	6.35	6.11
1-year	0.72	0.92	2.26	Utility (25/30-year) A	5.45	6.17	6.13
5-year	2.25	1.92	4.15	Utility (25/30-year) Baa/BBB	6.14	7.83	6.54
U.S. Treasury Securities				Foreign Bonds (10-Year)			
3-month	0.13	0.12	1.68	Canada	3.33	3.36	3.48
6-month	0.21	0.25	1.90	Germany	3.23	3.57	4.14
1-year	0.38	0.44	2.07	Japan	1.32	1.55	1.47
5-year	2.27	2.42	2.95	United Kingdom	3.55	3.79	4.50
10-year	3.31	3.54	3.70	Preferred Stocks			
10-year (inflation-protected)	1.74	1.63	1.64	Utility A	6.37	6.10	6.16
30-year	4.12	4.45	4.32	Financial A	5.94	8.35	6.97
30-year Zero	4.22	4.53	4.37	Financial Adjustable A	5.53	5.53	5.53
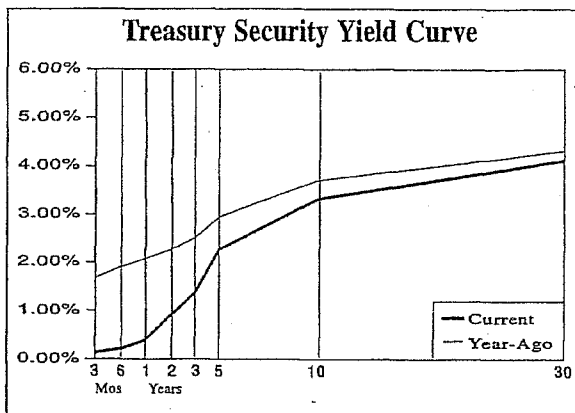
	Recent (9/02/09)	3 Months Ago (6/3/09)	Year Ago (9/03/08)
TAX-EXEMPT			
Bond Buyer Indexes			
20-Bond Index (GOs)	4.53	4.61	4.68
25-Bond Index (Revs)	5.99	5.53	5.17
General Obligation Bonds (GOs)			
1-year Aaa	0.40	0.40	1.58
1-year A	0.90	1.13	1.68
5-year Aaa	1.80	2.02	2.74
5-year A	2.24	3.45	2.84
10-year Aaa	2.93	3.01	3.55
10-year A	3.30	4.55	3.75
25/30-year Aaa	4.36 -	4.64	4.69
25/30-year A	4.82	6.16	5.07
Revenue Bonds (Revs) (25/30-Year)			
Education AA	5.30	6.20	4.85
Electric AA	5.40	6.25	4.80
Housing AA	5.55	6.55	5.15
Hospital AA	5.60	6.50	5.25
Toll Road Aaa	5.35	6.30	4.80

Treasury Security Yield Curve

Federal Reserve Data

BANK RESERVES
(Two-Week Period; in Millions, Not Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	8/26/09	8/12/09	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	794546	708501	86045	756262	762985	613020
Borrowed Reserves	327647	340534	-12887	394750	486512	508084
Net Free/Borrowed Reserves	466899	367967	98932	361512	276473	104936

MONEY SUPPLY
(One-Week Period; in Billions, Seasonally Adjusted)

	Recent Levels			Growth Rates Over the Last...		
	8/17/09	8/10/09	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1658.2	1663.6	-5.4	17.9%	13.1%	19.9%
M2 (M1+savings+small time deposits)	8312.4	8318.3	-5.9	-1.5%	1.1%	8.1%

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Michael A. Miller

449. With respect to Exhibit MAM-5, please provide (1) a copy of page 2 of Exhibit MAM-5, which is missing, (2) all data and work papers used in the analysis of interest rates, as well as an detailed explanation of the analysis which is performed in Exhibit MAM-5, and (2) an electronic version of Exhibit MAM-5 (pages 1 and 2) along with all supporting Schedules and work papers used in the analysis, with all data and equations left intact.

Response:

For the electronic version of Exhibit MAM-5 please refer to KAW_R_AGDR1#2_042610. Please see the response to KAW_R_AGDR1#447_042610 regarding the working papers supporting this exhibit.

For the electronic version of this response, refer to KAW_R_AGDR1#449_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: **Michael A. Miller**

450. With respect to Exhibit MAM-6, please provide (1) all data, work papers, assumptions, and calculations used to short-term interest rate paid by KAWC and the Fed Funds rate, and (2) an electronic version (Microsoft Excel) of all supporting Schedules and work papers used to determine the senior capital costs, with all data and equations left intact.

Response:

For the electronic version of Exhibit MAM-6 please refer to KAW_R_AGDR1#2_042610. Please the response to KAW_R_AGDR1#447_042610 regarding the working papers supporting this exhibit.

For the electronic version of this response, refer to KAW_R_AGDR1#450_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Dr. James H. Vander Weide**

451.   With respect to page 3, lines 8-23, please provide copies of Dr. James H. Vander Weide's last three cases in which he gave little or no weight to his CAPM results due to the Betas or market capitalization.

Response:

As discussed on pp. 41 - 44 of Dr. Vander Weide's direct testimony, the finance literature provides evidence to support the hypothesis that: (1) the CAPM tends to underestimate the cost of equity for companies with betas significantly less than 1.0 and/or small market capitalizations; and (2) the amount by which the CAPM underestimates a company's cost of equity increases as the company's beta and/or its market capitalization decreases. While most electric, natural gas, and water utilities have experienced declining estimated betas since 2008, the publicly-traded water companies also tend to have significantly smaller market capitalizations than most electric and natural gas utilities. Thus, the tendency of the CAPM to underestimate the cost of equity for water companies in the current market environment is especially pronounced. In Dr. Vander Weide's electric and natural gas testimony, Dr. Vander Weide reviews the evidence that the CAPM tends to underestimate the cost of equity for companies with betas less than 1.0 and he uses this evidence either to support his conclusion that his recommended cost of equity, which includes CAPM results, is conservative, or to support his conclusion that CAPM results should be given little or no weight. Since this proceeding relates to water utilities which have both low beta values and small market capitalizations, Dr. Vander Weide recommends that the Commission give no weight to CAPM results.

For the electronic version, refer to KAW_R_AGDR1#451_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: **Dr. James H. Vander Weide**

452.   With respect to page 15, lines 1-5, and Appendix 2, please provide copies of all theoretical and empirical studies known to Dr. Vander Weide which compare and contrast the quarterly and annual DCF models.

Response:

My use of the quarterly DCF model is based on the theoretical discussion contained in Appendix 1 of my direct testimony. Although I do not rely on any other studies that compare quarterly and annual DCF models, I am aware of several articles that discuss the use of quarterly versus annual DCF models. Please see the attached articles.

For the electronic version, refer to KAW_R_AGDR1#452_042610.pdf.

An *N*-Stage, Fractional Period, Quarterly Dividend Discount Model

Robert Brooks and Billy Helms*

Abstract

This paper develops a dividend discount model that will allow as many growth stages as desired. The model is directly applicable to most common stocks in that quarterly dividends are assumed and you need not be on a dividend payment date. The equation is easily programmed into a computer and is computationally very fast. The Newton-Rhapson algorithm is suggested as a means for estimating the required rate of return.

Introduction

The development of dividend discount models (DDMs) beyond the constant growth model has been limited to the two- and three-stage models. The two-stage model was developed by Malkiel [13], and the three-stage model was developed by Molodovsky [14]. The primary reason for not going further than three stages has been the difficulty of estimating the appropriate parameters. (See, for example, Elton and Gruber [5].) Another reason for limiting the development of the DDMs to three or fewer stages is the computational difficulty. The literature related to DDMs is vast. A brief summary includes [1, 3, 6–10, 15, 16].

The purpose of this paper is to provide a simple analytical equation that can handle as many stages as the analyst will brave to estimate. Thus, the analyst can decide the limits with regard to the number of stages rather than being constrained by the model. Also, the model presented here is directly applicable to actual stock price data as it assumes quarterly dividends and fractional periods.

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The Model

The *N*-stage model presented is based on the assumption that the stages are of the Malkiel type [13] and not of the Molodovsky type [14]. That is, within each stage, dividends grow at a constant rate. The *N*-stage model is also based on the assumption that dividends are adjusted once a year with the first adjustment beginning *h* quarters from now, and quarterly compounding as opposed to annual compounding is assumed.

If dividends are paid quarterly, it is imperative that quarterly compounding be used in any model. Therefore, if annual rate *k* is used, the appropriate rate on a quarterly basis is

$$r = (1 + k)^{1/4} - 1.$$

The errors associated with using *k*/4 instead of *r* are well documented by Chew and Clayton [2], Horvath [11], and Lindley, Helms, and Haddad [12]. That is, if *k* is indeed the annual rate of return, large errors result from not using a model that assumes quarterly compounding.

The *N*-stage, fractional period, quarterly dividend discount model is as follows: (The derivation of this model is available from the authors upon request.)

$$P = Q(DF^{-f})\left[T + (DF^h)Z\left\{ \sum_{m=1}^{N} \left(\prod_{j=1}^{m-1} B_j^{n_j} \right) S_m \right\} \right] \qquad (1)$$

where

Q = last quarterly dividend paid,
DF = $1/(1 + k)^{1/4}$ (the discount factor for one quarter)

where

k = required rate of return (annual),
f = fraction of current *quarter* elapsed since last dividend payment,
T = $(1 - DF^h)/[(1 + k)^{1/4} - 1]$,
h = number of quarters until a change in dividend policy,
N = number of growth stages,
Z = $DF^{-3} + DF^{-2} + DF^{-1} + 1$,
B_j = $(1 + g_j)DF^4 = (1 + g_j)/(1 + k)$,

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g_j = growth rate of dividends for stage j, j = 1, 2, ..., N,

n_j = number of years for the jth stage growth rate,

$S_N = (1 + g_N)/(k - g_N)$

$S_m = n_m I(B_m = 1.0) + NE_m I(B_m \neq 1.0)$ for m = 1, 2, ..., $N - 1$,

where $I(\cdot)$ is an indicator function—if the statement within the parentheses is true, then I = 1.0, otherwise I = 0.0,

$NE_m = (1 - B_m^{n_m})(1 + g_m)/(k - g_m)$.

Also, assume $\displaystyle\prod_{j=1}^{0} B_j^{n_j} = 1.0$.

If N = 0, then dividends will remain constant, and thus $h = \infty$ and $DF^h = 0.0$. Therefore, equation (1) reduces to

$P = Q(DF^{-f})T$

$P = Q(DF^{-f})/[(1 + k)^{1/4} - 1]$.

If N = 1, then $k > g_1$ (or else the price is infinite), and $n_1 = \infty$; thus $S_1 = NE_1 = (1 + g_1)/(k - g_1)$ and equation (1) reduces to

$P = Q(DF^{-f})[T + (DF^h)Z(S_1)]$

$P = Q(DF^{-f})[T + (DF^h)Z(1 + g_1)/(k - g_1)]$.

If N = 2, then $k > g_2$, thus $S_2 = (1 + g_2)/(k - g_2)$ and

$P = Q(DF^{-f})[T + (DF^h)Z\{S_1 + B_1(1 + g_2)/(k - g_2)\}]$.

For $N > 2$, then $k > g_N$, and equation (1) can be applied.

The Required Rate of Return

When implementing this model, the current market price is easily observable. In this section, we sketch the methodology for estimating k (the annual required rate of return) using the standard Newton-Rhapson method. The Newton-Rhapson method (see Ellis [4]) is an iterative technique that is easily programmable. The following is an outline of the Newton-Rhapson approach to solving for k in our model.

Step 1. Estimate $k_i = (4Q/P) + g_N$, which is the first estimate of k where i = 1 (i is a counter). Any rea-

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sonable estimate of k is acceptable. This estimate assures $k_1 > g_N$.

Step 2. Calculate $P(k_i)$, the price based on k_i.

Step 3. Calculate

$$\left.\frac{dP}{dk}\right|_{k=k_i} \equiv P'(k_i),$$

which is the first derivative of price with respect to k and evaluated at k_i. The appropriate derivative is given in equation (2) below.

Step 4. Calculate $k_{i+1} = k_i - ((P(k_i) - P)/P'(k_i))$, an improved estimate of k.

Step 5. Test to make sure $k_{i+1} > 0$ for $N = 0$ and $k_{i+1} > g_N$ for $N > 0$, a rational estimate of k. The Newton-Rhapson method works well as long as the price based on k_{i+1} is not too small or too large.

Step 6. Calculate $P(k_{i+1})$, the price based on k_{i+1} and test accuracy of k_{i+1} to compute the observed price. That is,

IF $(|P(k_{i+1}) - P| < \epsilon)$ THEN
$k = k_{i+1}$ and quit for acceptable ϵ (say $\epsilon = 0.001$).

Step 7. If k_{i+1} is not precise enough, then set $i = i + 1$ and go to Step 3.

The only problem in implementing the Newton-Rhapson method is solving for $P'(k_i)$.

$$\frac{dP}{dk} = [Qf(DF^{4-f})/4]\left[T + (DF^h)Z\left\{ \sum_{m=1}^{N} \left(\prod_{j=1}^{m-1} B_{j}^{n_j} \right)S_m \right\} \right]$$

$$+ Q(DF^{-f})\left[\{h(DF^{h+4})[(1+k)^{1/4} - 1] \right.$$

$$- (1 - DF^h)(1+k)^{-3/4}\}/(4[(1+k)^{1/4} - 1]^2)$$

$$- \left(h(DF^{h+4})/4 \right)Z\sum_{m=1}^{N} \left(\prod_{j=1}^{m-1} B_{j}^{n_j} \right)S_m$$

$$- (DF^h)(DF^5/4)(3DF^2 + 2DF + 1)\sum_{m=1}^{N} \left(\prod_{j=1}^{m-1} B_{j}^{n_j} \right)S_m \qquad (2)$$

$$+ (DF^h)Z\left(\sum_{m-1}^{N} \left(\prod_{j-1}^{m-1} (1 + g_j)^{n_j} \right) \right.$$

$$\times \left\{ -\left(\sum_{i-1}^{m-1} n_i \right)(1 + k)^{-\left(\sum_{i=1}^{m-1} n_i \right) - 1} S_m \right.$$

$$+ (1 + k)^{-\left(\sum_{i=1}^{m-1} n_i \right) - 1} \left[OI(B_m = 1.0) \right.$$

$$+ (1 + g_m)\left\{ n_m B_m^{n_m - 1}(1 + k)^{-2}(k - g) \right.$$

$$\left. \left. \left. \left. - (1 - B_m^{n_m}) \right\}/(k - g_m)^2 I(B_m \neq 1.0) \right] \right\} \right) \right].$$

Example

Consider the case of Commonwealth Edison Company (CWE), which supplies electricity to an estimated population of 8,000,000 in an 11,525 square mile area in northern Illinois. Approximately 33 percent of sales are derived from the Chicago area with 77 percent of the power generated by nuclear and 22 percent by coal. (See *Valueline*, April 21, 1989). CWE has paid quarterly dividends of $0.75 since 1982. The closing price on June 9, 1989, was 37 5/8, the last dividend was paid on May 1, 1989, and the next dividend will be paid on August 1, 1989. (See *Barron's*, June 12, 1989.)

Three estimates are made of the required rate of return to illustrate the advantage of the dividend discount model presented here: (a) annual dividends, no fractional periods; (b) quarterly dividends, no fractional periods; and (c) quarterly dividends, fractional periods (the model presented here).

Case 1: No Growth. If we assume that CWE will only be able to maintain their $3.00 per year dividend and thus no growth in dividends is anticipated, the required rates of return are as follows: (Note that $f = 39/92$, $Q = \$0.75$, and $P = \$37$ 5/8.)

Compound Period	Fractional Periods?	Required Rate of Return
(a) Annual	No	7.973%
(b) Quarterly	No	8.215%
(c) Quarterly	Yes	8.287%

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Thus, we see that by assuming annual periods and ig-
noring the fractional period, we produce an estimate of
the required rate of return that is off by 31.4 basis points
$((8.287 - 7.973) \times 100)$. Assuming quarterly compound-
ing but ignoring the fractional period produced an error
of 7.2 basis points $((8.287 - 8.215) \times 100)$. This error
is not that great partly due to being only 39 days
through the quarter.

Case 2: Constant Growth. If we assume that CWE's
dividends will grow at 3 percent per year $(g = 0.03)$
after year end $(h = 2)$, then we have the following re-
quired rates of return:

Compound Period	Fractional Periods?	Required Rate of Return
(a) Annual	No	11.213%
(b) Quarterly	No	11.429%
(c) Quarterly	Yes	11.530%

Again, we see the downward bias of ignoring quarterly
compounding as well as fractional periods. The exact
downward bias of more complex cases is a function of
the parameters selected.

Summary

The dividend discount model developed incorporates
quarterly dividends, fractional periods, and N stages.
This model alleviates the need to use a one- or two-stage
model to estimate future dividends for the more realistic
cases where expected changes in dividend policy do not
occur at convenient annual time periods and dividend
policy is expected to change more than once or twice.
The N-stage, fractional period, quarterly dividend dis-
count model presented provides greater precision and
more flexibility than previous models. In addition, an
efficient procedure is given for estimating the required
rate of return.

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Estimation Biases in Discounted Cash Flow Analyses of Equity Capital Cost In Rate Regulation

Charles M. Linke and J. Kenton Zumwalt

Professors Linke and Zumwalt both teach at the University of Illinois at Champaign-Urbana.

I. Introduction

The discounted cash flow (DCF) valuation models commonly found in public utility rate regulation testimony generate biased estimates of a utility's cost of equity capital. These biases typically range in magnitude from 50 to over 200 basis points. Such biases are not trivial. A 100 basis point bias could alter a utility's request for increased total revenues by ten to fifteen percent.[1] This paper examines three of the most common sources of estimation biases in DCF equity cost estimates.

Section II illustrates the DCF implementation problem that arises when quarterly dividend payments are forced, unadjusted, into an annual DCF framework.[2] A simple solution to eliminate this systematic underesti-

mation of equity capital cost is proposed. Section III demonstrates that a regulatory body's rate-year/rate-base practices generally require that the market-determined DCF equity cost estimate be adjusted to a regulatory allowed rate of return in order to estimate a utility's required quantity of earnings and revenues. An adjustment procedure is developed that avoids misstating a utility's required earnings and revenues. Section IV considers the practice of some rate of return analysts of converting a DCF market determined annual rate of return to a continuously compounded rate of return. It is shown that the frequency of compounding is irrelevant if the lower continuously compounded rate of return is implemented employing a rate base

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[1] A review of recent rate relief requests by a gas distribution utility, a telecommunication firm, and an electric utility in a large industrial state revealed that a 100 basis point bias in the equity cost estimate would account for approximately nine percent, fifteen percent, and eleven percent of the total revenue increases requested.

[2] The typical DCF treatment uses either the sum of four quarterly dividends or the sum of four quarterly dividends multiplied by $(1 + g)$. For the standard textbook DCF treatment, see [1, Chapter 15; and 10,

Chapter 8]. In either case, the cost of equity will be understated unless the time value of quarterly dividends is considered. Although DCF analyses presented in rate regulatory hearings fail to recognize this bias, in recent years several academic rate of return witnesses have recognized this source of estimation bias. For example, see [5, 6, 8, 9].

In passing, it is worth noting that institutional investors' stock rankings based upon DCF expected returns may be altered by this bias. Also, DCF estimates of equity capital cost may be a source of bias in empirical financial research. Examples of empirical research using annual growth estimates and/or annual dividend values include [3, 4, 7].

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construct that is consistent with continuous compounding.

II. The Quarterly Dividend Problem

The DCF model envisions the value of an asset as being determined by the cash flows expected from the asset and investors' required return which is determined by the time value of money and the required risk premium. Thus, for common stock the value or price today is the present value of all future dividends expected, including any liquidating dividend or sale price. That is,

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \ldots +$$

$$\frac{D_\infty}{(1+k)^\infty} = \sum_{t=1}^{\infty} \frac{D_t}{(1+k)^t} \qquad (1)$$

where D_t is the dividend paid at the end of period t, k is the required rate of return of investors or the market cost of equity capital, and P_0 is the current price of the stock. If dividends are expected to grow at a constant rate g for the indefinite future and $g < k$, Equation (1) can be rewritten as,

$$P_0 = \frac{D_0(1+g)}{(1+k)} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3}$$

$$+ \ldots + \frac{D_0(1+g)^\infty}{(1+k)^\infty} .$$

This formula reduces to the familiar Gordon Model,

$$P_0 = \frac{D_1}{k-g} \text{ or } k = \frac{D_1}{P_0} + g. \qquad (2)$$

These equations describe a generalized DCF model that may be used to analyze any periodic (annual, quarterly, monthly, etc.) cash flow.

Problems arise when using the annual version of the model unless recognition is given to the fact that the quarterly dividends have an opportunity cost. Most firms pay dividends quarterly, and the price of the stock reflects both the timing and amount of the dividends. The typical application of the annual DCF model ignores the time value of quarterly dividends.[3] Quarterly versions of Equations (1) and (2) resolve the time value of quarterly dividends problem, but create a new problem related to the size of the dividends.

Problems with the Annual Growth Model

DCF analyses of stock values should give recognition to the fact that firms commonly pay dividends quarterly and that firms change their quarterly dividend rate only periodically. It is shown below that failure to adjust the quarterly dividend for the time value of money will cause the annual DCF model's estimate of the cost of equity capital to be understated.

Consider, for example, a firm that paid a $.9432[4] annual dividend per share (quarterly dividends of $.2358 per share) during the fiscal year just ended. Dividends are expected to increase 6.0 percent per annum or to $.25 per share each quarter in the next fiscal year. The share price is $8.00. The time configuration of the expected dividends is presented in Exhibit 1. The implied annual dividends associated with the Equations (1) and (2) annual models are also shown. The typical cost of equity capital estimate using the annual mode of Equations (1) or (2) is 18.5 percent,

$$\$8.00 = \frac{4(\$.25)}{(1+.185)} + \frac{4[(\$.25)(1+.06)]}{(1+.185)^2}$$

$$+ \ldots + \frac{4[(\$.25)(1+.06)^\infty]}{(1+.185)^\infty}$$

or $\quad k = \dfrac{\$1.00}{\$8.00} + .06 = .185 = 18.5\%.$

This formulation is correct *only* if the entire annual dividend is paid at year end as shown in the second row of Exhibit 1. But the present value of four quarterly dividends is greater than the present value of one year-end dividend. Indeed, the cost of equity capital is 19.375 percent when the timing and amount of dividends embodied in the market price of the stock are considered. That is, 19.375 percent is the iterative solution[5] to

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[3]The CAPM suffers the same bias. This is apparent when the CAPM is rewritten in terms of P_0, or $P_0 = (P_1 + D_1)/[1 + R_f + \beta(R_m - R_f)]$, where P_0 is the current price, P_1 and D_1 are the expected price and dividend at the end of the next period, and $[1 + R_f + \beta(R_m - R_f)]$ is the risk-adjusted required return. In contrast, the time value of periodic payments is not ignored by bond dealers in the calculation of the yield to maturity for U.S. Government and corporate bonds.

[4]Although firms typically pay a dividend per share amount that is rounded to the nearest cent, the paper will use fractional cents for mathematical and expository convenience.

[5]An iterative solution procedure for solving Equation (1a) is

$$\$8.00 = \left[\frac{\displaystyle\sum_{Q=1}^{4} \$.25(1+k)^{1-.25Q}}{(1+.06)} \right] \left[\frac{1 - \dfrac{(1+.06)^t}{(1+k)^t}}{\dfrac{1+k}{1+.06} - 1} \right]$$

using a large value for t (*i.e.*, $t \geq 100$).

This equation is one of several formulations for growing cash flow streams. For example, the equation reduces to Equation A.8 in the text by Copeland and Weston [2, p. 706]. Also, as shown on page 17, when

$$D_1 = \sum_{Q=1}^{4} \$.25[1 + .19375]^{1-.25Q}$$ the equation reduces to equation

A.9 in Copeland and Weston. A trial and error process can be used to calculate the true cost of equity.

Exhibit 1. Expected Dividends Versus the Dividends Implied by the Annual and Quarterly Growth Models (annual growth rate = 6%; quarterly growth rate = 1.46738%)

	t_0 Fiscal Year End	Fiscal Year $t = 1$				Fiscal Year $t = 2$			
		Dividend at End of . . .				Dividend at End of . . .			
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4
Annual Model									
Expected Quarterly Dividends	$.2358*	$.250	$.250	$.250	$.250	$.265	$.265	$.265	$.265
Implied Annual Dividends†	$.9432				$1.00				$1.06
Quarterly Model									
Implied Quarterly Dividend‡ if analysis date is . . .									
t_0, Q_4	$.2358*	$.239	$.243	$.246	$.250				
t_1, Q_1		$.250*	$.254	$.257	$.261	$.265			
t_1, Q_2			$.250*	$.254	$.257	$.261	$.265		
t_1, Q_3				$.250*	$.254	$.257	$.261	$.265	

*Actual dividend in quarter preceding analysis.
†Total annual dividend (4 × Quarterly Dividend).
‡Implied four quarterly dividends are underlined.

$$\$8.00 = \sum_{Q=1}^{4} \frac{\$.25}{(1+.19375)^{.25Q}}$$
$$+ \sum_{Q=1}^{4} \frac{\$.25(1.06)}{(1+.19375)^{1+.25Q}} + \ldots$$
$$= \sum_{t=0}^{\infty} \sum_{Q=1}^{4} \frac{\$.25(1+.06)^t}{(1+.19375)^{t+.25Q}} . \qquad (1a)$$

The same equity cost estimate is obtained from the reduced form Equation (2) DCF annual model if the D_1 measure is adjusted for the time value of dividends. As shown later, the D_1 value called for in the reduced form annual model is $1.06998 [$1.06998 = $\sum_{Q=1}^{4}$ $.25 (1 + .19375)^{1-.25Q}$] with a 19.375 percent opportunity cost to shareholders. The cost of equity after adjusting for the time value of dividends is

$$k = \frac{1.06998}{\$8.00} + .06 = .19375 \text{ or } 19.375\%.$$

Hence, the customary use of the annual DCF growth model understates the cost of equity capital for this firm by 88 basis points [19.375% − 18.50% = 0.875%] because the time value of money associated with the quarterly dividends and embodied in the market price of the stock is ignored.

Problems with the Quarterly Growth Model

As indicated above, one method of considering the timing of the quarterly dividends is to use the Equation (1) model in a quarterly mode. This formulation eliminates the time value of money problem associated with the unadjusted annual growth model. Unfortunately, common usage of a quarterly DCF model introduces a dividend bias since quarterly DCF models typically are formulated as

$$P_0 = \sum_{Q=1}^{\infty} \frac{D_{Q-1}(1+g_q)^Q}{(1+k_q)^Q} , \qquad (3)$$

where Q = number of quarters,
   g_q = quarterly dividend growth rate, and
   k_q = quarterly cost of equity rate.

This reduces to

$$P_0 = \frac{D_1}{k_q - g_q} = \frac{D_0(1+g_q)}{k_q - g_q} . \qquad (4)$$

These formulations assume dividends are increased quarterly rather than periodically (typically annually). Thus, the quarterly dividend model correctly handles the time value of dividends but the quarterly dividend growth may cause the cost of equity capital to be understated or overstated.

The data in Exhibit 1 indicate clearly the reason for the bias in the quarterly model's equity cost estimates. The bottom four rows of Exhibit 1 present the implied quarterly dividends associated with a six percent annual dividend growth rate. The dividend stream denoted t_0, Q_4 assumes the analysis occurs at $t = 0$ or fiscal year end; stream t_1, Q_1 assumes the analysis is made after the first quarterly dividend, etc. The top row of Exhibit 1 shows the quarterly dividends actually expected. The discrepancies between the expected quarterly dividends (top row) and the dividends implied by the quarterly growth model (bottom four rows) depend upon

when the DCF analysis is made relative to the fiscal year dividend policy change. For example, if the analysis is made immediately following the fiscal year-end, t_0, Q_4, the implied quarterly dividend is *less* than the actual dividend in three of the four quarters. However, if the analysis is made at the end of the first quarter, the implied quarterly dividend will be *greater* than the expected dividend in three of the four quarters. Similar discrepancies occur if the analysis is performed at the end of Q_2 or Q_3.

A Proposed Solution

Investors are fully aware of the quarterly payment schedule of dividends. Thus, the price, P_0, reflects the timing of the dividends as well as the amount of the dividends. If $(D_{t-1,Q1})$, $(D_{t-1,Q2})$, $(D_{t-1,Q3})$, and $(D_{t-1,Q4})$ represent the quarterly dividend payments at the end of the quarters in the year preceding the (t_0) date of analysis,[6] and dividends are expected to grow at an annual rate g, then P_0 can be written as

$$P_0 = \frac{(D_{t-1,Q1})(1+g)}{(1+k)^{.25}} + \frac{(D_{t-1,Q2})(1+g)}{(1+k)^{.50}}$$
$$+ \frac{(D_{t-1,Q3})(1+g)}{(1+k)^{.75}} + \frac{(D_{t-1,Q4})(1+g)}{(1+k)}$$
$$+ \sum_{t=1}^{\infty} \sum_{Q=1}^{4} \frac{D_{t,Q}(1+g)}{(1+k)^{t+.25Q}}. \qquad (5)$$

This equation can be simplified to the $[k = (D_1/P_0) + g]$ annual model,

$$k = \frac{(D_{t,Q1})(1+k)^{.75} + (D_{t,Q2})(1+k)^{.50} + (D_{t,Q3})(1+k)^{.25} + (D_{t,Q4})}{P_0}$$
$$+ g. \qquad (6)$$

Equation (6) shows that the DCF model expressed in an annual mode must include a time value of money adjustment to dividends when applied to the real world where dividends are paid quarterly rather than once a year.[7] Applying the Equation (6) annual model to the

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[6]Ex-dividend and dividend payment dates are important variables in the analysis. Equations (5) and (6) are developed under the assumption that the analysis date occurs immediately after a dividend payment. Given quarterly dividend payments, the time periods for which the time value of dividend adjustments are required are .75 year, .50 year, .25 year, and .00 year. A different set of time periods would be involved if the analysis occurred between dividend payment dates.

[7]The mathematical complexity of estimating k via Equation (6) can be reduced substantially by approximating the k in the numerator as k = $[4(D_{Q1,t})/P] + g$. This approximation technique causes k to be understated slightly. Additional iterations can determine the exact required return.

firm discussed earlier shows that investors' required rate of return is correctly assessed as 19.375 percent,

$$.19375 = \frac{\$.25(1+.19375)^{.75} + \$.25(1+.19375)^{.50} + \$.25(1+.19375)^{.25} + \$.25}{\$8.00}$$
$$+ .06,$$

or

$$.19375 = \frac{\$1.06998}{\$8.00} + .06$$

when quarterly dividends are adjusted to reflect the time value of money. This adjustment raises the estimate of the example firm's cost of equity some 88 basis points or from 18.50% to 19.375 percent. Thus, the time value of money adjustment to dividends is not trivial.

III. Market Required Rate of Return Vs. Allowed Return on Equity Rate Base

It is common practice in rate regulation to determine a utility's required quantity of earnings as the product of the DCF cost of equity measure and an equity rate base. The appropriateness of this procedure revolves around the rate year/rate base practices of regulatory agencies. This section demonstrates that a regulatory body's rate year/rate base practices may require that the market determined DCF equity cost estimate $[k_{mkt}]$ be adjusted to a regulatory allowed return $[k_{reg}]$ in order to estimate a utility's required quantity of earnings.

A review of the example firm discussed earlier will make clear why the (k_{mkt}) estimate may need to be adjusted before using it to estimate the required quantity of earnings. Recall that the example firm had the following characteristics

$$P_0 = \$8.00 \quad \overset{t_0}{\underset{\vdash\qquad\vdash}{D_{Q1} = \$.25 \quad D_{Q2} = \$.25}}$$

$$\overset{t_1}{\underset{\vdash\qquad\vdash}{D_{Q3} = \$.25 \quad D_{Q4} = \$.25}} P_1 = \$8.48$$

and

$$k_{mkt} = .19375 \text{ or } [\$8.00 = (\sum_{t=1}^{4} \frac{D_{Qi}}{(1+.19375)^{t/4}})$$
$$+ \frac{\$8.48}{(1+.19375)}].$$

For expository convenience, the $t = 0$ share price (P_0) is assumed to be equal to book value per share (BV_0), or

$P_0 = BV_0 = \$8.00$.[8] Were a regulatory body to estimate the quantity of required earnings as

$$\text{Required Earnings} = (k_{mkt})(BV_0) = (.19375)(\$8.00) = \$1.55$$

then equity investors will realize the 19.375 percent required market return only if the utility (1) retains all earnings and the share price increases in line with book value [$\$8.00 = (\$8.00 + \$1.55)/(1 + .19375)$], or (2) retains no earnings and pays out only a year-end $1.55 annual dividend [$\$8.00 = \dfrac{\$1.55}{(1 + .19375)} + \dfrac{\$8.00}{(1 + .19375)}$]. This is nothing more than an example of the before-tax dividend irrelevance proposition.

But if the utility pays quarterly dividends, then the $[k_{mkt}][BV_0]$ product will overestimate the earnings requirement and, therefore, overestimate required revenues.[9] Consider the example firm once again. Assuming non-seasonal earnings and a share price equal to book value, the $1.55 earnings requirement estimate will allow equity investors to achieve a 20.29 percent return [$\$8.00 = \sum_{t=1}^{4} \dfrac{\$.25}{(1 + .2029)^{t/4}} + \dfrac{\$8.55}{(1 + .2029)}$] which exceeds the market required return of 19.375 percent by over 90 basis points. The source of this anomaly is well known in the finance literature. It revolves around the reinvestment assumptions inherent in yield or internal rate of return analyses.

The confounding elements of the reinvestment problem can be easily handled, however, by explicitly introducing reinvestment assumptions. For example, the discrepancy between the realized and required returns disappears in the example above if the utility's after-tax earnings requirement is calculated as follows:

Step 1: Estimate the n period compounded equivalent of the annual market determined rate of return by

$$k_{mkt,n} = [1 + k_{mkt,annual}]^{\frac{1}{n}} - 1, \qquad (8)$$

where n = number of compounding periods (if quarterly, n = 4).

Step 2: Use the rate of return from Step 1 and the beginning of each future period's equity rate base to calculate the earnings requirement for the year,

$$\begin{array}{l}\text{Earnings Requirement} \\ \text{in Year Beginning at} \\ \text{Time of Analyses}\end{array} = \sum_{t=0}^{n-1} [k_{mkt,n}][(BV_n)_t], \quad (9)$$

where $(BV_n)_t$ = the equity book value at the beginning of each compounding period in the year following the analysis date.

Step 3: The regulatory allowed rate of return can be calculated by relating the equity earnings requirement (in year t) calculated in Step 2 to the (beginning of year t) rate base construct mandated by a regulatory commission.

$$k_{reg} = \dfrac{\text{Equity Earnings Requirement}}{\text{Equity Rate Base Measure}}. \quad (10)$$

Exhibit 2 shows that the appropriate annual after-tax earnings requirement for the example utility emerges as the product of the beginning of quarter equity rate bases and the annual DCF equity capital cost (19.375 percent) restated in its quarterly compounded equivalent (4.52697 percent). The resulting $1.48 earnings requirement will provide equity investors the 19.375 required market return [$\$8.00 = (\sum_{t=1}^{4} \dfrac{\$.25}{(1 + .19375)^{t/4}}) + \dfrac{\$8.48}{(1 + .19375)}$].

Assuming the appropriate n in Equations (8) and (9) is four, the $1.48 earnings requirement can be used to calculate k_{reg} for rate base measures other than a beginning of the year rate base (BV_0). For example, k_{reg} is 17.720522 ($\$1.48/\$8.3519$) percent if a year end rate base is used, and 18.24413 percent if a mid-test year rate base is employed ($\$1.48/\$8.1122$). And, of course, k_{reg} will be greater for an expanding utility than k_{mkt} if a historical rate base test year is employed.

It is worth noting that k_{reg} is 18.50 percent ($\$1.48/\$8.00$) when a beginning of the year rate base (BV_0) is used to estimate a utility's required quantity of earnings. This was the same rate obtained using the traditional annual DCF model uncorrected for the receipt of dividends received quarterly rather than a single year-end dividend payment. This fact should not be interpreted to mean that there really is no problem with the traditional annual growth DCF model. Rather, this equality is a unique happenstance that will occur if and

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[8] One measure often used to indicate the efficacy of regulation is the price/book value ratio. The argument generally made is that when a utility has a P/BV = 1.0, the utility is earning the required return. The extent to which this measure is correct depends on how closely the book value reflects the economic value of the assets.

[9] It should be observed that the required earnings per share are on an after-tax basis. Revenue requirements are, of course, on a before-tax basis.

Exhibit 2. Required Earnings for Example Firm

Quarter	Book Value Beginning of Quarter	Earnings in Quarter t $(.0452697)(BV_{Q_t})$	Dividends in Quarter t ($.25/quarter)	Retained Earnings in Quarter t $(RE_t = EPS_t = DPS_t)$	Book Value End of Quarter t $(BV_{Q,t-1} + RE_t)$
1	\$8.0000	\$.3622	\$.2500	\$.1122	\$8.1122
2	8.1122	.3672	.2500	.1172	8.2294
3	8.2294	.3725	.2500	.1225	8.3519
4	8.3519	.3781	.2500	.1281	8.4800
		\$1.4800			

only if: (1) the n variable in Equations (8) and (9) is equal to the frequency with which dividends are paid each year; (2) demand-revenues-earnings are non-seasonal; (3) the analysis occurs immediately following an ex-dividend date; and (4) the next n dividends are equal.[10] If any of these conditions are not met, then only a market determined equity cost measure $[k_{mkt}]$ estimated via Equations (6) or (7) and converted to a regulatory allowed return on equity $[k_{reg}]$ via Equations (8), (9) and (10) will correctly estimate a utility's level of required earnings. Unless the $[k_{mkt}]$ estimate is converted to a regulatory allowed return $[k_{reg}]$, the allowed return on equity may be misstated by 100 to 200 basis points.[11]

IV. The Irrelevance of the Frequency of Compounding

In recent years, some rate of return analysts have begun to argue that a DCF market determined annual rate of return should be converted to a continuously compounded rate. Such an adjustment causes the rate of return recommended to be 100–175 basis points lower, and leads to an understatement of the needed allowed return given the rate base constructs generally employed by regulatory commissions. However, use of a continuously compounded rate will not alter the estimate of a utility's required earnings and revenues if it is implemented employing a rate based construct

consistent with continuous compounding.

The logic of why the frequency of compounding is irrelevant can be easily shown using the example firm. Recall that the beginning \$8.00 price $(P_0 = BV_0 = \$8.00)$ emerges from investors' expectations that a \$.25 dividend will be received at the end of each quarter and that the price at the end of the year will be $\$8.48[P_1 = BV_1 = \$8.48 = \$8.00(1 + g)]$. This dividend-price configuration will provide investors with their required 19.375 percent annual holding period return. Whatever rate base-required return combination is used, the utility's required quantity of earnings is \$1.48 during the year [4(\$.25 quarterly dividend) + (\$.48 increment to retained earnings)]. As shown in Exhibit 2, this means a utility must earn 4.52697 percent on its beginning of the quarter equity rate bases. Alternatively, using Equation (8), the allowed return can be stated on a monthly compounded basis or 1.48677 percent and used in conjunction with the beginning of the month equity rate bases. And, of course, the continuously compounded equivalent of shareholders' required 19.375 percent return or 17.70996 percent can be used *but* it must be applied to a rate base which increases continuously. That is,

$$\ln(1.19375) = .1770996128 = r_c$$

where r_c refers to the continuous compound rate. That the continuous compound rate of return generates the same \$1.48 required quantity of earnings when the proper rate base measure is used, is shown in Exhibit 3. And shareholders realize their required 19.375 percent annual return since,

$$\$8.00 = \frac{\$.25}{e^{.25r_c}} + \frac{\$.25}{e^{.50r_c}} + \frac{\$.25}{e^{.75r_c}} + \frac{\$.25}{e^{r_c}} + \frac{\$8.48}{e^{r_c}}$$

$$= \frac{\$.25}{(1+.19375)^{.25}} + \frac{\$.25}{(1+.19375)^{.50}}$$

$$+ \frac{\$.25}{(1+.19375)^{.75}} + \frac{\$.25}{(1+.19375)}$$

$$+ \frac{\$.25}{(1+.19375)}$$

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[10] In passing, it should be pointed out that the same intra-year compounding problem exists in connection with the calculation of the cost of a utility's embedded debt. Conventional practice of both utilities and regulatory commissions is to calculate a utility's embedded debt cost as the weighted average of the coupon yields $(k_{i:coupon})$ of outstanding bond issues rather than to calculate a weighted average of the yields-to-maturity $(k_{i:ytm})$ (with $P_0 = P_t = \$1000$) that gives recognition to intra-year compounding. Interestingly, ignoring intra-year compounding does not create the serious bias problem in the cost of debt measure that it does with respect to the cost of equity estimate. This is because $k_{i:reg} = k_{i:coupon} = n\,[(1 + k_{i:ytm})^{1/n} - 1]$ when n is two, $P_0 = P_t = \$1000$, and the semi-annual interest payment is level.

[11] A *caveat* is in order inasmuch as this presentation abstracts from various realities in the regulatory process. For example, a regulatory commission may choose to exclude specific assets from a utility's rate base, or not allow certain expenses to be recovered. However, introduction of these regulatory realities would not alter the conclusions reached in the paper regarding the proper procedures to be followed in implementing a DCF analysis of equity capital cost in rate regulation.

Exhibit 3. Required Earnings for Example Firms Using Continuous Compounding

Quarter	Beginning of Period BV	$\times\ e^{.25r_c}$	=	End of Period $BV_{Q,t}$ Before Dividends	Quarterly Earnings $(BV_{Q,T} - BV_{Q,t-1})$	–	Quarterly Dividend	=	Retained Earnings in Quarter t
1	$8.0000	$\times\ e^{.25r_c}$	=	$8.3622	$.3622	–	$.2500	=	$.1122
2	8.1122	$\times\ e^{.25r_c}$	=	8.4794	.3672	–	.2500	=	.1172
3	8.2294	$\times\ e^{.25r_c}$	=	8.6019	.3725	–	.2500	=	.1225
4	8.3519	$\times\ e^{.25r_c}$	=	8.7300	.3781	–	.2500	=	.1281
5	8.4800								
					$1.4800		$1.0000		$.4800

$$\text{Required Earnings} = \$1.48 = \frac{\$1.0000}{\text{Dividends}} + \frac{\$0.4800}{\text{Capital Gain or } \Delta BV(\Delta P)}$$

Thus, the frequency of compounding is irrelevant as long as the rate base construct employed in calculating a utility's required earnings is consistent with the assumptions inherent in the rate of return employed.

V. Summary

The annual DCF models typically encountered in financial texts, rate hearings, and empirical financial research do not treat correctly the timing of dividends. Also, the market determined DCF cost of equity estimate must generally be adjusted before it can be applied to a regulatory rate base. This paper illustrates the bias arising from conventional DCF analyses and presents a simple adjustment to the DCF model which eliminates the timing of dividend problem. In addition, the appropriate procedure for adjusting a market determined rate of return to a regulatory allowed rate of return is presented. Finally, the frequency of compounding used in a DCF analysis is shown to be irrelevant.

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The Irrelevance of Compounding Frequency in Determining a Utility's Cost of Equity

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I. Introduction

The relevance of the frequency of compounding in utility rate regulation is often misunderstood. Increasingly, analysts have advocated that the allowed return on equity capital should be the quarterly or continuously compounded equivalent of the market determined annual rate of return estimate emerging from a discounted cash flow (DCF) analysis. Of course, restating an annual rate of return in terms of its quarterly or continuously compounded equivalent creates a lower return measure. If this lower return were applied to an unchanged rate base, the resulting estimates of the utility's earnings and revenue requirements would also be lower. However, the use of a quarterly or continuously compounded rate will not alter the estimate of a utility's annual earnings requirement as long as it is implemented with a rate base construct that is consistent with quarterly or continuous compounding. That

is, regardless of the frequency of compounding, the allowed rate of return and, hence, service rates must be set at levels that are expected to generate the quarterly dividends and growth in investment (share price) required by investors.

Linke-Zumwalt [1] and Siegel [2] have explored the effect on capital cost estimation when recognition is given to the fact that firms commonly pay dividends quarterly but change the dividend amount only periodically. Both articles demonstrated that the market return estimate based on quarterly dividends is higher than the traditional DCF model [$k_e = (DPS_1/P_0) + g_{dps}$] return estimate when DPS_1 is a simple sum of the next four quarterly dividends. Linke and Zumwalt (L-Z) also showed that the market determined DCF equity cost estimate should be adjusted to a regulatory allowed return in order to estimate a utility's required amounts of earnings and revenues.

L-Z went on to argue that this required adjustment is independent of the frequency of compounding (annual, monthly, quarterly or continuous) assumption embodied in the return estimate. Siegel, on the other

Exhibit 1. Siegel's Example Utility Data

Analysis Date	Beginning of quarter 1 in year 1
Price/Share (P)	Equal to book value/share (BVPS)
Beginning-of-quarter Dividends/Share (DPS)	$ 1.50 quarterly in year 1
	$ 1.62 quarterly in year 2
Annual Growth (g)	8.0% for DPS, BVPS and P
Beginning-of-year Price/Share	$50.00
End-of-year Price/Share	$54.00 or $50(1.08)
Payout Ratio	0.60 calculated on an annual basis

$\text{Quarter}_{t,q}$	$Q_{1,1}$	$Q_{1,2}$	$Q_{1,3}$	$Q_{1,4}$	$Q_{2,1}$	$Q_{2,2}$	...
Dividend/Share	$1.50	$1.50	$1.50	$1.50	$1.62	$1.62	
Price/Share	$50.00				$54.00		

hand, argued that the earnings requirement for common equity ". . . must be discounted at the continuously compounded rate of return rather than the discrete, per period return" [2, p. 51]. This article reconciles the apparent differences in these conclusions and demonstrates that, when the proper rate base construct is used, the frequency of compounding is irrelevant in utility rate regulation.

II. Irrelevance of the Frequency of Compounding

Siegel's conclusion that continuous compounding must be used by regulators emerges from his assumption that the earnings of a utility are received continuously over time. However, the time configuration of earnings does not dictate that regulators must employ continuous compounding to estimate the annual earnings requirement for a utility. This is not to say that continuous compounding is an inappropriate method. Rather, the point is that annual, quarterly, monthly or continuously compounded rates equivalent to investors' annual required return will provide the same estimate of the annual earnings requirement for a utility *if* the compounding assumptions of the rate of return measure and the rate base measure are consistent. This can be easily shown using Siegel's example utility data (see Exhibit 1).

The example utility provides shareholders with $6.00 of dividends and $4.00 price appreciation and, therefore, a market determined DCF annual required return of 21.57892%.[1] This is equivalent to a discrete quarterly rate of return of 5.00611% and a continuously compounded annual rate of return (r_c^a) of 19.53934%.[2] Siegel indicates the continuously com-

pounded rate of return should be used to calculate the example utility's annual earnings requirement (R^a) as shown in his Equation (13),

$$R^a = r_c^a P_0 = (0.1953934)(\$50) = \$9.769671.[3]$$

This estimate of R^a, the annual earnings requirement of the example utility, is too small to provide shareholders their $6.00 of dividends and $4.00 price (book value) appreciation during year one. However, if earnings on reinvested earnings are included, the $9.769671 estimate is, in fact, too large.[4] The earnings

[2] The continuous annual rate (r_c^a) that is equivalent to the 0.2157892 discrete annual rate of return (r_d^a) is

$$r_c^a = \ln(1 + r_d^a) = \ln(1.2157892) = 0.1953934.$$

The discrete quarterly rate of return is

$$r_d^q = (1 + r_d^a)^{0.25} - 1 = (1.2157892)^{0.25} - 1 = 0.0500611,$$

while the continuous quarterly rate is

$$r_c^q = \ln(1 + r_d^q) = \ln(1.0500611) = 0.0488484.$$

[3] In his footnote 9, Siegel offers a second calculating procedure when earnings of the utility are assumed to grow at a continuous rate (g_c). Specifically,

$$R^a = R_0 e^{(g_c)(1)}$$
$$= [(r_c^a - g_c^a)P_0][e^{(g_c)(1)}]$$
$$= [(0.19539341 - 0.076961)\$50][1.08]$$
$$= \$6.3955$$

Using this formulation, the earnings requirement for Siegel's example utility would be only $6.3955, drastically short of the $10.00 needed if shareholders are to receive their $6.00/share of dividends and $4.00 price (book value) per share appreciation.

This calculating procedure would appear to be applicable to Siegel's example utility which is assumed to experience an 8.0% annual growth in its equity rate base and earnings. This alternative calculation is incorrect because there is no earnings growth that Siegel has not fully considered in his Equation (13) estimation procedure.

[4] Siegel defines the annual equity earnings requirement (R^a) for a utility to be the earnings ". . . from rate payers plus interest and dividends

[1] $$\$50.00 = \sum_{q=0}^{3} \frac{1.50}{(1.2157892)^{0.25q}} + \frac{\$54.00}{(1.2157892)}.$$

Exhibit 2. Earnings on Beginning Rate Base and Reinvested Earnings for Example Utility (Continuous Compounding)

Quarter	Beginning of Quarter Book Value (1)	Dividend Paid at Beginning of Quarter (2)	Beginning of Quarter Book Value after Dividend Payment (3) = (1) − (2)	Earnings in Quarter (4) = (3)($e^{r_c^q}-1$)	Book Value at End of Quarter (5) = (3) + (4)
1	$50.0000	$1.50	$48.5000	$ 2.4280	$50.9280
2	50.9280	1.50	49.4280	2.4744	51.9024
3	51.9024	1.50	50.4024	2.5232	52.9256
4	52.9256	1.50	51.4256	2.5744	54.0000
		$6.00		$10.0000	

Composition of Earnings	Earnings in Quarter q (E_q)*				Total* (ΣE_q)
	E_1	E_2	E_3	E_4	
A. Earnings during Quarter on $48.50† Beginning of Period Rate Base	$2.3691	$2.3691	$2.3691	$2.3691	$ 9.4766
B. Earnings on Earnings Reinvested during Quarter	0.0588	0.0588	0.0588	0.0588	0.2353
Subtotal: Earnings during Quarter on Beginning of Period Rate Base	$2.4280	$2.4280	$2.4280	$2.4280	$ 9.7119
C. Earnings during Quarters 2, 3 and 4 on Quarter 1's Excess Earnings‡		0.0464	0.0488	0.0512	0.1464
D. Earnings during Quarters 3 and 4 on Quarter 2's Excess Earnings‡			0.0464	0.0488	0.0952
E. Earnings during Quarter 4 on Quarter 3's Excess Earnings‡				0.0460	0.0460
	$2.4280	$2.4744	$2.5232	$2.5744	$10.0000

*Details may not sum to totals due to rounding.
†The beginning-of-period equity rate base is $48.50 inasmuch as the $50.00 (price) book value per share is reduced to $48.50 when the $1.50 beginning-of-quarter 1 dividend is paid.
‡The term "excess earnings in quarter" refers to earnings during a quarter in excess of the end-of-quarter dividend.

data shown in Exhibit 2 for the example utility reveal why this is so.

The upper panel of Exhibit 2 shows the quarter-by-quarter and annual earnings requirement of the example utility using continuous compounding.[5] As can be

from securities owned [earnings on reinvested earnings] less all operating expenses and payments of interest on debt and dividends on preferred stock outstanding" [2, p. 51]. Later in the same paragraph when discussing the calculation of R^a, Siegel states that R^a must be estimated as $R^a = r_c^a P_0$ because the utility receives earnings continuously and this ". . . allows the firm to earn an additional rate of return on its revenue [earnings] before it disburses funds [quarterly dividends] to shareholders, [thereby] lowering the annual revenue [i.e., earnings] requirement below the level that would exist if the firm obtained revenue [i.e., earnings] allotments at the end of the quarter" [2, p. 51].
[5]Implicit in the Exhibit 2 data is the assumption that the utility receives earnings through the continuous sale of service and is able to reinvest these earnings instantaneously at r_c^a.

seen, the $10.00 of earnings generated over the year provide shareholders with $6.00 of dividends and a $4.00 increase in price (book value per share).

The lower panel of Exhibit 2 decomposes the $10.00 annual earnings requirement into (i) earnings on the beginning-of-period rate base or the rate base implicit in a DCF analysis, and (ii) earnings on reinvested earnings. Row A shows the quarterly earnings associated with the $48.50 beginning-of-period rate base. Row B shows the earnings generated during a quarter due to the reinvestment during that quarter of the continuously generated earnings. Rows C, D, and E identify the earnings in subsequent quarters due to the reinvestment of previous quarters' earnings after payment of quarterly dividends.

These reinvested earnings *must* earn shareholders'

Exhibit 3. Earnings on Beginning Rate Base and Reinvested Earnings for Example Utility (Quarterly Compounding)

Quarter	Beginning of Quarter Book Value (1)	Dividend Paid at Beginning of Quarter (2)	Beginning of Quarter Book Value after Dividend Payment (3) = (1) − (2)	Earnings in Quarter (4) = (3) × (r_d^q)	Book Value at End of Quarter (5) = (3) + (4)
1	$50.0000	$1.50	$48.5000	$ 2.4280	$50.9280
2	50.9280	1.50	49.4280	2.4744	51.9024
3	51.9024	1.50	50.4024	2.5232	52.9256
4	52.9256	1.50	51.4256	2.5744	54.0000
		$6.00		$10.0000	

Composition of Earnings	Earnings in Quarter q (E_q)*				Total (ΣE_q)
	E_1	E_2	E_3	E_4	
Earnings during Quarter on $48.50† Beginning of Period Rate Base	$2.4280	$2.4280	$2.4280	$2.4280	$ 9.7120
Earnings during Quarters 2, 3 and 4 on Quarter 1's Excess Earnings‡		0.0464	0.0488	0.0512	0.1464
Earnings during Quarters 3 and 4 on Quarter 2's Excess Earnings‡			0.0464	0.0488	0.0952
Earnings during Quarter 4 on Quarter 3's Excess Earnings‡				0.0464	0.0464
	$2.4280	$2.4744	$2.5232	$2.5744	$10.0000

*E_q = (r_d^q or 0.05006115) (beginning-of-quarter investment).

†The beginning-of-period equity rate base is $48.50 inasmuch as the $50.00 (price) book value per share is reduced to $48.50 when the $1.50 beginning-of-quarter 1 dividend is paid.

‡The term "excess earnings in quarter" refers to earnings during a quarter in excess of the end-of-quarter dividend.

required return in order to generate the necessary $10.00 of annual earnings. The earnings data reveal that the utility requires service rates that provide it the opportunity to earn only $9.4766 from the sale of services generated by its beginning-of-period rate base. The $0.5234 difference between the $10.00 annual earnings requirement and the $9.4766 earnings from the sale of services generated by the $48.50 beginning-of-period rate base comes from earnings on reinvested earnings.

Alternative rate-of-return measures that are equivalent to investors' annual required return will provide estimates of the utility's quarter-by-quarter and annual earnings requirement that are identical to the estimates obtained using continuous compounding. The upper and lower panels of Exhibit 3 show the calculation of the $10.00 earnings requirement using quarterly compounding for both the rate-base measure and investors' required return. As can be seen, the application of the quarterly equivalent of the 21.57892% annual required return measure to the beginning-of-quarter rate base

values provides for the four $1.50 quarterly dividends and the $54.00 ending book value (price). Also, as in the continuous compounding calculations shown in Exhibit 2, the payout ratio is 60% and the growth in book value (price) conforms to the 8.0% annual growth rate assumption.

As shown in Exhibits 2 and 3, and in the L-Z article, the quarter-by-quarter and annual earnings requirements of the example utility are identical whether the estimates are based on annual, quarterly or continuous compounding. Thus, it is not necessary that the annual earnings requirement for a utility's common equity be estimated using continuous compounding.

Note, however, that when specifying his R^a calculating procedure, Siegel altered his working definition of R^a so as to exclude earnings on reinvested earnings. He then separated the proportion of the annual $10.00 earnings requirement that customers must provide through the prices they pay for service generated by the beginning-of-period equity rate base from the proportion of the annual earnings requirement that will be

earned on reinvested earnings.[6] If, as Siegel assumed, the utility receives its revenues and earnings continuously over the year and can instantaneously reinvest earnings at r_c^a, then customers need to pay service prices that provide only $9.4766 (see row A of lower panel of Exhibit 2) of earnings on the generating capacity in place at the beginning of the period. If it is believed, on the other hand, that the utility will only be able to invest earnings in excess of dividends quarterly, rather than instantaneously, then customers need to pay prices for the service generated by beginning-of-period capacity that will provide $9.7120 (see Exhibit 3) in earnings over the year. And, of course, if it is judged by the regulatory body that the utility will only be able to reinvest its earnings annually at investors' required return, then customers must pay prices that will provide the entire $10.00 of required earnings.[7]

III. Concluding Observations

Setting the allowed rate of equity return in public utility regulation requires that two very different rate of return concepts be distinguished — the required market (economic) return and the regulatory allowed (accounting) return. Investors' annual required rate of return is a market determined return that reflects both the amount and timing of expected cash flows from dividends and price appreciation to the beginning-of-period investment (price). The regulatory allowed rate of return is a percentage accounting return that emerges when the required quantity of earnings a utility needs to earn, if shareholders are to realize their expected market return, is related to a historical or future test year equity rate base.

Rate of return analysts' DCF estimates of the market required return must be converted into a regulatory allowed return if a utility's earnings requirement is to be correctly estimated. This article has shown that the estimation of a utility's annual earnings requirement is not affected by the frequency of compounding assumed in a DCF analysis. As long as the investment or rate base construct used to estimate the required quantity of earnings is consistent with the compounding assumption implicit in the rate of return measure, the estimated required quantity of earnings and, thus, the regulatory allowed return [(required quantity of earnings)/(regulatory rate base)] are identical whether a continuous or a discrete compounding analysis is undertaken.

[6]The service rates established during a rate hearing will allow shareholders to earn their required market return in the future if it can be safely assumed that: (i) the required market return does not change; (ii) the post rate hearing unit demand relative to productive capacity is unchanged; (iii) the [(operating costs per unit output)/(authorized service rate per unit output)] ratio does not change over time; and (iv) the average total investment and average equity investment per unit of capacity does not change over time. These assumptions may have worked tolerably well in the 1950s and 1960s. However, developments in the 1970s and 1980s, particularly inflation, changed the reasonableness of these crucial assumptions and fostered the increased volume of rate hearings.

[7]The appropriate reinvestment rate to use in an analysis of the earnings requirement for a utility will be affected by such variables as seasonality of revenues and earnings, the rate of growth and timing of capital expenditures and the rate base measure. This means, of course, that the appropriate reinvestment rate may range from zero up to investors' required return, and is, ultimately, an empirical issue.

References

1. C. M. Linke and J. K. Zumwalt, "Estimation Biases in Discounted Cash Flow Analyses of Equity Cost in Rate Regulation," *Financial Management* (Autumn 1984), pp. 15–21.
2. J. J. Siegel, "The Application of the DCF Methodology for Determining the Cost of Equity Capital," *Financial Management* (Spring 1985), pp. 46–53.

ARES ANNUAL MEETING

The Fourth Annual Meeting of the American Real Estate Society (ARES) will be held April 13-16, 1988 in San Francisco. For program details and further information, interested persons should contact:

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**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

453.   With respect to pages 17-18, please indicate (1) why Dr. Vander Weide has chosen to use the earnings forecasts reported by I/B/E/S and not another service like Zack's or First Call?, (2) how does the analysts coverage of I/B/E/S compare to the analysts coverage of the other major earnings reporting services?, and (3) are the I/B/E/S earnings forecasts available free of charge on the Internet and, if so, where?

Response:

(1)   I choose to use the I/B/E/S earnings growth forecasts rather than those of another service such as Zack's or First Call because: (1) I have performed statistical studies that demonstrate that the I/B/E/S growth estimates are highly correlated with companies' stock prices; (2) in my experience over the past 30 years, the I/B/E/S forecasts have superior availability of historical coverage, estimates for more companies, and more contributing analysts' estimates; (3) the I/B/E/S data have been more widely studied in the academic literature; and (4) I/B/E/S also provides other financial information such as revenue/sales, net income, pre-tax profit, and operating profit. I do not include Zack's or First Call in addition to I/B/E/S because there is considerable overlap in the analysts contributing to the I/B/E/S, Zack's, and First Call surveys, and because I/B/E/S and First Call are now owned by the same firm, Thomson Financial; thus, I/B/E/S and First Call long-term growth estimates should be identical.

(2)   The I/B/E/S data represents a consensus of annual and long-term forecasts collected from 60 data researchers and 9,000 contributing analysts, and the I/B/E/S data contain historical earnings estimates for more than 35,000 companies worldwide, with U.S. data beginning in 1976 and international data beginning in 1987. Detailed First Call consensus estimate data is confined to U.S. and Canadian companies. I have been unable to find current information from Zack's on the numbers of analysts providing long-term earnings growth forecasts.

(3)   Yahoo Finance reports earnings estimates free of charge that it lists as being obtained from Thomson Financial. However, these data do not include detailed information relating to whether the estimates are means or medians; the time the estimates are supplied; the number of or identity of the analysts contributing to the estimates; the value of each analyst's estimate; or the standard deviation or coefficient of variation among the estimates. Analysts' long-term earnings growth estimates are also available at Reuters.com. Reuters identifies the estimates as being mean estimates, provides the number of analysts contributing to the estimate, and the high and low estimates.

For the electronic version, refer to KAW_R_AGDR1#453_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Dr. James H. Vander Weide**

454.   With respect to page 18, lines 1-5, please provide all studies known to Dr. Vander Weide which indicate that "I/B/E/S growth rates are widely used by institutional and other investors."

Response:

My use of analysts' forecasts to estimate the growth component of the DCF model is based on the results of my own studies rather than on the results of studies reported in the literature. As a result, I have not attempted to find all studies that indicate that investors use analysts' forecasts to estimate future earnings growth. However, I am aware of several articles that investigate the relationship between analysts' forecasts and stock prices. The strong correlation between analysts' forecasts and stock prices found in these articles indicates that investors use the analysts' growth forecasts to estimate future earnings growth. See, for example, the attached. See also, Cragg, John G. and Burton G. Malkiel, *Expectations and the Structure of Share Prices*, National Bureau of Economic Research, University of Chicago Press, 1982.

For the electronic version, refer to KAW_R_AGDR1#454_042610.pdf.

EXPECTATIONS AND SHARE PRICES*

EDWIN J. ELTON,† MARTIN J. GRUBER† AND MUSTAFA GULTEKIN†

It is generally believed that security prices are determined by expectations concerning firm and economic variables. Despite this belief there is very little research examining expectational data. In this paper we examine how expectations concerning earning per share effect share price. We first show that knowledge concerning analyst's forecasts of earnings per share cannot by itself lead to excess returns. Any information contained in the consensus estimate of earnings per share is already included in share price. Investors or managers who buy high growth stocks where high growth is determined by consensus beliefs should not earn an excess return. This is not due to earnings having no effect upon share price since knowledge of actual earnings leads to excess return. Much larger excess returns are earned if one is able to determine those stocks for which analysts most underestimate return. Finally, the largest returns can be earned by knowing which stocks for which analysts will make the greatest revision in their estimates. This pattern of results suggests that share price is affected by expectations about earnings per share. Given any degree of forecasting ability managers can obtain best results by acting on the differences between their forecasts and concensus forecasts.
(FINANCE; FINANCE—INVESTMENT)

1. Introduction

A central theme of modern investment theory is that expectations about firm characteristics are incorporated into security prices. This theme can be found in most investment texts and is utilized in much of the current research in finance. Not only does this belief pervade academia it is commonly held by the financial community.

Surprisingly, in light of the strength of this belief, there is very little empirical evidence to support it. Almost all research which attempts to measure the impact of expectations utilizes not expectational data but historical extrapolations of past data that the authors hope will serve as a proxy for expectational data. This is true for most tests of valuation models as well as almost all tests in the efficient markets literature.

The purpose of this article is to examine the importance of expectations concerning one variable, earnings per share, in the determination of share price. Earnings per share is considered a key variable in determining share price and has been studied extensively in the efficient markets literature. In almost all studies, expectations of future earnings per share are formulated as an extrapolation of past earnings.[1] Justification for using historical extrapolation is sometimes found in tests of the accuracy of extrapolated data in forecasting future earnings.

While tests such as those found in [3], [4], and [5] provide some evidence of the relative accuracy of historical extrapolation versus expectational data as forecasts of the future, they do not address the question of the role of expectations in share price formation. The purpose of this paper is to directly address this question. More

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[1] Malkiel and Cragg [8] used expectational data on earnings growth in a valuation model. However, their sample of expectational data was very limited.

specifically, we will address the question of the role of actual future changes in earnings on stock returns, the role of expected changes in earnings, and finally the role of changes in expectations.

; In addition to examining the importance of expectations and earnings, we briefly explore the issue of the scale of returns that can be earned by being "more accurate" than average forecasts. If market prices reflect average expectations, then superior forecasting ability should be rewarded with excess returns. We will explore both the size of these returns and the timing of their occurrence.

2. Overview: Variables Examined and Sample Design

The testing of the impact of earnings expectations has awaited the development of a broad consistent data base. Lynch, Jones and Ryan have constructed a data base which contains one and two-year consensus earnings estimates on all corporations followed by one or more analysts at most major brokerage firms.[2] Lynch, Jones, and Ryan define the consensus earnings estimate for any stock as a simple arithmetic average of the estimates prepared by all of the analysts following that stock. Given this data base, a study can be made of the role of average expectations in price formation and in particular the importance of earnings expectations in determining share price.

In order to study the role of expectations, we need some measure of the excess returns that can be earned from knowledge concerning future earnings. To examine this, we analyzed the actual growth rate in earnings. The actual growth rate was defined as actual earnings for the forecast year minus actual earnings in the previous fiscal year, divided by actual earnings in the previous fiscal year. This variable is computed only for those firms for which the denominator is positive. This does not bias the results of our tests as the denominator is known at the time this variable is formulated. However, the population of stocks to which our tests apply is restricted. Letting G_t stand for the growth rate in earnings,

$$G_t = \frac{E_t - E_{t-1}}{E_{t-1}} \quad \text{for } E_{t-1} > 0 \tag{1}$$

where E_t is reported earnings per share at time t.

Anticipating our results for a moment, we will find that knowledge of actual growth will allow a significant risk adjusted excess return to be earned. This indicates that growth in earnings is an important variable affecting share price, and that expectations concerning this variable are worth studying.

If expectations determine share price, then knowledge of the average value of these expectations should already be incorporated in the share price, and buying on the basis of average expectations should not lead to excess returns. Thus, the second variable we examined was the consensus forecast of the growth rate in per share

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[2]Lynch, Jones and Ryan, a New York-based brokerage firm, have available in computer readable form consensus (average) earnings estimates updated monthly for the current and next fiscal year as well as forecasts of each individual analyst following each stock. They designate this as the I/B/E/S service. During the time period studied Lynch, Jones and Ryan surveyed brokerage firms. Our sample consisted of all stocks listed on the New York Stock Exchange which were followed by three or more analysts. The average number of analysts following each of these firms was slightly above seven. Furthermore, slightly less than 70 stocks were followed by ten or more analysts. The maximum number of analysts following any stock was 18.

earnings. We call this the forecasted growth rate. It is formulated as the consensus forecast of fiscal year earnings minus the actual earnings in the previous fiscal year divided by the actual earnings that occurred in the previous fiscal year. Since this measure cannot be interpreted for a negative denominator, it is computed only for those companies for which the denominator is positive. To be more explicit, let

$$FG_t = \frac{C_t - E_{t-1}}{E_{t-1}} \quad \text{for } E_{t-1} > 0, \tag{2}$$

where C_t is the consensus forecasts of the earnings per share that will occur at time t, and FG_t is the consensus forecast of the growth rate in earnings per share.

If expectations are important and are incorporated in present prices, then one should observe larger excess returns by having knowledge concerning the error in the growth estimate, than by knowing actual growth itself. Investment in a firm with high actual growth should not necessarily lead to excess returns unless investors were forecasting low growth. Thus, if expectations are important, knowledge concerning differences between actual growth and forecasted growth should lead to higher excess returns than knowledge concerning growth itself. Thus, the third variable we examine is actual growth minus forecasted growth. This differential growth can be expressed as

$$DG_t = G_t - FG_t. \tag{3}$$

Since the effect of differences between expectations and realizations is the key phenomena that we wish to study, we have measured this phenomena in two additional ways. The first is the error in the earnings forecast defined as the actual earnings in the forecast year minus the forecast earnings. If we denote this variable by M_t for misestimate in consensus forecast of earnings, then

$$M_t = E_t - C_t. \tag{4}$$

The second is the percentage forecast error, which is measured as the actual earnings in the forecast year minus the forecast earnings divided by the absolute value of the actual earnings. If we use $\%M_t$ to stand for the percentage, then

$$\%M_t = \frac{E_t - C_t}{|E_t|}. \tag{5}$$

While most of our analysis consists of an examination of one year forecasts, we decided to take a brief look at the excess returns associated with errors in two year forecasts. We duplicated the one-year measures and examined the error in earnings forecast for two years and the percentage error in earnings forecast for two years.

If consensus forecasts are more important than the actual level of future earnings in determining prices, then one should be able to do a better job of selecting stocks by knowing the change in consensus forecasts than by knowing actual earnings. To test this hypothesis, a variable measuring the percentage adjustment in forecasts over time was used. This variable is formulated as negative of the following quantity: the forecast of earnings prepared for the next (as opposed to this) fiscal year minus the forecast of earnings for the same fiscal year made one year later divided by this latter number. To better understand this variable, let $_{t-a}C_t$ stand for the consensus forecast for earnings at time t which are produced at time $t - a$, and $_{(t-a+12)}C_t$ stands for the forecast for time t which is produced 12 months later. Then the forecast revision

denoted by FR_t can be represented as

$$FR_t = - \frac{(t-a)C_t - (t-a+12)C_t}{(t-a+12)C_t} \; . \qquad (6)$$

3. The Sample

The raw data consisted of a monthly file of one and two-year earnings forecasts prepared in the years 1973, 1974, and 1975. We limited our sample of data in several ways. First, the sample was restricted to firms having fiscal years ending on December 31. By confining our sample to firms with fiscal years ending on the same date, forecasts prepared a certain number of months (e.g., nine) in advance of the end of the fiscal year, fall on the same calendar date. This procedure assures that the same general economic influences (e.g., the economy, the market, etc.) were available to all forecasters at the time forecasts were prepared. The date of December 31 was selected because more companies had fiscal years ending on that date than on any other.

Second, forecasts are restricted to two forecast dates, March and September. March was selected because it is the earliest date on which financial data for the previous fiscal year would be reported by most companies. September was selected as a month that is far enough from the first forecast and far enough into the fiscal year that significant evidence on companies' performance during the year should be available. Yet it is not so far into the year that earnings are known with certainty. Both dates are used for all variables involving one-year forecasts. However, so few two-year forecasts were available in March that only the September date could be used when examining two-year forecasts.

Finally, because we are interested in the impact of consensus forecasts, the sample was restricted to companies which were followed by three or more analysts. The consensus prepared from less than three forecasts could be idiosyncratic and not typical of broad feelings about the stock.

The final sample consisted of a total of 919 one-year forecasts of the fiscal years 1973, 1974, and 1975 and a total of 710 two-year forecasts of fiscal years 1974, 1975, and 1976. Because of negative earnings, some firms had to be eliminated over several measures. This caused the sample size to fall to as low as 913 and 696 for one and two-year forecasts, respectively. As discussed earlier Lynch, Jones and Ryan survey most large brokerage firms. Since we have included all stocks followed by three or more analysts, the group of stocks in our sample can be considered a universe of all stocks with important analyst interest. Since brokerage firms are interested in providing information to their customers, our sample should include most stocks of major institutional interest.

4. Methodology

The first step in our procedure was for each time period studied (March and September) and for each year to rank all stocks on each variable and to divide the stocks into deciles by each variable. For example, we formed deciles for the forecasted growth rates made in September 1973 with the first decile containing the 10% of the stocks with the highest forecasted growth rate. For each decile, we calculated the average value of the variable being studied (in this case, forecasted growth).

In order to determine whether certain types of information lead to excess returns, it is necessary to have a measure of what return is expected. If we have a measure of

expected return, then excess return is the difference between actual return and expected return. In order to measure expected return, we use the market model. The market model is a relationship between the return on a security and the return on a market index.

Let

1. r_{it} be the return on portfolio i in period t.
2. r_{mt} be the return on the market in period t.
3. α_i and β_i be parameters for portfolio i.
4. e_{it} be deviations from the model.

The market model is:

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it}$$

Using the market model leads to expected returns being determined by the security's normal relationship with the market (β_i), the market return in the period (r_m) and the security's average nonmarket return (α_i). Using the market model excess return is

$$r_{it} - (\alpha_i + \beta_i r_{mt}).$$

Although the market model is frequently used in finance, there are some problems with its use that can lead to biased tests. First there is measurement error in the coefficients and if this varies systematically with the test statistic, it can lead to an appearance of a relationship when none exists. This was guarded against in several ways.

First we calculated the market model for the deciles discussed earlier. Using grouped data is one way of reducing the measurement error. The one variable where measurement error can be especially bothersome is beta. As Blume [1] has shown the error in measuring beta varies systematically with its difference from one. The use of grouped data helps. In addition, we examined the individual betas on the groups. There was no systematic pattern, nor did any group beta differ very much from one (the range was 0.93 to 1.09). Given this result, we judged that any further adjustment in beta was unnecessary. In the original CAPM tests grouping data was common. Litzenberger and Ramaswamy [7] and Ross and Roll [9] have criticized this on the grounds that the CAPM is a theory of the pricing of single assets and as such has to be shown to explain differences in asset returns. Our purpose here is not to test CAPM but rather to examine the effect of expectations on share price. Hence grouping is a reasonable procedure for dealing with measurement error.

The second problem in the use of the market model is its difference from a capital asset pricing model. There are numerous general equilibrium models that have been derived. If one of these ultimately is shown to be correct, then better estimates of returns should be obtained by using that model rather than the market model. Brennan [2] has shown that the use of alternative models can make some difference. However, in this study the magnitude of the results, the grouping techniques, and the spread in the β_i's should mean that there is minimal chance of this source of potential bias explaining the results.[3] For example, assuming that the beta for each group was equal to one would not change any of our conclusions.

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[3]We could have used differences from R_m, rather than the market model in reporting our results. However the reader might then question to what extent our conclusions were due to differences in market risk. Alternatively we could have followed Watts [10] methodology to force the Beta on each Portfolio to be exactly one. However since the differences in Beta from one were neither large nor systematically related to any criteria across our deciles we did not take this additional step.

The market model was estimated by treating each decile as an equally weighted portfolio of the stocks which composed it and estimating the market model parameters for each decile. The market index we used was the Standard and Poor's index adjusted for dividends. The parameters of the model were estimated in each case using 60 monthly observations on returns up to and including the forecast month. The data dissemination procedure followed by Lynch Jones and Ryan means that forecasts are in the hands of the subscriber by the end of the month. The estimated parameters of the market model were then used in conjunction with actual market returns to forecast normal risk adjusted returns for each of the deciles during each of the 24 months after the forecast month. The risk adjusted returns in each month were close to but not exactly equal to zero. This should not be surprising to the reader. The sum of the residuals in any one month should equal zero only if they are weighted in market proportions and include all stocks in the index. Our sample meets neither of these conditions. We adjusted our residuals to have a mean (across all deciles) of zero for ease of presentation. Our primary statistical test is a *rank* correlation test, subtracting a constant from each entry can not effect the rank. Thus our adjustment had very little effect on the numbers reported and had no effect on their statistical significance or on our conclusions.

As discussed earlier, we calculated risk adjusted excess returns for each of the deciles for each of the variables for the 24 months after the forecast month. In the case of the March data we calculated risk adjusted excess returns from April on and in the case of September from October on. This was done for each of the three years for which we had data. We combined these years and have reported the average risk adjusted return across the three years for each decile.

To aid in understanding the results, we report the sum of the risk adjusted excess returns from the month after the forecast month to the month under consideration, rather than reporting the risk adjusted excess returns in any one month.[4] Thus, for March forecasts, the entry in month 3 is the sum of the risk adjusted excess returns earned in April, May, and June. This allows the reader to more easily determine the cumulative effect of any influence.

After examining the data we determined that there were no further effects after month 15 for March data and month 9 for September data. Thus, we have not reported results beyond these dates.

In reporting results we have combined the deciles in two ways. First, we report the cumulative risk adjusted excess returns in the upper 30%, middle 40%, and lowest 30% of firms ranked on each variable. Second, we report the cumulative risk adjusted excess returns in the upper 50%. Since the risk adjusted excess returns add to zero, across all deciles the risk adjusted excess return in the upper 50% is the negative of the lowest 50%. We chose to present the data in this way since using the ungrouped deciles increases the size of the tables substantially without providing additional insights.

The reader can judge the economic significance of the results by examining the cumulative residuals in Tables 1 through 4. These excess returns are reported before

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[4]Many authors accumulate residuals by calculating the product of one plus the residuals. The justification for this is that return over N periods is the product of the N one period returns. There is a difficulty with this procedure. The null hypothesis is that the residuals average zero. If this hypothesis is true, it is easy to show that the product of one plus the one period residuals minus one becomes negative and significantly so as N gets large. The sum of the residuals is zero under the null hypothesis and deviations from zero are indications of real effects.

TABLE I

Time Series of Cumulative Excess Returns Ranked by
Error in the Forecast of the Growth Rate (Equation (3)) for March Data

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Upper 30%	0.0166	0.0221	0.0221	0.0321	0.0630	0.0698	0.0767	0.0782	0.0855	0.0664	0.0729	0.0775	0.0909	0.0801	0.0897
Middle 40%	-0.0069	-0.0037	+0.0037	-0.0001	-0.0139	-0.0170	-0.0038	-0.0041	-0.0063	-0.0162	-0.0107	-0.0120	-0.0144	-0.0209	-0.0126
Bottom 30%	-0.0075	-0.0169	-0.0173	-0.0320	-0.0444	-0.0470	-0.0719	-0.0726	-0.0773	-0.0448	-0.0588	-0.0731	-0.0717	-0.0523	-0.0729
Rank Corre-lation[a]	0.71**	0.73**	0.76**	0.83*	0.83*	0.76**	0.84*	0.87*	0.89*	0.90*	0.85*	0.87*	0.93*	0.92*	0.89*

[a] Rank correlation coefficients
* Indicates significance at the 1% level.
** Indicates significance at the 5% level.

TABLE 2

Time Series of Cumulative Excess Returns for the
Error in the Forecast of Growth Rate Using September Data (Equation (3))

	1	2	3	4	5	6	7	8	9
Upper 30%	0.0187	0.0272	0.0421	0.0429	0.0466	0.0506	0.0618	0.0638	0.0680
Middle 40%	0.0100	0.0092	0.0014	− 0.0035	− 0.0036	− 0.0045	− 0.0069	− 0.0065	− 0.0034
Lower 30%	− 0.0318	− 0.0394	− 0.0441	− 0.0384	− 0.0421	− 0.0445	− 0.0526	− 0.0550	− 0.0635
Rank Correlation[a]	0.77*	0.88*	0.84*	0.88*	0.99*	0.92*	0.95*	0.94*	0.85*

[a] Rank correlation coefficients are computed across deciles.
* Indicates significance at 1% level.
** Indicates significance at 5% level.

TABLE 3

Excess Returns for Months 7 and 13 March Data

Time of Analysis		Forecasted Growth Equation (2)	Actual Growth Equation (1)	Error in Growth Equation (3)	Error in Forecast (One Year) Equation (4)	Percentage Error in Forecast Equation (5)
	Upper 30%	− 0.0064	+ 0.0591	+ 0.0767	0.0633	+ 0.0711
	Middle 40%	0.0068	0.0006	− 0.0033	0.0092	− 0.0033
MONTH 7	Lower 30%	− 0.0028	− 0.0597	− 0.0719	− 0.0754	− 0.0719
	Upper 50%	− 0.0080	0.0463	0.0426	0.0462	0.0426
	Rank Correlation[a]	− 0.35	0.90*	0.84*	0.98*	0.90*
	Upper 30%	+ 0.0006	+ 0.0748	+ 0.0908	+ 0.0715	+ 0.0861
	Middle 40%	− 0.0093	− 0.0191	− 0.0144	+ 0.0022	− 0.0156
MONTH 13	Lower 30%	+ 0.0019	− 0.0493	− 0.0717	− 0.0743	− 0.0651
	Upper 50%	− 0.0139	0.0411	0.0577	0.0571	0.0554
	Rank Correlation[a]	− 0.30	0.88*	0.93*	0.96*	0.85*

[a] Rank Correlation coefficients are computed across deciles.
* Indicates significance at the 1% level.
** Indicates significance at the 5% level.

TABLE 4

Excess Returns for Month 7 from September Data

	Forecasted Growth Equation (1)	Actual Growth Equation (2)	Error in Growth Equation (3)	Error in Forecast (One Year) Equation (4)	Error in Forecast (One Year) Equation (5)	Error in Forecast (Two Years) Equation (4)	Error in Forecast (Two Years) Equation (5)	Forecast Revision Equation (6)
Upper 30%	0.0135	0.0399	0.0618	0.0567	0.0652	0.0773	0.0792	0.0889
Middle 40%	− 0.0079	− 0.0161	− 0.0069	− 0.0053	− 0.0084	− 0.0023	− 0.0062	− 0.0141
Lower 30%	− 0.0029	− 0.0186	− 0.0526	− 0.0497	− 0.0541	− 0.0741	− 0.0711	− 0.0701
Upper 50%	0.0073	0.0245	0.0405	0.0402	0.0409	0.0496	0.0498	0.0512
Rank Correlation[a]	0.37	0.53	0.95*	0.95*	0.89*	0.96*	0.98*	0.83'

[a] Rank correlation coefficients are computed across deciles.
* Indicates significance at the 1% level.
** Indicates significance at the 10% level.

TABLE 5

Mean Values for Each Variable

	Equat. (1) Forecasted Growth	Equat. (2) Actual Growth	Equat. (3) Error in Growth	Equat. (4) Forecast Error (1 yr)	Equat. (5) Percentage Forecast Error (1 yr)	Equat. (4) Percentage Forecast Error (2 yrs)	Equat. (5) Percentage Forecast Error (2 yrs)	Equat. (6) Forecast Revision
March Data								
Upper 30%	56.61%	107.45%	63.62%	1.08%	26.24%			
Middle 40%	6.9	8.27	1.35	0.01	− 0.32			
Lower 30%	− 9.16	− 34.95	− 38.88	1.05	− 159.24			
Sept. Data								
Upper 30%	81%	98.83%	26.36%	0.53%	14.72%	0.13%	26.74%	43.76%
Middle 40%	9.34	8.32	− 0.17	− 0.07	− 0.23	− 0.09	− 3.75	1.19
Lower 30%	− 15.75	− 32.95	− 27.02	− 0.67	− 94.01	− 1.64	− 155.29	− 27.34

transaction costs. While estimates of round trip transaction costs differ, a reasonable estimate is in the range of two to four percent. Thus, cumulative residuals in excess of 4% can be accepted as of economic significance.

It is also logical to examine whether the relationship between any of the variables under study and excess return is statistically significant. This was examined by computing Spearman rank order correlation coefficient between the decile and the rank order of the cumulative excess return for each decile. A statistically significant rank order correlation coefficient would indicate that there was a significant relationship between the variable under study and cumulative excess returns. Furthermore, by using a nonparametric test this statement is free of any distributional assumptions (across deciles) about the pattern of excess returns and/or the variables under study. Note that when we compute, the statistical significance of the cumulated residuals in successive periods these tests are not independent.

Table 5 presents the average values for each variable studied in this paper.

5. Results

The first question to analyze is: Can an investor earn excess returns by selecting stocks on the basis of the consensus growth rate forecasted by security analysts (Equation (2))? The answer is no. There is no discernable pattern in the cumulative excess returns. In some months the stocks for which high growth was forecasted had positive risk adjusted cumulative excess returns; in other months they had negative ones. As a further check we performed a rank order correlation test on the deciles in

each month. The rank order correlation between forecasted growth and risk adjusted cumulative excess return was never significantly different from zero at the 1% level and only significantly different from zero from the 5% level in two months. In the months it was significant it was negative, which is opposite to what one would expect if growth estimates contained information which was not incorporated in stock prices. The lack of a pattern was even more evident in the September data. In no month was the cumulative excess return significantly different from zero at even the 5% level and the average cumulative excess return varied frequently from positive to negative. The results for each individual month is not reported in the paper but the results for selected months can be seen by examining Tables 3 and 4.

This lack of risk adjusted excess returns occurs even though the analysts were projecting some very large growth rates. In September the analysts were projecting that the average growth rate for the top decile would be over 100% and the growth rate in the second decile would be 33%. In contrast the earnings of stocks in the last decile were expected to decline by 34%.

A number of financial institutions purchase growth stocks as an investment strategy. In the three years we examined, pursuing such a strategy based on consensus estimates would not have led to superior returns, growth forecasts were already incorporated in the security prices. This is what one would expect if expectations are incorporated into security price.

On the other hand, our results show that growth is an important determinant of security returns. Investors with perfect forecasting ability could make risk adjusted excess returns. The results for individual months are not reported. However, the results for selected months, can be seen by examining Tables 3 and 4. From month 4 on, the rank order of excess returns for the deciles is significant at the 1% level. The excess return builds up to 7.23% for the upper 30% of all stocks by month 9. It then declines and builds up again to over 7%. A similar but less distinct pattern can be seen by examining the lowest 30%.

The risk adjusted excess returns from possessing perfect forecasting ability in September are much lower than they were from possessing perfect forecasting ability in March. Furthermore in most months the rank order of the deciles is insignificant at the 1% level (although it's still sometimes significant at the 5% level). This is what one would expect. By September investors have a much better idea of actual growth than they do in March.

If prices reflect consensus forecasts, then knowing the error in the consensus estimate of growth should lead to larger profits than just knowing actual growth. How large is the mis-estimate of actual growth by the analysts? In March, the average error for the 30% of the companies for which earnings growth was most underestimated was 63.6%, while the average error for the 30% of the companies for which growth was most overestimated was 38.9%. The corresponding numbers for September forecasts are 26.4% and 20.3%. It is apparent that while there are still large size errors in the September forecasts, the size of the error has decreased markedly between March and September. Analysts can improve the accuracy of their forecasts as interim earnings reports or as other information comes out and more information is available on company performance.

Tables 1 and 2 show the time series of cumulative risk adjusted excess return for the errors in the March and September estimates (Equation (3)). The rank order of the deciles is significant from the first month for both the September and March estimates.

The risk adjusted excess returns build up very quickly in both cases. For the March forecasts, the risk adjusted excess returns are close to 7% by month 6 (September), the major increase occurring in month 5. Once again, the risk adjusted excess returns have a temporary peak in month 9 and then increase to a global peak in month 13. This rapid build-up is consistent with information about true earnings growth being disseminated over time and the market correctly incorporating the information.

Even in September investors with a better estimate of growth than the consensus had an opportunity for excess profits. Notice that while knowledge of the forecast error as of September allows an excess profit to be earned, perfect forecast ability did not allow an excess profit to be earned. This suggests that on average forecasts are accurate enough in September that excess profits can be earned only by isolating those cases where forecasted growth is very much different than actual.

The time pattern for all variables is very similar with March forecasts producing excess returns which level out after month 13 and September forecasts producing excess returns which level out after month 7. Consequently, we shall only report results for these months. The cumulated excess returns in these months are reported in Table 3 and Table 4. In addition, in Table 3 we show the risk adjusted cumulative excess returns 7 months after the March forecasts for comparison with the effect 7 months after the September forecast.

Note that among the variables discussed so far for both March and September forecasts, the risk adjusted excess return was highest for the error in the growth rate, next highest for actual growth and close to zero for the forecasted growth. What an investor desirous of making excess profits should be most concerned with is finding securities where his forecasts are not only good in the sense of being right but where they are both accurate and different from the consensus.

The same conclusion can be reached by examining errors in the earnings estimates. Tables 3 and 4 present the analysis of excess returns for the error in forecast earnings and the percentage error in earnings forecasts for one year forecasts as of March and September and two-year forecasts as of September. In each case the excess returns appear to be sufficient to cover transaction costs and the rank order correlation coefficient is significant at the 1% level.

Furthermore, the amount of excess returns that can be earned vary with the magnitude of the forecast error. The two-year estimates made in September and the one-year estimates made in March were considerably less accurate than the one-year forecast made in September. They also produced higher risk adjusted excess returns. However, even in September there is a considerable forecast error in year-end earnings. In September, the percentage forecast error was 26% for the top decile, 11.6% in the next decile, and 6.3% in the next. These errors, while lower, were still significant enough to lead to an excess risk adjusted return.

We have now examined evidence that consensus forecasts are incorporated into price. Further, we have seen that the ability to forecast with more accuracy than the consensus forecast can lead to an excess risk adjusted return. If consensus forecasts play a major role in price determination, then the ability to forecast consensus forecasts themselves should lead to a superior return. Since we have estimates of the earnings for each company made 15 months in advance (the two-year forecast as of September) and estimates of the same earnings made 12 months later (one-year forecast made in September of the following year), we can measure the impact of being able to forecast the change in the estimate (Equation (6)). As shown in Table 4, the

TABLE 6
Error in Growth*
(Forecast-actual)

Percentage of Firms eliminated	Excess return if completely accurate	Excess return if 50% error	Excess return if 90% error
0%	0	0	0
10%	1.56	0.78	0.16
20%	2.88	1.44	0.29
30%	3.07	1.53	0.31
40%	4.32	2.16	0.43
50%	5.77	2.88	0.58
60%	7.35	3.67	0.74
70%	9.08	4.54	0.91
80%	9.90	4.95	0.99
90%	10.42	5.21	1.04

*Forecasts of one year growth rates prepared in March. Cumulative returns calculated as of April of the following year.

returns from being able to estimate forecast revision are substantial. In fact, the return from forecasting future forecasts themselves is higher than the return from being able to forecast actual earnings. This is consistent with our other evidence that it is consensus forecasts which determine security prices.

All of the results presented in this section could be used to analyze the amount of accuracy necessary to earn excess returns. Assume the analysts can identify firms that are in various deciles with respect to the error in estimated earnings. For example, suppose he could identify the 10% of the firms with the largest forecast error. Column 2 of Table 6 shows the cumulative excess return he would earn. Columns 3 and 4 assumes that he identifies the members of a decile with error. Column 3 assumes that 50% of the time he identifies a firm as a member of a decile he is randomly selecting from among all firms and 50% of the time he is accurate. Column 4 assumes that 90% of the time he is randomly selecting from all firms.

For example, if an analyst is attempting to select from among the 30% of the firms for which the consensus forecast most underestimate true earnings, and he is right 50% of the time, he will earn an excess risk adjusted return of 4.54%.

As can be seen from an examination of the table, a little bit of information leads to substantial cumulative excess returns. These kinds of excess returns provide some justification for the effort undertaken by many organizations to forecast earnings.

6. Conclusions

In this study we present evidence in support of the hypothesis that expectations are incorporated into security prices. In addition, we have analyzed the timing and size of returns from forecasts which are more accurate than the consensus. Since prices reflect consensus forecasts, the payoff from being accurate in forecasting is increased markedly as the consensus forecast becomes inaccurate. Finally, we have demonstrated that the payoff from being able to forecast the consensus estimate is higher than the payoff from being able to forecast earnings. The market reacts to expectational data. But despite this, or rather because of it Lord Keynes [6] appears to have been right when he likened professional investing to participating in a newspaper contest on a beauty

contest, where " . . . each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of other competitors, all of whom are looking at the contest from the same point of view."

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Choice Among Methods Of Estimation Share Yield
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Choice among methods of estimating share yield

The search for the growth component in the discounted cash flow model.

David A. Gordon, Myron J. Gordon, and Lawrence I. Gould

The yield at which a share of stock is selling, also called its expected return or required return, is an important statistic in finance. Firms use it in choosing among investment opportunities and financing alternatives, and investors use it in making portfolio decisions. Nevertheless, the yield at which a share is selling is a difficult quantity to measure, which has limited its use in the practice of finance. This paper develops and tests a basis for choice among alternative methods of estimating a share's yield.

A share's yield, like a bond's yield, is the discount rate that equates its expected future payments with its current price. A bond's yield is easy to measure under the common practice of ignoring default risk, as the future payments are then known with certainty. The future payments on a share, however, are dividends and market price, and these payments are uncertain.

The common practice is to represent these future dividend payments with estimates of two numbers: One is the coming dividend, and the other is a growth rate. The latter can be an estimate of the long-run growth rate in the dividend or of the growth rate in price over the coming period. In the latter case, the estimate is called the expected holding-period return (EHPR); in the former case, it is called the discounted cash flow yield (DCFY).[1] In either case, the estimate of a share's yield reduces to the sum of its dividend yield and a future growth rate, with the latter inferred in some way from historical data.

There is a wide variety of acceptable methods for using historical data to estimate future growth. This variation in method is illustrated in the testimony of expert witnesses before public utility commissions on the fair return for a public utility. In these cases, the estimates and the methods used are a matter of public record. Some idea of the various methods can be found in Morin (1984) and Kolbe, Read, and Hall (1984). The performance of alternative estimating methods has been examined in Gordon (1974), Kolbe, Read, and Hall (1984), Brigham, Shome, and Vinson (1985), and Harris (1986).

We have derived our basis for comparing the accuracy of alternative methods for estimating the DCFY on a share from the generally accepted propositions that yield should vary according to risk, and that beta is the best estimate of risk. Hence, the DCFY should vary among shares with beta, and, between two methods for estimating growth, the superior method is the one for which the variation in yield among shares is explained better by the variation in beta among the shares.

First we present simple, plausible, and objective measurement rules for implementing four popular and/or attractive methods for estimating the DCFY. We then describe how sample statistics may be used to judge the accuracy of each method. We also describe how the CAPM model has been used to estimate share yield and explain why we do not compare it with the various DCFY methods. The following section carries out the comparison with samples of utility and industrial shares, and the last section pre-

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sents the conclusions that may be drawn from the findings.

ALTERNATIVE MEASUREMENT RULES FOR A SHARE'S YIELD

Under the DCF method or model for estimating the expected return on a stock, the yield for the jth stock is:

$$DCFY_{jt} = DYD_{jt} + GR_{jt}, \qquad (1)$$

where:

$DCFY_{jt}$ = DCF yield on the jth stock at time t,

DYD_{jt} = dividend yield on the jth stock at time t, and

GR_{jt} = long-run growth rate in the dividend on the jth stock that investors expect at time t.

In what follows, we omit the time and firm subscripts on the variables when they are not required. Also, DCFY will refer to the unknown true yield on a share.

The difficult problem in arriving at the DCFY is estimation of the long-run growth rate that investors expect. Four estimates of that quantity are:

EGR = rate of growth in earnings per share over a prior time period, usually the last five years;

DGR = rate of growth in dividend per share over a prior time period, usually the last five years;

FRG = consensus among security analyst forecasts of the growth rate in earnings, over the next five years; and

BRG = an average over the prior five years of the product of the retention rate b and rate of return on common equity r on a stock.

The estimate of share yield that incorporates each of these estimates of growth is denoted KEGR, KDGR, KFRG, and KBRG, respectively.

A case can be made for each of the four methods for estimating growth. KEGR, KDGR, and KBRG have been widely used in public utility testimony and in research on stock valuation models. The rationale for KEGR is the belief that the past growth rate in earnings is the best predictor of future growth in earnings and dividends. The rationale for KDGR is that the future growth rate in dividends is the statistic we want to estimate, and the past dividend record is free of the noise in past earnings.[2] The rationale for KBRG is that all variables will grow at this rate if the firm earns r and retains b. Furthermore, as Gordon and Gould (1980) show, KEGR and KDGR will be biased in one direction or another if r and b have changed over the last five years. As for KFRG, security analysts

are professionals employed to forecast future performance; their forecasts are widely accepted by investors. The IBES collection of forecast growth rates of security analysts compiled by Lynch, Jones, and Ryan has increased the popularity of this estimate.

As stated earlier, we may also take the yield on a share as the sum of the dividend yield and the expected rate of growth in price over the coming period. This estimate of a share's yield is widely used in testing the CAPM, with the average HPR over the prior five years commonly used in such empirical work. On the other hand, this estimate of a share's yield varies so widely among firms and over time as to be patently in error as an estimate of share yield.[3]

BASIS OF COMPARISON

To compare the accuracy of the four estimates of the DCFY stated above, we regress the data under each estimate on beta for a sample of shares. If KEGR is the estimate,

$$KEGR_j = \alpha_0 + \alpha_1 BETA_j + \epsilon_j. \qquad (2)$$

The rationale for this expression lies in the risk premium theory of share yield, where the share yield is equal to the interest rate plus a risk premium that varies with the share's relative risk. Hence, if BETA is an error-free index of relative risk, α_0 is equal to the interest rate, and α_1 is the risk premium on the market portfolio or standard share.[4]

The higher the correlation between KEGR and BETA, assuming that α_1 is positive, the greater the confidence we may have in KEGR as an estimate of DCFY. We cannot rely solely on the correlation, though, in selecting among the methods for estimating DCFY. Errors in KEGR as a basis for estimating the DCFY on the jth share have random and systematic components. The former is ϵ_j, and its average value can be taken as the root mean square error of the regression (MSE). The larger the root MSE of the regression, the less attractive KEGR is as an estimate of share yield, because the error makes the problem of choice between $KEGR_j$ and $KEGR_j - \epsilon_j$ more acute. (That problem will be discussed shortly.)

The systematic error is the difference between the unknown true yield on the jth share, $DCFY_j$, and the value predicted by Equation (2). There is no obvious measure of the systematic error, as we do not know $DCFY_j$, but sample values of α_0 may provide information on its average value. The difference between α_0 and the interest rate is an indicator of systematic error, because the difference is zero under the risk premium theory. Error in the measurement of BETA biases α_0 upward, but, with the same BETA for each share used in all four regressions, differences in α_0 are indicators of systematic error.[5]

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In addition to regression statistics, the sample mean and standard deviation of KEGR is a source of information on its accuracy as a method for the estimation of DCFY. If the mean departs radically from the long-term bond rate, or if the standard deviation indicates an unreasonable range of variation among shares, the accuracy of the method is open to question. Also, the sample mean may be a source of information on the systematic error for a method of estimation. Hence, sample values for the mean, standard deviation, correlation, root MSE, and constant term all contribute to a judgment on a method's accuracy for estimating the DCFY on a share. Unfortunately, there is no simple criterion for choice among the alternatives.

Once a conclusion is reached on the most accurate method for estimating DCFY — say, KEGR — we then have the problem of choice between $KEGR_j$ and $KEGR_j - \epsilon_j$ for the jth share. If the random error in $KEGR_j$ is due to error in its measurement for the jth share, we simply use the value predicted by Equation (2), which is $KEGR_j - \epsilon_j$. On the other hand, KEGR and DCFY may vary among shares with other (omitted) variables as well as BETA, in which case ϵ_j is also due to the omitted variables, and $KEGR_j$ may be the better estimate of DCFY. Unfortunately, we have no basis for choice among these two hypotheses, and the smaller the root MSE the less troublesome the problem of choice between them.

A more favorable tax treatment of capital gains over dividends should make investors prefer capital gains to dividends. As Brennan (1973) has shown, the yield investors require on a share would then vary with the excess of its dividend yield over the interest rate. To recognize this, Equation (2) becomes

$$KEGR_j = \alpha_0 + \alpha_1 BETA_j + \alpha_2 DMI_j + \epsilon_j, \qquad (3)$$

with DMI_j the excess of the dividend yield over the interest rate for the jth firm. Although the tax effect should make α_2 positive, its information in DMI on share risk would tend to make α_2 negative. That is, dividend yield varies inversely with expected growth, and we would find α_2 negative insofar as growth is risky. To the extent that these two influences of the dividend yield offset each other, α_2 will tend toward zero.

The CAPM theory of how expected return varies among shares has been proposed as an alternative to the DCF model for measuring yield. Its value for the jth stock is

$$EHPR_j = INTR + BETA_j[EHPR_m - INTR], \qquad (4)$$

where:

$EHPR_j$ = expected holding-period return on the jth share,

$INTR$ = one-period risk-free interest rate,

$EHPR_m$ = expected holding-period return on the market portfolio.

There is an important difference between this CAPM model of share yield and the DCF model represented by Equation (1). The latter is merely an instrument for measuring share yield: There is nothing in the DCF model that explains the variation in yield among shares. The CAPM, on the other hand, is a theory on why and how yield varies among shares, but one must go outside of the theory to estimate the variables on the right-hand side of Equation (4). Given rules for estimating the variables, EHPR and BETA, empirical work then provides a joint test of the theory and the estimating rules, such as we are carrying out here.[6]

The CAPM nonetheless has been used to estimate share yield in testimony before regulatory commissions by assigning numbers to each of the quantities on the right-hand side of Equation (4). For INTR, a long-term bond yield is sometimes used instead of a one-period rate. BETA is estimated by conventional methods.

The big problem is the expected return on the market portfolio. Here the practice has been to use the average realized risk premium over a period of about fifty years as the estimate of $EHPR_m - INTR$ in Equation (4). Although the implicit assumption is that the risk premium is a constant over time, we would expect the premium to change from one period to the next for various reasons, among them changes in the interest rate, the risk premium on the market portfolio, and the relative taxation of interest and share income. Hence, this estimate of share yield is more or less in error at any particular time, but we have no way of estimating this error and comparing the method with the others.

COMPARATIVE PERFORMANCE

We carried out our empirical work with a sample of 75 large electric and gas utility firms and a sample of 244 firms that includes 169 industrial firms drawn from the S&P 400. We obtained share yield under the four methods for estimating it as of the start of the year for the years 1984, 1985, and 1986.

For the explanatory variables, BETA for each share on each date was obtained by regressing the monthly HPRs for the share on the monthly HPRs for the S&P 500 over the prior five years. DMI for a share is its dividend yield less the interest rate on the one-month Treasury bill at the start of each year. EGR and DGR are the growth rates in earnings and in dividends per share, respectively, over the prior five years as reported on the Value Line Tape. BRG is a weighted

average of the retention growth rates over the prior five years,[7] and FRG is the average of forecast growth rates in earnings over the next five years reported by IBES. The corresponding estimates of share yield were obtained by adding the dividend yield at the start of each year to the estimate of growth.

Table 1 presents the statistics that we obtained with KBRG and KFRG as the estimates of DCFY for the sample of utility shares and of all shares. The means of KBRG for the utility shares seems reasonable, with the interest rate on ten-year government bonds the standard of comparison, the latter being 11.67%, 10.43%, and 9.19% at the start of 1984, 1985, and 1986, respectively.[8] The standard deviations for KBRG are small enough to make its range of variation well within the bounds of reason. The lower means for all shares reveal that the means for industrial shares are below the means for utility shares.[9] This casts doubt on the accuracy of KBRG as a basis for estimating the DCFY on industrial shares, because industrials are riskier than utility shares.

The beta model explains none of the variation in KBRG among utility shares, but the two-factor model is a substantial improvement. The DMI coefficient, α_2, is positive and significant in every year, meaning that the unfavorable tax effect of a high dividend yield dominates the favorable risk effect. The coefficient on BETA is positive and significant in two of the three years. The only disturbing feature of the data is the sharp fall in R^2 and the corresponding rise in the root MSE relative to the standard deviation of KBRG as we go from 1984 to 1986.

The KBRG statistics for all shares are substantially inferior to the utility share statistics. This forces the unhappy conclusion that, for industrial shares, BETA is a poor measure of risk, or KBRG is a poor measure of DCFY, or both.

The KFRG statistics for the utility sample are superior to the KBRG statistics. The means are reasonable under the two criteria of being above the interest rate and moving with it. The range of variation of KFRG suggested by its standard deviations seems reasonable. The statistics for the beta model are a slight improvement on the corresponding statistics for KBRG. Furthermore, the two-factor model does a good job of explaining the variation in KFRG among

TABLE 1

Sample and Regression Statistics for KBRG and KFRG,
Utility Shares and All Shares, 1984, 1985, and 1986

	KBRG			KFRG		
	1984	1985	1986	1984	1985	1986
UTILITY SHARES (75)						
Mean	14.84	14.38	12.93	15.64	14.56	12.93
Standard Deviation	2.51	1.87	1.80	2.26	1.43	1.42
Beta Model α_0	14.26	13.96	13.05	15.14	13.48	12.74
α_1	1.44	1.21	−0.28	1.25	3.09	0.42
t-statistic	(0.97)	(1.12)	(0.19)	(0.93)	(4.14)	(0.37)
Root MSE	2.52	1.87	1.81	2.26	1.29	1.43
R^2	0.013	0.017	0.001	0.012	0.190	0.002
Two-Factor Model α_0	12.45	12.75	12.42	13.30	12.46	11.97
α_1	3.45	2.11	0.11	3.28	3.85	0.89
t-statistic	(3.13)	(2.19)	(0.08)	(3.83)	(6.33)	(0.88)
α_2	0.68	0.45	0.34	0.68	0.38	0.41
t-statistic	(8.22)	(4.88)	(2.81)	(10.73)	(6.52)	(4.65)
Root MSE	1.82	1.63	1.73	1.41	1.03	1.26
R^2	0.491	0.262	0.100	0.620	0.491	0.232
ALL SHARES (244)						
Mean	12.98	13.19	11.86	16.17	15.87	14.31
Standard Deviation	3.86	3.21	3.52	2.60	2.32	2.30
Beta Model α_0	15.00	14.71	13.90	15.56	14.50	12.57
α_1	−2.47	−1.91	−2.40	0.74	1.72	2.05
t-statistic	(4.23)	(4.15)	(4.25)	(1.83)	(5.29)	(5.70)
Root MSE	3.73	3.10	3.40	2.59	2.20	2.16
R^2	0.069	0.066	0.069	0.014	0.104	0.118
Two-Factor Model α_0	14.34	14.42	13.95	15.40	14.61	12.75
α_1	0.09	−1.18	−2.51	1.37	1.44	1.61
t-statistic	(0.13)	(2.04)	(3.45)	(2.69)	(3.52)	(3.49)
α_2	0.48	0.17	−0.02	0.12	−0.06	−0.10
t-statistic	(6.04)	(2.09)	(0.24)	(2.01)	(1.12)	(1.53)
Root MSE	3.49	3.08	3.41	2.57	2.20	2.16
R^2	0.191	0.083	0.070	0.030	0.108	0.127

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utility shares. The R^2s are higher here than for KBRG in every year. Finally, α_2 is positive and significant in every year, and α_1 is not significant only in 1986.

The implicit means of KFRG for the industrial shares seem high but not beyond reason. On the other hand, the regression statistics for the all-shares sample are not good, which leads to the same unhappy conclusion for industrial shares as we reached for KBRG.

Table 2 presents the statistics that we obtained using KEGR and KDGR as estimates of the DCFY on the shares in our samples. Comparison of the regression statistics with those in Table 1 reveals that KEGR and KDGR, particularly the former, fall short by a wide margin of the performance of KBRG and KFRG as estimates of the DCFY on a share.

CONCLUSION

We have compared the accuracy of four methods for estimating the growth component of the discounted cash flow yield on a share: past growth rate in earnings (KEGR), past growth rate in dividends (KDGR), past retention growth rate (KBRG), and forecasts of growth by security analysts (KFRG). Criteria for the comparison were the reasonableness of sample means and standard deviations and the success of beta and dividend yield in explaining the variation in DCF yield among shares. For our sample of utility shares, KFRG performed well, with KBRG, KDGR, and KEGR following in that order, and with KEGR a distant fourth. If we had used past growth in price, it would have been an even more distant fifth. Nevertheless, none of the four estimates of growth performed well under the criteria for a sample that included industrial shares.

Before closing, we have three observations to make. First, the superior performance by KFRG should come as no surprise. All four estimates of growth rely upon past data, but in the case of KFRG a larger body of past data is used, filtered through a group of security analysts who adjust for abnormalities that are not considered relevant for future growth. We assume this is done by any analyst who develops retention growth estimates of yield for a firm. If we had done this for all seventy-five firms in our utility sample, it is likely that the correlations

TABLE 2

Sample and Regression Statistics for KEGR and KDGR,
Utility Shares and All Shares, 1984, 1985, and 1986

	KEGR			KDGR		
	1984	1985	1986	1984	1985	1986
UTILITY SHARES (75)						
Mean	16.16	0.32	14.91	16.49	15.76	14.13
Standard Deviation	3.31	3.47	4.66	3.12	2.41	2.21
Beta Model α_0	15.45	16.18	0.51	15.75	14.53	12.30
α_1	1.75	0.40	−7.87	1.83	3.53	3.99
t-statistic	(0.89)	(0.20)	(2.16)	(0.99)	(2.64)	(2.32)
Root MSE	3.32	3.49	4.55	3.12	2.32	2.15
R^2	0.010	0.001	0.060	0.013	0.087	0.069
Two-Factor Model α_0	14.20	15.83	18.76	14.10	13.56	12.64
α_1	3.13	0.66	−8.03	3.65	4.25	3.78
t-statistic	(1.66)	(0.32)	(2.18)	(2.23)	(3.26)	(2.20)
α_2	0.47	0.13	−0.13	0.61	0.35	−0.18
t-statistic	(3.32)	(0.66)	(0.42)	(5.02)	(2.86)	(1.21)
Root MSE	3.11	3.50	4.58	2.70	2.21	2.14
R^2	0.142	0.007	0.063	0.269	0.180	0.087
ALL SHARES (244)						
Mean	11.14	9.42	7.88	15.08	13.63	11.35
Standard Deviation	10.67	11.67	11.45	6.08	6.30	6.71
Beta Model α_0	15.96	18.28	19.55	15.15	0.04	15.39
α_1	−5.90	−11.16	−13.70	−0.09	−1.78	−4.74
t-statistic	(3.62)	(7.07)	(8.10)	(0.09)	(1.92)	(4.41)
Root MSE	10.41	10.65	10.18	6.09	6.27	6.47
R^2	0.051	0.171	0.213	0.000	0.015	0.074
Two-Factor Model α_0	14.84	18.01	19.91	14.31	14.11	14.79
α_1	−1.56	−10.49	−14.62	3.17	0.63	−3.25
t-statistic	(0.77)	(5.27)	(6.72)	(2.73)	(0.55)	(2.36)
α_2	0.81	0.15	−0.21	0.61	0.55	0.34
t-statistic	(3.51)	(0.55)	(0.67)	(4.57)	(3.47)	(1.72)
Root MSE	10.18	10.67	10.19	5.86	6.13	6.45
R^2	0.097	0.172	0.215	0.080	0.062	0.085

would have been as good or better than those obtained with the analyst forecasts of growth.

Second, we examined shares and not portfolios, because our objective is to estimate the DCFY for shares and not for portfolios. As common practice in testing the CAPM has been to execute tests on portfolios instead of shares, we classified our population of shares into ten portfolios on the basis of their beta values. Regression statistics were substantially unchanged, except that correlations increased dramatically.

Finally, we must acknowledge that we have no basis for estimating the expected HPR or DCF yield for industrial shares with any confidence. Theories on financial decision-making in industrial corporations that rely on that statistic have a weak empirical foundation.

[1] The EHPR is a one-period return, while the DCFY is a yield to maturity measure. The two may differ in actuality because of measurement problems, but they also may differ in theory. That is, they may differ in the same way that interest rates on bonds of different maturities may differ. See Gordon and Gould (1984a). This source of difference between EHPR and DCFY will be ignored here.

[2] A widely accepted hypothesis is that dividends contain information on earnings, because management sets the dividend to pay out a stable fraction of normal or permanent earnings.

[3] Over a five-year period, there may even be a negative rate of growth in price for a large number of firms. Furthermore, this negative growth rate may be larger in absolute value than the dividend yield, which leads to the conclusion that investors are holding such shares to earn a negative return. The frequency of negative rates of growth in price is reduced as the prior time period used in its calculation increases in length. As that takes place, however, the estimate of the expected return for a firm approaches a constant or a constant plus the dividend yield. The expected return on a share is one statistic for which it is an error to assume that expectations are on average realized.

[4] Equation (2) is similar to the CAPM according to Sharpe, Lintner, and Mossin. They arrived at this expression under very rigorous assumptions. The heuristic risk premium model is adequate for our purposes.

[5] It may be thought that Theil's (1966) decomposition of the difference between the actual and predicted values of a variable can be used here, but in fact that decomposition applies to a different problem. It assumes that the observed (actual) past values of a variable are free of error, and it decomposes the error in a model that is employed to explain the past values. The purpose of Theil's decomposition is to cast light on the possible error in using the model to predict future values of the dependent variable. Our problem is to determine which set of observed values is closest to the true values, with the risk premium theory of share yield and BETA as the source of information on the true values. Theil's method would be appropriate for decomposing the difference between the actual and predicted values of the *realized* holding-period return on a share. The actual values here can be observed without error.

[6] There is an enormous volume of empirical work devoted to discovering whether the theory is true, but this empirical work does not provide useful estimates of the EHPR on a share. To test the truth of Equation (4), the practice has been to regress EHPR on BETA for a sample of firms with the average realized HPR over the prior five or so years used as an estimate of the EHPR. Because of the large error in the realized HPR over a prior time period, as noted earlier, neither the actual values of the dependent variable nor the values predicted by the model are usable as estimates of share yield. See Fama and MacBeth (1973) and Friend, Westerfield, and Granito (1978).

[7] BRG for a year is earnings less dividend divided by the end-of-year book value. The estimate of the expected value as of the start of 1986 is 0.3BRG85 + 0.25BRG84 + 0.20BRG83 + 0.15BRG83 + 0.10BRG82. If any value of BRG was negative, it was set equal to zero.

[8] We expect the yields on shares to be above the risk-free interest rate, but with a high enough interest rate the more favorable tax treatment of shares can reduce the yield below the interest rate. Interest rates were not that high in these years. See Gordon and Gould (1984b).

[9] The statistics reported for all shares and for utility shares were also obtained for industrial shares. All methods of estimation performed so poorly for industrial shares, however, as to suggest no confidence can be placed in any of them. To save space, we do not present statistics for the industrial shares. Whatever we want to know about them can be deduced by comparing the data for all shares and utility shares.

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INVESTOR GROWTH EXPECTATIONS
Summer 2004

A study done by Vander Weide and Carleton in 1988[1] suggests that consensus analysts' forecast of future growth is superior to historically oriented growth measures in stock valuation process for domestic companies. We worked with one of the original authors of the study, Dr. James H. Vander Weide, and closely followed his suggestions and methodology to investigate whether the results still hold in more recent times (2001- 2003).

We used the following equation to determine which estimate of future growth (g) best predicts the firm's P/E ratio when combined with the dividend payout ratio, D/E, and risk variables, B, Cov, Stb, and Sa.

$$P/E = a_0(\text{D/E}) + a_1 g(\text{Growth}) + a_2 B(\text{Beta}) + a_3 \text{Cov}(\text{Interest Coverage Ratio}) + a_4 \text{Stb}(\text{Stability}) + a_5 \text{Sa}(\text{Std Dev}) + e$$

Data Description

Earnings Per Share: IBES consensus analyst estimate of the firm's earnings for the unreported year.

Price/Earnings Ratio: Closing stock price for the year divided by the consensus analyst earnings per share for the forthcoming year.

Dividends: Ratio of common dividends per share to the consensus analyst earnings forecast for the forthcoming fiscal year (D/E).

Historical Growth measures

EPS Growth Rate: Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.

Dividend per Share Growth Rate: Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.

Book Value per Share Growth Rate: Common equity divided by the common shares outstanding. Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.

Cash Flow per Share Growth Rate: Ratio of gross cash flow to common shares outstanding. Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.

Plowback Growth: Firm's retention ratio for the current year times the firm's latest annual return on equity.

3yr Plowback Growth: Firm's three-year average retention ratio times the firm's three-year average return on equity.

Consensus Analysts' Forecasts

Five-Year Earnings Per Share Growth: Mean analysts' forecast compiled by IBES.

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[1] Vander Weide, J. H., and W. T. Carleton. "Investor Growth Expectations: Analysts vs. History." *The Journal of Portfolio Management*, Spring 1988, pp. 78-82.

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Risk Variables

B: Beta, the firm's beta versus NYSE from Value Line.

Cov: The firm's pretax interest coverage ratio from Compustat.

Stb: Five-year historical earnings per share stability. Average absolute percentage difference between actual reported EPS and a 5yr historical EPS growth trend line from IBES.

Sa: The standard deviation of earnings per share estimate for the fiscal year from IBES.

We set five restrictions on the companies included in the study in order to be consistent with the original study and to obtain more meaningful results.

- Excluded all firms that IBES did not follow.
- Eliminated companies with:
  - Negative EPS during any of the years 1991-2003.
  - No dividend during any one of the years 1991-2003.
  - P/E ratio greater than 60 in years 2001-2003.
  - Less than five years of operating history.

The final universe consisted of 411 US firms, fifty-nine of which are utility companies.

Results

The study was performed in two stages.

Stage 1

In order to determine which historically oriented growth measure is most highly correlated with each firm's end-of-year P/E ratio, we computed spearman (rank) correlations between all forty-two historically oriented future growth measures and P/E.

The result of the stage 1 study is displayed in Table 1. Three-year plowback ratio has the highest correlation with P/E in 2001 and 2002, and five-year EPS growth rate has the highest correlation with P/E in 2003.

Table 1

Stage1 Results for Utility and Non-Utility Companies Combined

Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
	EPS	0.232	0.210	0.145	0.122	0.059	0.034	-0.007	-0.076	-0.117	-0.154
	DPS	-0.243	-0.297	-0.296	-0.293	-0.313	-0.316	-0.336	-0.334	-0.329	-0.333
2001	BVPS	0.059	-0.017	-0.098	-0.138	-0.150	-0.182	-0.219	-0.259	-0.271	-0.273
	CFPS	0.092	0.092	0.087	0.042	-0.063	-0.102	-0.141	-0.193	-0.237	-0.262
	plowback	0.203									
	plowback3	0.308									
	EPS	-0.007	0.147	0.076	0.080	0.083	0.050	0.030	-0.018	-0.060	-0.089
	DPS	-0.126	-0.202	-0.251	-0.224	-0.215	-0.239	-0.232	-0.233	-0.211	-0.198
2002	BVPS	-0.036	-0.036	-0.078	-0.115	-0.114	-0.127	-0.152	-0.162	-0.175	-0.171
	CFPS	0.056	0.045	0.017	0.021	0.030	-0.024	-0.050	-0.080	-0.125	-0.162
	plowback	0.093									
	plowback3	0.180									
	EPS	0.073	0.084	0.214	0.231	0.244	0.228	0.182	0.158	0.104	0.049
	DPS	0.120	0.054	-0.001	-0.078	-0.090	-0.126	-0.152	-0.165	-0.183	-0.185
2003	BVPS	0.097	0.076	0.067	0.036	-0.045	-0.062	-0.063	-0.083	-0.105	-0.131
	CFPS	0.146	0.196	0.243	0.239	0.206	0.178	0.107	0.089	0.039	-0.022
	plowback	-0.017									
	plowback3	0.038									

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We also independently examined utility and non-utility firms. Table 2 shows the result for the fifty-nine utility firms. Two-year growth in EPS has the highest correlation with P/E in 2001, four-year EPS has the highest correlation in 2002, and six-year EPS has the highest correlation in 2003.

Table 3 exhibits the result for the remaining non-utility firms. EPS one-year growth, two-year growth, and five-year growth has the highest correlation with P/E in 2001, 2002, and 2003, respectively.

Table 2
Stage1 Results for Utility Companies
Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
2001	EPS	0.305	0.330	0.305	0.319	0.238	0.157	0.129	0.107	0.079	0.048
	DPS	-0.215	-0.321	-0.302	-0.294	-0.316	-0.281	-0.332	-0.414	-0.435	-0.429
	BVPS	0.164	0.137	0.147	-0.027	-0.072	-0.135	-0.117	-0.104	-0.106	-0.140
	CFPS	0.194	0.135	0.020	-0.018	-0.122	-0.157	-0.135	-0.134	-0.103	-0.219
	plowback	-0.143									
	plowback3	-0.027									
2002	EPS	-0.065	0.044	0.069	0.119	0.071	0.004	-0.038	-0.069	-0.061	-0.070
	DPS	-0.333	-0.327	-0.278	-0.313	-0.280	-0.321	-0.277	-0.226	-0.203	-0.210
	BVPS	-0.325	-0.239	-0.182	-0.177	-0.230	-0.237	-0.250	-0.247	-0.235	-0.235
	CFPS	-0.205	-0.132	-0.172	-0.166	-0.216	-0.289	-0.285	-0.265	-0.227	-0.218
	plowback	-0.151									
	plowback3	-0.133									
2003	EPS	0.010	0.136	0.186	0.263	0.365	0.367	0.344	0.343	0.309	0.302
	DPS	0.151	-0.029	-0.014	-0.022	-0.054	-0.117	-0.142	-0.137	-0.105	-0.092
	BVPS	0.212	0.060	0.047	0.019	0.003	0.040	0.022	0.005	0.003	-0.002
	CFPS	0.222	-0.046	0.173	0.115	0.165	0.100	0.017	0.077	0.057	0.077
	plowback	-0.365									
	plowback3	-0.403									

Table 3
Stage1 Results for Non-Utility Companies
Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
2001	EPS	0.1843	0.1660	0.1293	0.1218	0.0873	0.0829	0.0618	0.0106	-0.0194	-0.0412
	DPS	-0.2036	-0.2211	-0.2042	-0.1935	-0.2098	-0.2066	-0.2186	-0.2155	-0.2046	-0.1975
	BVPS	0.0757	0.0084	-0.0791	-0.0997	-0.0916	-0.1146	-0.1388	-0.1783	-0.1866	-0.1823
	CFPS	0.0864	0.0710	0.0956	0.0704	-0.0033	-0.0162	-0.0366	-0.0747	-0.1186	-0.1325
	plowback	0.0781									
	plowback3	0.1781									
2002	EPS	0.0762	0.1767	0.0755	0.0817	0.0936	0.0757	0.0708	0.0316	-0.0011	-0.0254
	DPS	-0.0804	-0.1693	-0.2103	-0.1672	-0.1519	-0.1720	-0.1645	-0.1636	-0.1394	-0.1226
	BVPS	0.0527	0.0236	-0.0363	-0.0777	-0.0710	-0.0753	-0.0953	-0.1019	-0.1118	-0.1061
	CFPS	0.0905	0.0488	0.0143	0.0237	0.0563	0.0246	0.0097	-0.0079	-0.0458	-0.0821
	plowback	0.0634									
	plowback3	0.1306									
2003	EPS	0.1254	0.1783	0.2788	0.2689	0.2791	0.2622	0.2219	0.2039	0.1559	0.1090
	DPS	0.1810	0.1290	0.0655	-0.0128	-0.0101	-0.0400	-0.0630	-0.0772	-0.0930	-0.0952
	BVPS	0.1555	0.1740	0.1534	0.1056	0.0127	-0.0069	-0.0054	-0.0218	-0.0416	-0.0636
	CFPS	0.1479	0.2200	0.2512	0.2429	0.2004	0.1839	0.1349	0.1286	0.0892	0.0388
	plowback	-0.1109									
	plowback3	-0.0402									

Stage 2

We compared the multiple regression model of historical growth rate with the highest correlation to the P/E ratio from stage 1 to the five-year earnings per share growth forecast.

$$P/E = a_0(D/E) + a_1 g + a_2 B + a_3 Cov + a_4 Stb + a_5 Sa + e$$

The regression results are displayed in table 4. The results show that the consensus analysts' forecast of future growth better approximates the firm's P/E ratio, which is consistent with the results found by Vander Weide and Carleton. In both regressions, R^2 in the regression with the consensus analysts' forecast is higher than the R^2 in the regression with the historical growth.

Table 4
Stage2 Results for Utility and Non-Utility Companies Combined
Multiple Regression Results
P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**
Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	10.43	8.46	10.79	6.79	0.02	-0.03	-18.83	0.20	13.90
	4.73	5.53	2.93	3.54	3.05	-3.06	-3.32		
2002	12.36	7.60	6.66	1.01	0.00	0.01	-32.48	0.15	9.46
	7.21	6.18	2.61	0.66	1.57	1.48	-4.04		
2003	13.34	5.96	9.87	5.27	0.01	-0.01	-20.46	0.24	17.61
	7.29	4.04	2.95	3.39	3.62	-1.31	-4.25		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	-1.26	16.14	144.75	-0.64	0.01	-0.03	-10.76	0.47	48.00
	-0.62	11.63	13.22	-0.38	3.07	-4.04	-2.29		
2002	3.37	13.37	106.07	-3.60	0.00	0.01	-21.85	0.35	29.73
	1.93	10.97	10.59	-2.57	1.25	1.50	-3.06		
2003	4.77	12.76	61.93	4.38	0.01	0.00	-19.41	0.33	26.38
	2.65	9.48	7.25	3.01	2.45	-0.81	-4.33		

*T-stats below the coefficients in smaller font

For utility companies shown in table 5, consensus analysts' forecast of future growth is superior to historically oriented growth in 2002 and 2003. R^2 is lower in the regression with the consensus analysts' forecast in 2001. For non-utility companies, we found that consensus analysts' forecast of future growth is superior to the alternative in all three years (table 6).

Table 5
Stage2 Results for Utility Companies
Multiple Regression Results
P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**
Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	7.90	11.07	-11.19	-3.00	0.29	0.00	-9.37	0.44	6.38
	2.16	4.80	-5.71	-0.86	0.88	0.64	-1.51		
2002	13.87	7.00	-3.80	-6.89	0.56	0.00	-29.89	0.38	5.11
	4.02	3.54	-0.66	-2.01	1.48	0.42	-2.70		
2003	11.29	7.74	-1.65	-1.40	0.32	0.00	-5.69	0.25	2.68
	3.22	3.30	-0.23	-0.43	1.05	-0.73	-0.75		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	9.61	9.20	66.61	-7.92	0.50	-0.01	-12.83	0.27	2.95
	2.31	3.45	3.66	-1.86	1.31	-1.33	-1.76		
2002	12.43	7.86	50.74	-9.61	0.50	0.00	-24.94	0.48	7.56
	3.89	5.29	3.10	-2.94	1.50	0.17	-2.41		
2003	5.81	11.06	101.12	-1.69	-0.19	0.00	-4.75	0.50	7.81
	1.89	6.32	4.80	-0.58	-0.74	-0.22	-0.74		

*T-stats below the coefficients in smaller font

Table 6
Stage2 Results for Non-Utility Companies
Multiple Regression Results
P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**
Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	15.90	8.39	2.82	3.53	0.02	-0.03	-21.05	0.21	12.45
	6.57	4.13	1.96	1.68	2.97	-2.14	-3.40		
2002	17.76	8.46	6.02	-3.06	0.00	0.02	-36.97	0.27	16.78
	9.39	5.19	3.28	-1.88	1.37	2.52	-4.31		
2003	14.24	9.86	8.85	3.46	0.01	0.00	-19.00	0.30	19.89
	7.49	5.89	2.49	2.11	3.23	-0.15	-3.73		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	-0.51	17.28	140.84	-1.06	0.01	-0.03	-8.63	0.44	36.00
	-0.22	11.21	10.73	-0.59	2.88	-2.62	-1.63		
2002	5.05	15.67	91.22	-4.06	0.00	0.02	-22.93	0.38	27.65
	2.48	11.23	7.66	-2.74	1.18	2.33	-2.87		
2003	7.25	14.47	45.60	3.47	0.01	0.00	-19.09	0.33	22.30
	3.56	9.42	4.68	2.20	2.36	-0.12	-3.89		

*T-stats below the coefficients in smaller font

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Investor growth expectations: Analysts vs. history

Analysts' growth forecasts dominate past trends in predicting stock prices.

James H. Vander Weide and Willard T. Carleton

For the purposes of implementing the Discounted Cash Flow (DCF) cost of equity model, the analyst must know which growth estimate is embodied in the firm's stock price. A study by Cragg and Malkiel (1982) suggests that the stock valuation process embodies analysts' forecasts rather than historically based growth figures such as the ten-year historical growth in dividends per share or the five-year growth in book value per share. The Cragg and Malkiel study is based on data for the 1960s, however, a decade that was considerably more stable than the recent past.

As the issue of which growth rate to use in implementing the DCF model is so important to applications of the model, we decided to investigate whether the Cragg and Malkiel conclusions continue to hold in more recent periods. This paper describes the results of our study.

STATISTICAL MODEL

The DCF model suggests that the firm's stock price is equal to the present value of the stream of dividends that investors expect to receive from owning the firm's shares. Under the assumption that investors expect dividends to grow at a constant rate, g, in perpetuity, the stock price is given by the following simple expression:

$$P_s = \frac{D(1 + g)}{k - g} \tag{1}$$

where:

P_s = current price per share of the firm's stock;

D = current annual dividend per share;

g = expected constant dividend growth rate; and

k = required return on the firm's stock.

Dividing both sides of Equation (1) by the firm's current earnings, E, we obtain:

$$\frac{P_s}{E} = \frac{D}{E} \cdot \frac{(1 + g)}{k - g} \tag{2}$$

Thus, the firm's price/earnings (P/E) ratio is a nonlinear function of the firm's dividend payout ratio (D/E), the expected growth in dividends (g), and the required rate of return.

To investigate what growth expectation is embodied in the firm's current stock price, it is more convenient to work with a linear approximation to Equation (2). Thus, we will assume that:

$$P/E = a_0(D/E) + a_1g + a_2k. \tag{3}$$

(Cragg and Malkiel found this assumption to be reasonable throughout their investigation.)

Furthermore, we will assume that the required

rate of return, k, in Equation (3) depends on the values of the risk variables B, Cov, Rsq, and Sa, where B is the firm's Value Line beta; Cov is the firm's pretax interest coverage ratio; Rsq is a measure of the stability of the firm's five-year historical EPS; and Sa is the standard deviation of the consensus analysts' five-year EPS growth forecast for the firm. Finally, as the linear form of the P/E equation is only an approximation to the true P/E equation, and B, Cov, Rsq, and Sa are only proxies for k, we will add an error term, e, that represents the degree of approximation to the true relationship.

With these assumptions, the final form of our P/E equation is as follows:

$$P/E = a_0(D/E) + a_1g + a_2B + a_3Cov + a_4Rsq + a_5Sa + e. \qquad (4)$$

The purpose of our study is to use more recent data to determine which of the popular approaches for estimating future growth in the Discounted Cash Flow model is embodied in the market price of the firm's shares.

We estimated Equation (4) to determine which estimate of future growth, g, when combined with the payout ratio, D/E, and risk variables B, Cov, Rsq, and Sa, provides the best predictor of the firm's P/E ratio. To paraphrase Cragg and Malkiel, we would expect that growth estimates found in the best-fitting equation more closely approximate the expectation used by investors than those found in poorer-fitting equations.

DESCRIPTION OF DATA

Our data sets include both historically based measures of future growth and the consensus analysts' forecasts of five-year earnings growth supplied by the Institutional Brokers Estimate System of Lynch, Jones & Ryan (IBES). The data also include the firm's dividend payout ratio and various measures of the firm's risk. We include the latter items in the regression, along with earnings growth, to account for other variables that may affect the firm's stock price.

The data include:

Earnings Per Share. Because our goal is to determine which earnings variable is embodied in the firm's market price, we need to define this variable with care. Financial analysts who study a firm's financial results in detail generally prefer to "normalize" the firm's reported earnings for the effect of extraordinary items, such as write-offs of discontinued operations, or mergers and acquisitions. They also attempt, to the extent possible, to state earnings for different firms using a common set of accounting conventions.

We have defined "earnings" as the consensus analyst estimate (as reported by IBES) of the firm's earnings for the forthcoming year.[1] This definition approximates the normalized earnings that investors most likely have in mind when they make stock purchase and sell decisions. It implicitly incorporates the analysts' adjustments for differences in accounting treatment among firms and the effects of the business cycle on each firm's results of operations. Although we thought at first that this earnings estimate might be highly correlated with the analysts' five-year earnings growth forecasts, that was not the case. Thus, we avoided a potential spurious correlation problem.

Price/Earnings Ratio. Corresponding to our definition of "earnings," the price/earnings ratio (P/E) is calculated as the closing stock price for the year divided by the consensus analyst earnings forecast for the forthcoming fiscal year.

Dividends. Dividends per share represent the common dividends declared per share during the calendar year, after adjustment for all stock splits and stock dividends). The firm's dividend payout ratio is then defined as common dividends per share divided by the consensus analyst estimate of the earnings per share for the forthcoming calendar year (D/E). Although this definition has the deficiency that it is obviously biased downward — it divides this year's dividend by next year's earnings — it has the advantage that it implicitly uses a "normalized" figure for earnings. We believe that this advantage outweighs the deficiency, especially when one considers the flaws of the apparent alternatives. Furthermore, we have verified that the results are insensitive to reasonable alternative definitions (see footnote 1).

Growth. In comparing historically based and consensus analysts' forecasts, we calculated forty-one different historical growth measures. These included the following: 1) the past growth rate in EPS as determined by a log-linear least squares regression for the latest year,[2] two years, three years, . . ., and ten years; 2) the past growth rate in DPS for the latest year, two years, three years, . . ., and ten years; 3) the past growth rate in book value per share (computed as the ratio of common equity to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; 4) the past growth rate in cash flow per share (computed as the ratio of pretax income, depreciation, and deferred taxes to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; and 5) plowback growth (computed as the firm's retention ratio for the current year times the firm's latest annual return on common equity).

We also used the five-year forecast of earnings

per share growth compiled by IBES and reported in mid-January of each year. This number represents the consensus (i.e., mean) forecast produced by analysts from the research departments of leading Wall Street and regional brokerage firms over the preceding three months. IBES selects the contributing brokers "because of the superior quality of their research, professional reputation, and client demand" (IBES *Monthly Summary Book*).

Risk Variables. Although many risk factors could potentially affect the firm's stock price, most of these factors are highly correlated with one another. As shown above in Equation (4), we decided to restrict our attention to four risk measures that have intuitive appeal and are followed by many financial analysts: 1) B, the firm's beta as published by Value Line; 2) Cov, the firm's pretax interest coverage ratio (obtained from Standard & Poor's Compustat); 3) Rsq, the stability of the firm's five-year historical EPS (measured by the R^2 from a log-linear least squares regression); and 4) Sa, the standard deviation of the consensus analysts' five-year EPS growth forecast (mean forecast) as computed by IBES.

After careful analysis of the data used in our study, we felt that we could obtain more meaningful results by imposing six restrictions on the companies included in our study:

1. Because of the need to calculate ten-year historical growth rates, and because we studied three different time periods, 1981, 1982, and 1983, our study requires data for the thirteen-year period 1971-1983. We included only companies with at least a thirteen-year operating history in our study.

2. As our historical growth rate calculations were based on log-linear regressions, and the logarithm of a negative number is not defined, we excluded all companies that experienced negative EPS during any of the years 1971-1983.

3. For similar reasons, we also eliminated companies that did not pay a dividend during any one of the years 1971-1983.

4. To insure comparability of time periods covered by each consensus earnings figure in the P/E ratios, we eliminated all companies that did not have a December 31 fiscal year-end.

5. To eliminate distortions caused by highly unusual events that distort current earnings but not expected future earnings, and thus the firm's price/earnings ratio, we eliminated any firm with a price/earnings ratio greater than 50.

6. As the evaluation of analysts' forecasts is a major part of this study, we eliminated all firms that IBES did not follow.

Our final sample consisted of approximately

sixty-five utility firms.[3]

RESULTS

To keep the number of calculations in our study to a reasonable level, we performed the study in two stages. In Stage 1, all forty-one historically oriented approaches for estimating future growth were correlated with each firm's P/E ratio. In Stage 2, the historical growth rate with the highest correlation to the P/E ratio was compared to the consensus analyst growth rate in the multiple regression model described by Equation (4) above. We performed our regressions for each of three recent time periods, because we felt the results of our study might vary over time.

First-Stage Correlation Study

Table 1 gives the results of our first-stage correlation study for each group of companies in each of the years 1981, 1982, and 1983. The values in this table measure the correlation between the historically oriented growth rates for the various time periods and the firm's end-of-year P/E ratio.

The four variables for which historical growth rates were calculated are shown in the left-hand column: EPS indicates historical earnings per share growth, DPS indicates historical dividend per share growth, BVPS indicates historical book value per share growth, and CFPS indicates historical cash flow per share growth. The term "plowback" refers to the product of the firm's retention ratio in the currennt year and its return on book equity for that year. In all, we calculated forty-one historically oriented growth rates for each group of firms in each study period.

The goal of the first-stage correlation analysis was to determine which historically oriented growth rate is most highly correlated with each group's year-end P/E ratio. Eight-year growth in CFPS has the highest correlation with P/E in 1981 and 1982, and ten-year growth in CFPS has the highest correlation with year-end P/E in 1983. In all cases, the plowback estimate of future growth performed poorly, indicating that — contrary to generally held views — plowback is not a factor in investor expectations of future growth.

Second-Stage Regression Study

In the second stage of our regression study, we ran the regression in Equation (4) using two different measures of future growth, g: 1) the best historically oriented growth rate (g_h) from the first-stage correlation study, and 2) the consensus analysts' forecast (g_a) of five-year EPS growth. The regression results, which are shown in Table 2, support at least

TABLE 1

Correlation Coefficients of All Historically Based Growth Estimates by Group and by Year with P/E

Historical Growth Rate Period in Years

Current Year	1	2	3	4	5	6	7	8	9	10
1981										
EPS	−0.02	0.07	0.03	0.01	0.03	0.12	0.08	0.09	0.09	0.09
DPS	0.05	0.18	0.14	0.15	0.14	0.15	0.19	0.23	0.23	0.23
BVPS	0.01	0.11	0.13	0.13	0.16	0.18	0.15	0.15	0.15	0.15
CFPS	−0.05	0.04	0.13	0.22	0.28	0.31	0.30	0.31	−0.57	−0.54
Plowback	0.19									
1982										
EPS	−0.10	−0.13	−0.06	−0.02	−0.02	−0.01	−0.03	−0.03	0.00	0.00
DPS	−0.19	−0.10	0.03	0.05	0.07	0.08	0.09	0.11	0.13	0.13
BVPS	0.07	0.08	0.11	0.11	0.09	0.10	0.11	0.11	0.09	0.09
CFPS	−0.02	−0.08	0.00	0.10	0.16	0.19	0.23	0.25	0.24	0.07
Plowback	0.04									
1983										
EPS	−0.06	−0.25	−0.25	−0.24	−0.16	−0.11	−0.05	0.00	0.02	0.02
DPS	0.03	−0.10	−0.03	0.08	0.15	0.21	0.21	0.21	0.22	0.24
BVPS	0.03	0.10	0.04	0.09	0.15	0.16	0.19	0.21	0.22	0.21
CFPS	−0.08	0.01	0.02	0.08	0.20	0.29	0.35	0.38	0.40	0.42
Plowback	−0.08									

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two general conclusions regarding the pricing of equity securities.

First, we found overwhelming evidence that the consensus analysts' forecast of future growth is superior to historically oriented growth measures in predicting the firm's stock price. In every case, the R^2 in the regression containing the consensus analysts' forecast is higher than the R^2 in the regression containing the historical growth measure. The regression coefficients in the equation containing the consensus analysts' forecast also are considerably more significant than they are in the alternative regression. These results are consistent with those found by Cragg and Malkiel for data covering the period 1961-1968. Our results also are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy–and–sell decisions.

TABLE 2

Regression Results
Model I

Part A: *Historical*

$P/E = a_0 + a_1D/E + a_2g_h + a_3B + a_4Cov + a_5Rsq + a_6Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−6.42*	10.31*	7.67*	3.24	0.54*	1.42*	57.43	0.83	46.49
	(5.50)	(14.79)	(2.20)	(2.86)	(2.50)	(2.85)	(4.07)		
1982	−2.90*	9.32*	8.49*	2.85	0.45*	−0.42	3.63	0.86	65.53
	(2.75)	(18.52)	(4.18)	(2.83)	(2.60)	(0.05)	(0.26)		
1983	−5.96*	10.20*	19.78*	4.85	0.44*	0.33	32.49	0.82	45.26
	(3.70)	(12.20)	(4.83)	(2.95)	(1.89)	(0.50)	(1.29)		

Part B: *Analysis*

$P/E = a_0 + a_1D/E + a_2g_a + a_3B + a_4Cov + a_5Rsq + a_6Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−4.97*	10.62*	54.85*	−0.61	0.33*	0.63*	4.34	0.91	103.10
	(6.23)	(21.57)	(8.56)	(0.68)	(2.28)	(1.74)	(0.37)		
1982	−2.16*	9.47*	50.71*	−1.07	0.36*	−0.31	119.05*	0.90	97.62
	(2.59)	(22.46)	(9.31)	(1.14)	(2.53)	(1.09)	(1.60)		
1983	−8.47*	11.96*	79.05*	2.16	0.56*	0.20	−34.43	0.87	69.81
	(7.07)	(16.48)	(7.84)	(1.55)	(3.08)	(0.38)	(1.44)		

Notes:

* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

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Second, there is some evidence that investors tend to view risk in traditional terms. The interest coverage variable is statistically significant in all but one of our samples, and the stability of the operating income variable is statistically significant in six of the twelve samples we studied. On the other hand, the beta is never statistically significant, and the standard deviation of the analysts' five-year growth forecasts is statistically significant in only two of our twelve samples. This evidence is far from conclusive, however, because, as we demonstrate later, a significant degree of cross-correlation among our four risk variables makes any general inference about risk extremely hazardous.

Possible Misspecification of Risk

The stock valuation theory says nothing about which risk variables are most important to investors. Therefore, we need to consider the possibility that the risk variables of our study are only proxies for the "true" risk variables used by investors. The inclusion of proxy variables may increase the variance of the parameters of most concern, which in this case are the coefficients of the growth variables.[4]

To allow for the possibility that the use of risk proxies has caused us to draw incorrect conclusions concerning the relative importance of analysts' growth forecasts and historical growth extrapolations, we have also estimated Equation (4) with the risk variables excluded. The results of these regressions are shown in Table 3.

Again, there is overwhelming evidence that the consensus analysts' growth forecast is superior to the historically oriented growth measures in predicting the firm's stock price. The R^2 and t-statistics are higher in every case.

CONCLUSION

The relationship between growth expectations and share prices is important in several major areas of finance. The data base of analysts' growth forecasts collected by Lynch, Jones & Ryan provides a unique opportunity to test the hypothesis that investors rely more heavily on analysts' growth forecasts than on historical growth extrapolations in making security buy–and–sell decisions. With the help of this data base, our studies affirm the superiority of analysts' forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.

[1] We also tried several other definitions of "earnings," including the firm's most recent primary earnings per share prior to any extraordinary items or discontinued operations. As our results were insensitive to reasonable alternative

TABLE 3

Regression Results
Model II

Part A: *Historical*

$P/E = a_0 + a_1 D/E + a_2 g_h$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	−1.05	9.59	21.20	0.73	82.95
	(1.61)	(12.13)	(7.05)		
1982	0.54	8.92	12.18	0.83	167.97
	(1.38)	(17.73)	(6.95)		
1983	−0.75	8.92	12.18	0.77	107.82
	(1.13)	(12.38)	(7.94)		

Part B: *Analysis*

$P/E + a_0 + a_1 D/E + a_2 g_a$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	3.96	10.07	60.53	0.90	274.16
	(8.31)	(8.31)	(20.91)	(15.79)	
1982	−1.75	9.19	44.92	0.88	246.36
	(4.00)	(4.00)	(21.35)	(11.06)	
1983	−4.97	10.95	82.02	0.83	168.28
	(6.93)	(6.93)	(15.93)	(11.02)	

Notes:
* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

definitions of "earnings " we report only the results for the IBES consensus.

[2] For the latest year, we actually employed a point-to-point growth calculation because there were only two available observations.

[3] We use the word "approximately," because the set of available firms varied each year. In any case, the number varied only from zero to three firms on either side of the figures cited here.

[4] See Maddala (1977).

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**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

455.   With respect to page 18, lines 12-20, please provide a copy of the article written by Dr. Vander Weide from the *Journal of Portfolio Management*.

Response:

The requested article is provided in response to AGDR1#454.

For the electronic version of this response, refer to KAW_R_AGDR1#455_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

456.   With respect to page 19, lines 14-18, please provide (1) a copy of the updated study by State Street Financial Advisers; and (2) copies of the work papers, data, and analyses used in the updated study. Please provide the data in Microsoft Excel format, with all data and formulas in intact.

Response:

The requested study is provided in response to AGDR1#454. Since the study was conducted by State Street Financial Advisers, Dr. Vander Weide does not have copies of the work papers, data, and analyses used in the updated study in Excel format.

For the electronic version, refer to KAW_R_AGDR1#456_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

457.   With respect to page 20, lines 13-23, please provide (1) estimates of the floatation costs (direct expenses as well as market pressure costs) of the equity issued by KAWC over the past five years, (2) the prospectuses for all equity issues by KAWC over the past five years.

Response:

Since KAWC is a wholly-owned subsidiary of American Waterworks, it does not issue equity in the public capital markets. Further, American Waterworks, which had been owned by RWE, did not begin trading in until April 2008. In its 2009 Annual Report, American Waterworks indicates that it issued shares on June 10, 2009:

On June 10, 2009 the Company completed a public offering of 29,900 shares of its common stock. Pursuant to the offering, the Company sold 14,500 shares of common stock and 15,400 shares were sold by RWE. The Company completed the sale of 14,500 shares of common stock at $17.25 per share. The proceeds from the offering, net of underwriters' discounts and expenses payable by the Company, were $242,301. [American Waterworks 2009 Form 10-K, p. 109.]

Based on the above information, the out-of-pocket expenses are 3.13 percent.

No. of shares issued by the Company	**14,500**
Price per share	$ 17.25
Gross proceeds	$ 250,125
Net proceeds	$ 242,301
Out-of-pocket expense	$ 7,824
Expense as % of net proceeds	**3.13%**

Thus, the expenses the American Waterworks incurred in its June 2009 equity issuance are consistent with Dr. Vander Weide's statement that issuance expenses are typically in the range three to five percent (*see* Vander Weide Direct, Answer 42, page 20, "Costs vary depending upon the size of the issue, the type of registration method used and other factors, but in general these costs range between three and five percent of the proceeds from the issue...").

For the electronic version, refer to KAW_R_AGDR1#457_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

458.   With respect to page 22, lines 17-22, please indicate: (1) the water companies eliminated by each of the screens applied to the companies listed in the Value Line Investment Survey; (2) the reason each was eliminated.

Response:

The Value Line Investment Survey includes 11 water utilities with significant investment in regulated water facilities and three companies with insignificant investment in regulated water facilities. As shown on Schedule 1, Dr. Vander Weide's proxy water group includes each of the Value Line companies that have significant investment in regulated water facilities, including Amer. States Water, Amer. Water Works, Aqua America, Artesian Res. 'A', California Water, Connecticut Water, Middlesex Water, Pennichuck, SJW Corp., Southwest Water, York Water. Dr. Vander Weide does not include three companies, Emera, HERC Products, Inc., and Sun Hydraulics Corporation, because they are not primarily engaged in the business activities of water utilities similar to those of KAWC.

For the electronic version, refer to KAW_R_AGDR1#458_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: Dr. James H. Vander Weide

459.   With respect to page 26, lines 1-2 (Table), (1) please provide copies of the I/B/E/S analyst research reports for the water companies in the proxy group, and (2) for companies covered in the Plus edition of Value Line, please indicate the source used by Value Line for the earnings growth rate since Value Line does not provide long-term earnings forecasts for these companies.

Response:

(1)   Dr. Vander Weide does not have analyst research reports from I/B/E/S. Rather, as described in his testimony and schedules, Dr. Vander Weide's studies use I/B/E/S long-term earnings growth forecasts obtained electronically from Thomson Reuters.

(2)   Dr. Vander Weide does not know the source of the Value Line earnings growth rate forecasts. He has used the earnings growth forecasts shown in the Value Line report, which, for example, in the case of Connecticut Water Services' report, reads, "consensus 5-year earnings growth 9.0% per year."

For the electronic version, refer to KAW_R_AGDR1#459_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

460.   With respect to page 27, lines 7-17, please indicate (1) all companies considered as part
of the natural gas industry groups, (2) what gas companies were eliminated by each of the
screens applied to the companies listed in the Value Line Investment Survey; (3) the
reason each was eliminated.

Response:

(1) and (2) Dr. Vander Weide considers all companies shown in the following table. The
table also describes why each company not included in his proxy group was not included.

TABLE 1

AGL Resources	Include
Atmos Energy	Include
Energen Corp.	Include
EQT	Include
Laclede Group	No long-term growth estimate
MDU Resources	Include
National Fuel Gas	Only one long-term growth estimate
New Jersey Resources	Only one long-term growth estimate
NICOR	Include
NiSource	Include
Northwest Natural Gas	Include
ONEOK Inc.	Include
Piedmont Natural Gas	Include
Questar Corp.	Include
South Jersey Industries	Only one long-term growth estimate
Southwest Gas	Include
UGI Corp.	Only one long-term growth estimate
WGL Holdings	Only one long-term growth estimate

For the electronic version, refer to KAW_R_AGDR1#460_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Dr. James H. Vander Weide**

461.   With respect to page 29, lines 1-3, please provide copies of the I/B/E/S analyst research reports for the gas companies in the proxy group.

Response:

Dr. Vander Weide does not have "analyst research reports" for the gas companies in the proxy group. As described in his testimony and schedules, Dr. Vander Weide uses the mean estimate of long-term earnings growth compiled by I/B/E/S, which he obtains from Thomson Reuters.

For the electronic version, refer to KAW_R_AGDR1#461_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Dr. James H. Vander Weide**

462.   With respect to page 30, lines 1-19, and Schedule 3 of Exhibit __(JVW-1), please provide (1) copies of all source documents, data, and work papers used in Dr. Vander Weide's ex ante risk premium study, (2) an electronic version (Microsoft Excel) of the data used in the analysis, with all data and equations left intact, and (3) copies of the regressions run on the data.

Response:

(1)   The data and work papers used in Dr. Vander Weide's ex ante risk premium study are provided in response to KAW_R_AGDR1#2_042610. There are two types of data required for this study: (a) data required for the DCF calculation; and (b) bond yields. Dr. Vander Weide obtains the data required for the DCF calculations electronically and the bond yield information from the Mergent Bond Record, which is available in most public libraries.

(2)   Dr. Vander Weide's electronic work papers are supplied in response to KAW_R_AGDR1#2.

(3)   The regressions run on the data are supplied in Dr. Vander Weide's electronic work papers supplied in response to KAW_R_AGDR1#2.

For the electronic version of this response, refer to KAW_R_AGDR1#462_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

463.   With respect to page 32, line 1 to page 37, line 27, and Schedule 4 of Exhibit __(JVW-1), please provide (1) copies of all source documents, data, and work papers used in Dr. Vander Weide's ex post risk premium study using the S&P 500, (2) the sources of the data items employed, (3) an electronic version (Microsoft Excel) of the data used in the analysis, with all data and equations left intact, and (4) copies of the regressions run on the data.

Response:

(1)   As described in Schedule 4 and Appendix 5, stock price and yield information required to calculate the returns on equity are obtained from Standard & Poor's Security Price Record, which is available in public libraries. The data used and work papers are supplied in response to KAW_R_AGDR1#2.

(2)   See response to (1).

(3)   An electronic version (Microsoft Excel) of the data used in the analysis, with all data and equations left intact is supplied in response to KAW_r_AGDR1#2.

(4)   Copies of the regressions run on the data are supplied in response to KAW_R_AGDR1#2.

For the electronic version of this response, refer to KAW_R_AGDR1#463_042610.pdf.

**KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION**

Witness: Dr. James H. Vander Weide

464.   With respect to page 32, line 1 to page 37, line 27, and Schedule 5 of Exhibit __(JVW-1), please provide (1) all source documents, data, and work papers used in Dr. Vander Weide's ex post risk premium study using the S&P Utilities Stock Index, (2) the sources of the data items employed, and (3) an electronic version (Microsoft Excel) of the data used in the analysis, with all data and equations left intact.

Response:

(1)   As described in Schedule 5 and Appendix 5, prior to 2002, stock price and yield information required to calculate the returns on equity are obtained from Standard & Poor's Security Price Record, which is available in public libraries. Standard & Poor's discontinued its S&P Utilities Index in December 2001 and replaced its utilities stock index with separate indices for electric and natural gas utilities. In the study reported in Schedule 5, the stock returns beginning in 2002 are based on the total returns for the EEI Index of U.S. shareholder-owned electric utilities, as reported by EEI on its website. The data used and work papers are supplied in response to KAW_R_AGDR1#2.

(2)   See response to (1).

(3)   An electronic version (Microsoft Excel) of the data used in the analysis, with all data and equations left intact is supplied in response to KAW_R_AGDR1#2.

(4)   Copies of the regressions run on the data are supplied in response to KAW_R_AGDR1#2.

For the electronic version of this response, refer to KAW_R_AGDR1#464_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: **Dr. James H. Vander Weide**

465. With respect to page 39, lines 8-13, and Schedule 8 of Exhibit __(JVW-1), please provide (1) copies of the data, work papers, and source documents used in preparation of the CAPM study in Schedule 8; (2) for each company listed in the S&P 500, the data, the number of analysts providing an EPS growth rate forecast as well as the market capitalization weight used for each company, (3) the names and growth rates for the S&P 500 companies that are not included in Schedule 8, (4) the company name, dividend, price, expected growth, cost of equity, and market cap for all companies in the S&P 500, not just those shown in Schedule 8; and (4) an electronic version (Microsoft Excel) of all data and work papers used in the analysis, with all data and equations left intact.

Response:

   (1)   The requested data and work papers are provided in response to KAW_R_AGDR1#2. The data are obtained electronically from the sources cited in Dr. Vander Weide's Schedule 8.

   (2)   The number of analysts providing an EPS growth rate forecast and the market capitalization weight for each company in the S&P 500 are shown below.

Company	EPS LTG #ESTS	Market Cap $ (mils)
3M	5	40,538
ABBOTT LABORATORIES	6	81,675
ABERCROMBIE & FITCH	14	2,140
ADOBE SYSTEMS	5	12,281
ADVANCED MICRO DEVC.	3	1,625
AES	1	6,046
AETNA	5	13,483
AFFILIATED CMP.SVS.'A'	6	4,347
AFLAC	6	21,283
AGILENT TECHS.	3	5,910
AIR PRDS.& CHEMS.	4	11,600
AIRGAS	6	3,246
AK STEEL HLDG.	1	1,203
AKAMAI TECHS.	10	2,736
ALCOA	2	9,492
ALLEGHENY EN.	2	5,950
ALLEGHENY TECHS.	2	2,760
ALLERGAN	5	12,666
ALLSTATE	3	17,456
ALTERA	7	5,150
ALTRIA GROUP	2	31,689
AMAZON.COM	14	23,183

Company	EPS LTG #ESTS	Market Cap $ (mils)
AMER.ELEC.PWR.	3	13,681
AMEREN	2	7,049
AMERICAN EXPRESS	4	23,140
AMERICAN INTL.GP.	2	4,465
AMERICAN TOWER 'A'	2	11,929
AMERIPRISE FINL.	4	5,237
AMERISOURCEBERGEN	6	5,663
AMGEN	12	63,200
AMPHENOL 'A'	4	4,416
ANADARKO PETROLEUM	5	19,023
ANALOG DEVICES	3	5,699
AON	2	11,900
APACHE	3	27,794
APARTMENT INV.& MAN.'A'	1	1,011
APOLLO GP.'A'	8	12,355
APPLE	11	84,075
APPLIED MATS.	5	14,179
ARCHER-DANLS.-MIDL.	2	18,654
ASSURANT	4	3,501
AT&T	6	167,538
AUTODESK	5	4,725
AUTOMATIC DATA PROC.	5	20,315
AUTONATION	6	1,928
AUTOZONE	13	7,915
AVALONBAY COMMNS.	1	4,471
AVERY DENNISON	4	3,497
AVON PRODUCTS	3	10,576
BAKER HUGHES	3	11,000
BALL	4	4,037
BANK OF AMERICA	6	89,368
BANK OF NEW YORK MELLON	6	31,822
BAXTER INTL.	3	33,638
BB&T	6	14,298
BECTON DICKINSON	3	16,566
BED BATH & BEYOND	11	6,631
BEMIS	4	2,485
BEST BUY	11	12,403
BIG LOTS	3	1,250
BIOGEN IDEC	9	13,841
BJ SVS.	3	3,728
BLACK & DECKER	2	2,695
BMC SOFTWARE	4	5,085
BOEING	6	33,835
BOSTON PROPERTIES	2	6,354
BOSTON SCIENTIFIC	5	11,352
BRISTOL MYERS SQUIBB	6	45,986
BROADCOM 'A'	6	7,491
BROWN-FORMAN 'B'	4	4,992
BURL.NTHN.SANTA FE C	5	27,078
C R BARD	4	8,263
CA	5	9,666
CABOT OIL & GAS 'A'	2	3,031
CAMERON INTERNATIONAL	2	5,108
CAMPBELL SOUP	2	10,924

Company	EPS LTG #ESTS	Market Cap $ (mils)
CAPITAL ONE FINL.	5	12,940
CARDINAL HEALTH	7	12,849
CAREFUSION	NA	NA
CARNIVAL	1	15,657
CATERPILLAR	4	27,718
CB RICHARD ELLIS GP.	3	891
CBS 'B'	5	5,410
CELGENE	8	24,907
CENTERPOINT EN.	1	4,522
CENTURYTEL	3	2,819
CEPHALON	12	5,493
CF INDUSTRIES HDG.	1	2,739
CH ROBINSON WWD.	8	9,095
CHARLES SCHWAB	4	18,044
CHESAPEAKE ENERGY	6	10,895
CHEVRON	4	155,757
CHUBB	3	17,810
CIGNA	5	4,932
CINCINNATI FINL.	1	4,662
CINTAS	6	3,615
CISCO SYSTEMS	10	100,180
CITIGROUP	3	38,583
CITRIX SYS.	11	4,302
CLIFFS NATURAL RESOURCES	NA	3,485
CLOROX	4	7,817
CME GROUP	5	14,089
CMS ENERGY	3	2,423
COACH	6	7,160
COCA COLA	4	105,128
COCA COLA ENTS.	4	6,275
COGNIZANT TECH.SLTN.'A'	8	5,541
COLGATE-PALM.	5	34,336
COMCAST 'A'	6	35,099
COMERICA	6	2,922
COMPUTER SCIS.	2	5,690
COMPUWARE	NA	1,738
CONAGRA FOODS	2	7,431
CONOCOPHILLIPS	4	82,696
CONSOL EN.	1	6,318
CONSOLIDATED EDISON	4	10,800
CONSTELLATION BRANDS 'A'	5	3,218
CONSTELLATION EN.	2	4,710
CORNING	4	16,445
COSTCO WHOLESALE	11	22,654
COVENTRY HEALTH CARE	2	2,263
CSX	5	13,941
CUMMINS	3	6,045
CVS CAREMARK	4	42,800
D R HORTON	4	2,533
DANAHER	8	18,189
DARDEN RESTAURANTS	8	3,937
DAVITA	5	4,931
DEAN FOODS NEW	2	2,902
DEERE	3	18,113

Company	EPS LTG #ESTS	Market Cap $ (mils)
DELL	7	20,630
DENBURY RES.	4	3,389
DENTSPLY INTL.	5	4,193
DEVON ENERGY	6	31,338
DEVRY	8	3,839
DIAMOND OFFS.DRL.	5	9,260
DIRECTV 'A'	4	24,335
DISCOVER FINANCIAL SVS.	3	4,679
DOMINION RES.	5	21,161
DOVER	3	6,630
DOW CHEMICAL	1	13,903
DR PEPPER SNAPPLE GROUP	2	4,290
DTE ENERGY	1	5,963
DUKE ENERGY	6	19,954
DUN & BRADSTREET DEL.	NA	4,198
E I DU PONT DE NEMOURS	3	23,759
E*TRADE FINANCIAL	2	704
EASTMAN CHEMICAL	1	2,396
EASTMAN KODAK	NA	1,906
EATON	4	8,562
EBAY	11	18,860
ECOLAB	9	8,711
EDISON INTL.	3	10,892
EL PASO	3	6,154
ELECTRONIC ARTS	7	5,359
ELI LILLY	7	44,864
EMC	7	21,836
EMERSON ELECTRIC	6	28,619
ENTERGY	5	16,176
EOG RES.	7	17,638
EQT	3	4,703
EQUIFAX	4	3,501
EQUITY RESD.TST.PROPS. SHBI	NA	7,424
ESTEE LAUDER COS.'A'	4	3,677
EXELON	5	37,725
EXPEDIA	2	2,404
EXPEDITOR INTL.OF WASH.	6	7,097
EXPRESS SCRIPTS 'A'	15	14,135
EXXON MOBIL	4	415,223
FAMILY DOLLAR STORES	5	3,538
FASTENAL	8	5,407
FEDERATED INVRS.'B'	3	1,878
FEDEX	7	19,907
FIDELITY NAT.INFO.SVS.	6	3,258
FIFTH THIRD BANCORP	2	4,850
FIRST HORIZON NATIONAL	4	2,195
FIRST SOLAR	8	12,796
FIRSTENERGY	3	15,784
FISERV	4	6,108
FLIR SYS.	8	4,391
FLOWSERVE	3	3,118
FLUOR	5	9,037
FMC	1	3,333
FMC TECHNOLOGIES	3	3,307

Company	EPS LTG #ESTS	Market Cap $ (mils)
FORD MOTOR	NA	5,980
FOREST LABS.	7	7,902
FORTUNE BRANDS	3	6,359
FPL GROUP	6	21,229
FRANKLIN RESOURCES	4	15,556
FREEPORT-MCMOR.CPR.& GD.	2	10,657
FRONTIER COMMUNICATIONS	3	2,677
GAMESTOP	8	3,903
GANNETT	1	2,030
GAP	8	9,827
GENERAL DYNAMICS	5	23,290
GENERAL ELECTRIC	6	165,559
GENERAL MILLS	1	19,933
GENUINE PARTS	5	6,159
GENWORTH FINANCIAL	6	1,226
GENZYME	10	18,314
GILEAD SCIENCES	12	46,436
GOLDMAN SACHS GP.	6	39,253
GOODRICH	8	4,871
GOODYEAR TIRE & RUB.	NA	1,682
GOOGLE 'A'	14	78,579
H&R BLOCK	4	7,823
HALLIBURTON	2	17,580
HARLEY-DAVIDSON	7	4,407
HARMAN INTL.INDS.	2	1,121
HARRIS	3	5,366
HARTFORD FINL.SVS.GP.	4	5,179
HASBRO	3	4,095
HCP	2	6,463
HEALTH CARE REIT	1	3,997
HESS	1	19,098
HEWLETT-PACKARD	8	87,781
HJ HEINZ	1	12,194
HOME DEPOT	8	41,895
HONEYWELL INTL.	5	25,042
HORMEL FOODS	2	4,232
HOSPIRA	2	4,304
HOST HOTELS & RESORTS	NA	3,867
HUDSON CITY BANC.	5	7,855
HUMANA	6	6,431
HUNTINGTON BCSH.	5	2,852
ILLINOIS TOOL WORKS	6	18,540
IMS HEALTH	6	2,955
INTEGRYS ENERGY GROUP	2	3,396
INTEL	11	82,929
INTERCONTINENTAL EX.	5	5,274
INTERNATIONAL BUS.MCHS.	5	116,639
INTERPUBLIC GP.	2	1,878
INTL.FLAVORS & FRAG.	NA	2,388
INTL.GAME TECH.	3	3,928
INTL.PAPER	2	5,130
INTUIT	5	7,960
INTUITIVE SURGICAL	5	4,910
INVESCO	5	5,432

Company	EPS LTG #ESTS	Market Cap $ (mils)
IRON MNT.	4	5,001
ITT	3	9,119
J M SMUCKER	3	5,192
JABIL CIRCUIT	6	1,555
JACOBS ENGR.	5	6,275
JANUS CAPITAL GP.	4	1,419
JDS UNIPHASE	7	973
JOHNSON & JOHNSON	5	166,613
JOHNSON CONTROLS	2	11,314
JP MORGAN CHASE & CO.	3	109,171
JUNIPER NETWORKS	13	9,762
KELLOGG	3	17,096
KEYCORP	5	4,198
KIMBERLY-CLARK	3	21,921
KIMCO REALTY	1	5,006
KING PHARMS.	2	2,667
KLA TENCOR	4	3,782
KOHL'S	8	11,445
KRAFT FOODS	4	40,577
KROGER	4	17,401
L3 COMMUNICATIONS	3	9,232
LABORATORY CORP.OF AM. HDG.	10	7,091
LEGG MASON	3	3,314
LEGGETT&PLATT	4	2,399
LENNAR 'A'	3	1,318
LEUCADIA NATIONAL	NA	4,874
LEXMARK INTL.	2	2,204
LIFE TECHNOLOGIES	3	4,305
LIMITED BRANDS	7	3,530
LINCOLN NAT.	4	5,581
LINEAR TECH.	6	5,035
LOCKHEED MARTIN	5	33,591
LOEWS	NA	13,000
LORILLARD	2	9,414
LOWE'S COMPANIES	11	33,739
LSI	1	2,109
M&T BK.	2	5,951
MACY'S	5	4,904
MARATHON OIL	4	20,701
MARRIOTT INTL.'A'	3	7,265
MARSH & MCLENNAN	3	12,605
MARSHALL & ILSLEY	9	3,370
MASCO	2	4,222
MASSEY EN.	1	1,455
MASTERCARD	10	15,078
MATTEL	3	5,860
MCAFEE	14	5,129
MCCORMICK & CO NV.	1	3,768
MCDONALDS	6	70,840
MCGRAW-HILL	NA	7,734
MCKESSON	8	10,929
MEAD JOHNSON NUT.CL.A	NA	NA
MEADWESTVACO	1	1,944
MEDCO HEALTH SLTN.	14	22,018

Company	EPS LTG #ESTS	Market Cap $ (mils)
MEDTRONIC	8	36,432
MEMC ELT.MATERIALS	4	3,537
MERCK & CO.	8	64,546
MEREDITH	NA	643
METLIFE	5	28,165
METROPCS COMMS.	6	5,440
MICROCHIP TECH.	5	3,520
MICRON TECHNOLOGY	4	2,536
MICROSOFT	5	182,537
MILLIPORE	3	2,918
MOLEX	4	1,468
MOLSON COORS BREWING 'B'	4	7,571
MONSANTO	1	40,710
MONSTER WORLDWIDE	10	1,457
MOODY'S	1	5,316
MORGAN STANLEY	5	18,933
MOTOROLA	10	10,153
MURPHY OIL	4	9,399
MYLAN	3	3,004
NABORS INDS.	2	3,674
NASDAQ OMX GROUP	6	5,346
NATIONAL OILWELL VARCO	1	11,852
NATIONAL SEMICON.	7	2,475
NETAPP	8	4,751
NEW YORK TIMES 'A'	1	1,087
NEWELL RUBBERMAID	4	2,923
NEWMONT MINING	2	17,137
NEWS CORP.'A'	6	17,243
NICOR	2	1,557
NIKE 'B'	4	20,734
NISOURCE	4	3,063
NOBLE ENERGY	3	9,304
NORDSTROM	6	3,274
NORFOLK SOUTHERN	5	17,959
NORTHEAST UTILITIES	4	3,868
NORTHERN TRUST	7	11,754
NORTHROP GRUMMAN	5	16,118
NOVELL	6	1,309
NOVELLUS SYSTEMS	3	1,240
NUCOR	1	14,856
NVIDIA	6	4,764
NYSE EURONEXT	4	7,664
O REILLY AUTOMOTIVE	11	4,105
OCCIDENTAL PTL.	4	50,002
OFFICE DEPOT	5	1,017
OMNICOM GP.	3	8,718
ORACLE	7	91,285
OWENS ILLINOIS NEW	3	4,426
PACCAR	4	11,127
PACTIV	2	3,183
PALL	3	3,317
PARKER-HANNIFIN	3	7,285
PATTERSON COMPANIES	3	2,338
PAYCHEX	8	9,533

Company	EPS LTG #ESTS	Market Cap $ (mils)
PEABODY ENERGY	2	7,156
PENNEY JC	4	4,781
PEOPLES UNITED FINANCIAL	4	6,010
PEPCO HOLDINGS	2	3,725
PEPSI BOTTLING GP.	4	4,882
PEPSICO	3	86,354
PERKINELMER	3	1,740
PFIZER	5	122,452
PG&E	6	13,970
PHILIP MORRIS INTL.	2	89,964
PINNACLE WEST CAP.	3	3,391
PIONEER NTRL.RES.	4	2,288
PITNEY-BOWES	NA	5,339
PLUM CREEK TIMBER	3	5,522
PNC FINL.SVS.GP.	3	20,585
POLO RALPH LAUREN 'A'	4	2,634
PPG INDUSTRIES	2	7,107
PPL	3	11,870
PRAXAIR	4	19,697
PREC.CASTPARTS	5	9,147
PRICELINE.COM	3	3,044
PRINCIPAL FINL.GP.	6	5,986
PROCTER & GAMBLE	5	182,737
PROGRESS ENERGY	5	10,581
PROGRESSIVE OHIO	3	10,099
PROLOGIS	1	3,730
PRUDENTIAL FINL.	6	12,901
PUB.SER.ENTER.GP.	1	15,502
PUBLIC STORAGE	1	12,200
PULTE HOMES	2	3,126
QLOGIC	5	1,709
QUALCOMM	2	60,342
QUANTA SERVICES	1	3,724
QUEST DIAGNOSTICS	9	10,080
QUESTAR	3	6,330
QWEST COMMS.INTL.	5	5,928
R R DONNELLEY & SONS	1	2,979
RADIOSHACK	3	1,557
RANGE RES.	6	6,067
RAYTHEON 'B'	5	21,734
RED HAT	10	2,711
REGIONS FINL.NEW	4	6,034
REPUBLIC SVS.'A'	1	9,676
REYNOLDS AMERICAN	2	11,652
ROBERT HALF INTL.	5	3,202
ROCKWELL AUTOMATION	3	4,829
ROCKWELL COLLINS	7	6,505
ROPER INDS.NEW	5	4,027
ROSS STORES	5	3,916
ROWAN COMPANIES	3	1,949
RYDER SYSTEM	3	2,230
SAFEWAY	3	10,315
SAIC	5	4,030
SALESFORCE.COM	11	4,069

Company	EPS LTG #ESTS	Market Cap $ (mils)
SANDISK	6	2,729
SARA LEE	2	6,983
SCANA	2	4,286
SCHLUMBERGER	3	56,005
SCRIPPS NETWORKS INTACT. 'A'	3	3,056
SEALED AIR	3	2,403
SEARS HOLDINGS	2	5,109
SEMPRA EN.	4	10,833
SHERWIN-WILLIAMS	2	6,995
SIGMA ALDRICH	4	5,242
SIMON PR.GP.	1	11,439
SLM	2	4,542
SMITH INTL.	3	5,792
SNAP-ON	3	2,359
SOUTHERN	6	28,404
SOUTHWEST AIRLINES	4	6,421
SOUTHWESTERN ENERGY	4	11,285
SPECTRA ENERGY	2	10,360
SPRINT NEXTEL	NA	5,898
ST.JUDE MEDICAL	9	11,317
STANLEY WORKS	3	2,796
STAPLES	7	13,219
STARBUCKS	10	7,274
STARWOOD HTLS.& RSTS. WORLDWIDE	4	3,887
STATE STREET	7	17,939
STERICYCLE	5	4,480
STRYKER	7	16,464
SUN MICROSYSTEMS	4	3,301
SUNOCO	2	5,263
SUNTRUST BANKS	5	9,873
SUPERVALU	3	3,176
SYMANTEC	11	11,999
SYSCO	3	14,577
T ROWE PRICE GP.	5	9,563
TARGET	10	27,205
TECO ENERGY	6	2,709
TELLABS	4	1,672
TENET HLTHCR.	3	525
TERADATA	2	2,728
TERADYNE	2	873
TESORO	2	1,990
TEXAS INSTS.	8	20,561
TEXTRON	4	3,636
THE HERSHEY COMPANY	1	5,905
THERMO FISHER SCIENTIFIC	4	14,909
TIFFANY & CO	6	3,159
TIME WARNER	6	37,668
TIME WARNER CABLE	6	19,789
TITANIUM METALS	1	1,731
TJX COS.	6	8,906
TORCHMARK	5	3,872
TOTAL SYSTEM SERVICES	8	2,923
TRAVELERS COS.	3	26,029
TYSON FOODS 'A'	3	2,706

Company	EPS LTG #ESTS	Market Cap $ (mils)
UNION PACIFIC	4	26,360
UNITED PARCEL SER.	6	37,385
UNITED TECHNOLOGIES	5	51,618
UNITEDHEALTH GP.	4	33,047
UNUM GROUP	4	6,440
US BANCORP	7	41,827
US.STEEL	2	4,590
V F	5	6,274
VALERO ENERGY	1	12,694
VARIAN MED.SYS.	2	4,267
VENTAS	NA	4,449
VERISIGN	7	3,986
VERIZON COMMUNICATIONS	7	92,259
VIACOM 'B'	7	11,190
VISA 'A'	10	24,164
VORNADO REALTY TST.	1	8,869
VULCAN MATERIALS	1	7,705
WAL MART STORES	11	221,702
WALGREEN	10	26,484
WALT DISNEY	11	43,499
WASHINGTON PST.'B'	NA	3,343
WASTE MAN.	1	16,468
WATERS	4	3,765
WATSON PHARMS.	4	2,631
WELLPOINT	7	22,637
WELLS FARGO & CO	5	105,379
WESTERN DIGITAL	5	2,663
WESTERN UNION	12	10,587
WEYERHAEUSER	2	6,746
WHIRLPOOL	2	3,415
WHOLE FOODS MARKET	4	1,427
WILLIAMS COS.	2	9,027
WINDSTREAM	1	4,003
WISCONSIN ENERGY	4	4,925
WW GRAINGER	8	5,995
WYNDHAM WORLDWIDE	1	1,438
WYNN RESORTS	2	5,440
XCEL ENERGY	3	8,379
XEROX	NA	7,704
XILINX	6	4,996
XL CAP.'A'	4	1,240
XTO EN.	8	22,900
YAHOO	10	17,821
YUM! BRANDS	6	15,204
ZIMMER HDG.	8	9,212
ZIONS BANCORP.	7	2,805

(3)   The names and growth rates for the S&P 500 companies that are not included in Schedule 8 are shown below.

Company	Growth
ABBOTT LABORATORIES	11.93%
ADOBE SYSTEMS	16.00%
ADVANCED MICRO DEVC.	11.67%
AES	14.20%
AFFILIATED CMP.SVS.'A'	12.83%
AFLAC	14.95%
AGILENT TECHS.	13.00%
AK STEEL HLDG.	10.00%
AKAMAI TECHS.	15.78%
ALCOA	23.95%
ALLEGHENY EN.	16.00%
ALLEGHENY TECHS.	6.00%
ALLSTATE	7.00%
ALTERA	15.57%
ALTRIA GROUP	10.50%
AMAZON.COM	23.99%
AMER.ELEC.PWR.	5.15%
AMEREN	4.00%
AMERICAN INTL.GP.	13.50%
AMERICAN TOWER 'A'	11.50%
AMERIPRISE FINL.	15.95%
AMGEN	10.07%
AMPHENOL 'A'	17.75%
ANADARKO PETROLEUM	6.20%
ANALOG DEVICES	18.33%
AON	10.50%
APACHE	9.33%
APARTMENT INV.& MAN.'A'	4.00%
APOLLO GP.'A'	15.25%
APPLE	20.06%
ARCHER-DANLS.-MIDL.	13.10%
AUTODESK	12.80%
AUTOMATIC DATA PROC.	13.40%
AUTONATION	9.33%
AUTOZONE	12.20%
AVALONBAY COMMNS.	1.00%
AVON PRODUCTS	13.00%
BAKER HUGHES	1.83%
BALL	9.65%
BANK OF AMERICA	6.67%
BB&T	5.33%
BED BATH & BEYOND	12.82%
BIG LOTS	13.67%
BIOGEN IDEC	12.16%
BJ SVS.	6.33%
BLACK & DECKER	6.50%
BMC SOFTWARE	13.50%
BOEING	12.17%
BOSTON PROPERTIES	5.00%
BOSTON SCIENTIFIC	13.48%
BRISTOL MYERS SQUIBB	10.67%
BROADCOM 'A'	12.00%
BROWN-FORMAN 'B'	8.41%
C R BARD	14.25%

Company	Growth
CABOT OIL & GAS 'A'	9.00%
CAMERON INTERNATIONAL	12.50%
CAMPBELL SOUP	8.15%
CARDINAL HEALTH	12.57%
CAREFUSION	#VALUE!
CARNIVAL	15.00%
CB RICHARD ELLIS GP.	6.07%
CBS 'B'	2.48%
CELGENE	38.74%
CENTERPOINT EN.	18.00%
CENTURYTEL	6.43%
CEPHALON	14.43%
CF INDUSTRIES HDG.	3.50%
CH ROBINSON WWD.	14.82%
CHARLES SCHWAB	16.75%
CHEVRON	3.04%
CIGNA	10.40%
CINCINNATI FINL.	10.00%
CISCO SYSTEMS	11.50%
CITIGROUP	5.00%
CITRIX SYS.	13.82%
CLIFFS NATURAL RESOURCES	#VALUE!
CME GROUP	18.60%
CMS ENERGY	7.00%
COACH	15.00%
COCA COLA ENTS.	0.08%
COGNIZANT TECH.SLTN.'A'	24.50%
COMERICA	5.37%
COMPUTER SCIS.	11.50%
COMPUWARE	#VALUE!
CONAGRA FOODS	10.25%
CONOCOPHILLIPS	-0.55%
CONSOL EN.	56.00%
CONSOLIDATED EDISON	2.32%
CONSTELLATION BRANDS 'A'	11.35%
CONSTELLATION EN.	13.90%
COVENTRY HEALTH CARE	11.00%
CSX	14.84%
CUMMINS	14.67%
CVS CAREMARK	14.25%
D R HORTON	5.75%
DARDEN RESTAURANTS	12.03%
DAVITA	12.90%
DEAN FOODS NEW	11.25%
DELL	10.00%
DENBURY RES.	17.15%
DEVON ENERGY	6.50%
DEVRY	22.50%
DIAMOND OFFS.DRL.	17.20%
DIRECTV 'A'	12.10%
DISCOVER FINANCIAL SVS.	7.00%
DOVER	16.33%
DOW CHEMICAL	16.18%
DR PEPPER SNAPPLE GROUP	4.50%

Company	Growth
DTE ENERGY	6.00%
DUKE ENERGY	4.46%
DUN & BRADSTREET DEL.	#VALUE!
E I DU PONT DE NEMOURS	1.17%
E*TRADE FINANCIAL	14.50%
EASTMAN CHEMICAL	7.00%
EASTMAN KODAK	#VALUE!
EBAY	13.77%
EDISON INTL.	6.64%
EL PASO	9.00%
ELECTRONIC ARTS	17.43%
EMC	11.66%
EMERSON ELECTRIC	12.33%
EOG RES.	9.00%
EQUIFAX	10.25%
EQUITY RESD.TST.PROPS. SHBI	#VALUE!
EXPEDIA	10.00%
EXPEDITOR INTL.OF WASH.	15.45%
EXPRESS SCRIPTS 'A'	17.33%
EXXON MOBIL	2.32%
FASTENAL	15.13%
FEDEX	9.16%
FIDELITY NAT.INFO.SVS.	14.83%
FIFTH THIRD BANCORP	5.00%
FIRST HORIZON NATIONAL	5.50%
FIRST SOLAR	46.38%
FISERV	16.75%
FLIR SYS.	21.07%
FLUOR	15.20%
FMC	10.00%
FMC TECHNOLOGIES	19.67%
FORD MOTOR	#VALUE!
FOREST LABS.	8.86%
FREEPORT-MCMOR.CPR.& GD.	10.00%
FRONTIER COMMUNICATIONS	1.57%
GAMESTOP	18.50%
GANNETT	4.00%
GENERAL MILLS	10.00%
GENWORTH FINANCIAL	10.18%
GENZYME	17.99%
GILEAD SCIENCES	17.05%
GOLDMAN SACHS GP.	14.58%
GOODRICH	14.25%
GOODYEAR TIRE & RUB.	#VALUE!
GOOGLE 'A'	19.31%
HALLIBURTON	15.50%
HARMAN INTL.INDS.	22.50%
HARRIS	17.00%
HARTFORD FINL.SVS.GP.	10.00%
HCP	10.50%
HEALTH CARE REIT	16.00%
HESS	7.00%
HJ HEINZ	7.00%
HORMEL FOODS	8.15%

Company	Growth
HOSPIRA	10.95%
HOST HOTELS & RESORTS	#VALUE!
HUDSON CITY BANC.	14.80%
HUMANA	13.83%
HUNTINGTON BCSH.	8.00%
INTEGRYS ENERGY GROUP	11.10%
INTEL	12.00%
INTERCONTINENTAL EX.	22.00%
INTERPUBLIC GP.	20.50%
INTL.FLAVORS & FRAG.	#VALUE!
INTL.PAPER	6.00%
INTUIT	14.20%
INTUITIVE SURGICAL	31.60%
IRON MNT.	20.00%
J M SMUCKER	7.87%
JABIL CIRCUIT	18.75%
JACOBS ENGR.	16.40%
JANUS CAPITAL GP.	9.75%
JDS UNIPHASE	17.14%
JOHNSON CONTROLS	13.50%
JP MORGAN CHASE & CO.	9.67%
JUNIPER NETWORKS	19.06%
KEYCORP	4.60%
KIMCO REALTY	8.00%
KING PHARMS.	-12.95%
KLA TENCOR	13.75%
KOHL'S	13.25%
KROGER	9.25%
LABORATORY CORP.OF AM. HDG.	13.40%
LEGG MASON	10.33%
LEGGETT&PLATT	35.98%
LENNAR 'A'	8.67%
LEUCADIA NATIONAL	#VALUE!
LEXMARK INTL.	7.50%
LIFE TECHNOLOGIES	15.17%
LIMITED BRANDS	12.36%
LINCOLN NAT.	10.75%
LINEAR TECH.	16.33%
LOCKHEED MARTIN	11.50%
LOEWS	#VALUE!
LORILLARD	8.00%
LSI	17.50%
M&T BK.	2.45%
MACY'S	9.60%
MARATHON OIL	-0.77%
MARRIOTT INTL.'A'	11.67%
MARSHALL & ILSLEY	6.44%
MASCO	15.00%
MASSEY EN.	86.00%
MASTERCARD	18.10%
MCAFEE	12.64%
MCCORMICK & CO NV.	10.50%
MCGRAW-HILL	#VALUE!
MEAD JOHNSON NUT.CL.A	#VALUE!

Company	Growth
MEADWESTVACO	11.00%
MEDCO HEALTH SLTN.	16.75%
MEMC ELT.MATERIALS	15.25%
MERCK & CO.	4.57%
MEREDITH	#VALUE!
METROPCS COMMS.	28.50%
MICROCHIP TECH.	12.80%
MICRON TECHNOLOGY	12.25%
MILLIPORE	13.00%
MOLEX	14.25%
MONSANTO	30.00%
MONSTER WORLDWIDE	17.50%
MOODY'S	15.00%
MOTOROLA	10.10%
MURPHY OIL	13.72%
MYLAN	10.13%
NABORS INDS.	15.00%
NASDAQ OMX GROUP	20.58%
NATIONAL OILWELL VARCO	12.00%
NATIONAL SEMICON.	12.71%
NETAPP	13.50%
NEW YORK TIMES 'A'	3.00%
NEWELL RUBBERMAID	8.75%
NEWMONT MINING	17.15%
NEWS CORP.'A'	7.15%
NICOR	2.85%
NISOURCE	3.00%
NORTHEAST UTILITIES	6.72%
NORTHROP GRUMMAN	12.80%
NOVELL	12.83%
NOVELLUS SYSTEMS	13.33%
NUCOR	9.00%
NVIDIA	14.50%
NYSE EURONEXT	13.75%
O REILLY AUTOMOTIVE	14.42%
OCCIDENTAL PTL.	4.41%
OFFICE DEPOT	10.00%
OMNICOM GP.	7.17%
ORACLE	14.29%
OWENS ILLINOIS NEW	18.63%
PACTIV	10.50%
PALL	13.33%
PATTERSON COMPANIES	13.33%
PAYCHEX	13.25%
PEABODY ENERGY	41.00%
PEPCO HOLDINGS	4.00%
PEPSI BOTTLING GP.	8.15%
PFIZER	1.02%
PHILIP MORRIS INTL.	11.50%
PINNACLE WEST CAP.	4.50%
PIONEER NTRL.RES.	10.75%
PITNEY-BOWES	#VALUE!
PNC FINL.SVS.GP.	9.00%
PPG INDUSTRIES	7.94%

Company	Growth
PPL	12.33%
PREC.CASTPARTS	16.60%
PRICELINE.COM	23.33%
PROGRESSIVE OHIO	7.33%
PROLOGIS	6.00%
PRUDENTIAL FINL.	15.07%
PUB.SER.ENTER.GP.	3.00%
PUBLIC STORAGE	29.00%
PULTE HOMES	10.00%
QLOGIC	10.40%
QUALCOMM	14.00%
QUANTA SERVICES	12.00%
QUESTAR	9.00%
R R DONNELLEY & SONS	12.00%
RADIOSHACK	8.33%
RAYTHEON 'B'	12.40%
RED HAT	19.25%
REGIONS FINL.NEW	5.75%
REPUBLIC SVS.'A'	12.00%
REYNOLDS AMERICAN	6.50%
ROBERT HALF INTL.	15.60%
ROCKWELL AUTOMATION	12.33%
ROCKWELL COLLINS	13.97%
ROSS STORES	14.80%
ROWAN COMPANIES	12.00%
SAFEWAY	8.33%
SAIC	12.60%
SALESFORCE.COM	38.27%
SANDISK	14.17%
SARA LEE	4.75%
SCANA	5.01%
SCHLUMBERGER	2.70%
SEARS HOLDINGS	10.00%
SEMPRA EN.	6.99%
SHERWIN-WILLIAMS	12.25%
SIGMA ALDRICH	8.56%
SIMON PR.GP.	13.00%
SLM	13.50%
SMITH INTL.	20.67%
SOUTHWESTERN ENERGY	33.50%
SPECTRA ENERGY	9.50%
SPRINT NEXTEL	#VALUE!
ST.JUDE MEDICAL	14.49%
STARBUCKS	18.16%
STARWOOD HTLS.& RSTS. WORLDWIDE	9.75%
STERICYCLE	18.60%
STRYKER	17.51%
SUN MICROSYSTEMS	8.50%
SUNOCO	-26.42%
SUNTRUST BANKS	5.80%
SUPERVALU	5.00%
SYMANTEC	10.36%
SYSCO	12.00%
TELLABS	6.50%

Company	Growth
TENET HLTHCR.	10.00%
TERADATA	5.50%
TERADYNE	15.00%
TESORO	5.65%
TEXAS INSTS.	13.88%
THE HERSHEY COMPANY	7.00%
THERMO FISHER SCIENTIFIC	14.50%
TIME WARNER CABLE	9.04%
TITANIUM METALS	10.00%
TORCHMARK	8.26%
TYSON FOODS 'A'	14.77%
UNION PACIFIC	15.45%
UNITED PARCEL SER.	11.67%
US BANCORP	7.57%
US.STEEL	14.25%
VALERO ENERGY	-7.70%
VARIAN MED.SYS.	18.00%
VENTAS	#VALUE!
VERISIGN	16.43%
VIACOM 'B'	10.23%
VISA 'A'	20.40%
VORNADO REALTY TST.	5.00%
VULCAN MATERIALS	22.70%
WALT DISNEY	9.14%
WASHINGTON PST.'B'	#VALUE!
WASTE MAN.	12.00%
WATERS	12.65%
WATSON PHARMS.	15.15%
WELLPOINT	12.07%
WELLS FARGO & CO	7.60%
WESTERN DIGITAL	11.40%
WEYERHAEUSER	6.00%
WHIRLPOOL	9.55%
WHOLE FOODS MARKET	12.50%
WILLIAMS COS.	15.00%
WINDSTREAM	3.00%
WYNDHAM WORLDWIDE	15.00%
WYNN RESORTS	25.00%
XEROX	#VALUE!
XILINX	13.00%
YAHOO	18.99%
ZIMMER HDG.	10.82%
ZIONS BANCORP.	7.00%

(4)   The company name, dividend, price, expected growth, cost of equity, and market cap for all companies in the S&P 500, not just those shown in Schedule 8, are shown below.

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
3M	77.26	2.04	0.1130	14.3%	40,538
ABBOTT LABORATORIES	52.22	1.60	0.1193	15.4%	81,675

Company	P$_0$	D$_0$	Growth	Cost of Equity	Market Cap $ (mils)
ABERCROMBIE & FITCH	36.05	0.70	0.1121	13.4%	2,140
ADOBE SYSTEMS	35.07	0.00	0.1600	16.0%	12,281
ADVANCED MICRO DEVC.	6.60	0.00	0.1167	11.7%	1,625
AES	13.64	0.00	0.1420	14.2%	6,046
AETNA	28.76	0.04	0.1400	14.2%	13,483
AFFILIATED CMP.SVS.'A'	55.01	0.00	0.1283	12.8%	4,347
AFLAC	44.24	1.12	0.1495	17.9%	21,283
AGILENT TECHS.	27.92	0.00	0.1300	13.0%	5,910
AIR PRDS.& CHEMS.	80.82	1.80	0.0947	11.9%	11,600
AIRGAS	47.16	0.72	0.1231	14.0%	3,246
AK STEEL HLDG.	19.02	0.20	0.1000	11.2%	1,203
AKAMAI TECHS.	23.09	0.00	0.1578	15.8%	2,736
ALCOA	13.67	0.12	0.2395	25.0%	9,492
ALLEGHENY EN.	23.61	0.60	0.1600	19.0%	5,950
ALLEGHENY TECHS.	35.92	0.72	0.0600	8.1%	2,760
ALLERGAN	58.53	0.20	0.1440	14.8%	12,666
ALLSTATE	29.64	0.80	0.0700	9.9%	17,456
ALTERA	21.23	0.20	0.1557	16.7%	5,150
ALTRIA GROUP	18.81	1.36	0.1050	18.7%	31,689
AMAZON.COM	122.97	0.00	0.2399	24.0%	23,183
AMER.ELEC.PWR.	32.13	1.64	0.0515	10.6%	13,681
AMEREN	25.81	1.54	0.0400	10.3%	7,049
AMERICAN EXPRESS	37.79	0.72	0.1025	12.4%	23,140
AMERICAN INTL.GP.	34.80	0.00	0.1350	13.5%	4,465
AMERICAN TOWER 'A'	39.38	0.00	0.1150	11.5%	11,929
AMERIPRISE FINL.	37.27	0.68	0.1595	18.1%	5,237
AMERISOURCEBERGEN	23.88	0.32	0.1150	13.0%	5,663
AMGEN	56.04	0.00	0.1007	10.1%	63,200
AMPHENOL 'A'	41.66	0.06	0.1775	17.9%	4,416
ANADARKO PETROLEUM	62.29	0.36	0.0620	6.8%	19,023
ANALOG DEVICES	28.62	0.80	0.1833	21.7%	5,699
AON	39.19	0.60	0.1050	12.2%	11,900
APACHE	97.77	0.60	0.0933	10.0%	27,794
APARTMENT INV.& MAN.'A'	14.13	0.40	0.0400	7.0%	1,011
APOLLO GP.'A'	60.10	0.00	0.1525	15.3%	12,355
APPLE	197.60	0.00	0.2006	20.1%	84,075
APPLIED MATS.	12.86	0.24	0.1200	14.1%	14,179
ARCHER-DANLS.-MIDL.	30.70	0.56	0.1310	15.2%	18,654
ASSURANT	30.70	0.60	0.1125	13.4%	3,501
AT&T	26.72	1.68	0.0717	14.1%	167,538
AUTODESK	24.95	0.00	0.1280	12.8%	4,725
AUTOMATIC DATA PROC.	41.71	1.36	0.1340	17.1%	20,315
AUTONATION	18.68	0.00	0.0933	9.3%	1,928
AUTOZONE	146.70	0.00	0.1220	12.2%	7,915
AVALONBAY COMMNS.	74.22	3.57	0.0100	5.9%	4,471
AVERY DENNISON	37.18	0.80	0.0900	11.4%	3,497
AVON PRODUCTS	33.57	0.84	0.1300	15.9%	10,576
BAKER HUGHES	41.85	0.60	0.0183	3.3%	11,000
BALL	50.18	0.40	0.0965	10.5%	4,037
BANK OF AMERICA	15.99	0.04	0.0667	6.9%	89,368
BANK OF NEW YORK MELLON	27.52	0.36	0.1083	12.3%	31,822
BAXTER INTL.	56.24	1.16	0.1230	14.6%	33,638
BB&T	25.63	0.60	0.0533	7.8%	14,298
BECTON DICKINSON	72.21	1.48	0.1267	15.0%	16,566

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
BED BATH & BEYOND	37.28	0.00	0.1282	12.8%	6,631
BEMIS	28.13	0.90	0.0950	13.0%	2,485
BEST BUY	40.79	0.56	0.1264	14.2%	12,403
BIG LOTS	25.83	0.00	0.1367	13.7%	1,250
BIOGEN IDEC	47.20	0.00	0.1216	12.2%	13,841
BJ SVS.	19.16	0.20	0.0633	7.4%	3,728
BLACK & DECKER	55.37	0.48	0.0650	7.4%	2,695
BMC SOFTWARE	38.11	0.00	0.1350	13.5%	5,085
BOEING	51.79	1.68	0.1217	15.9%	33,835
BOSTON PROPERTIES	64.93	2.00	0.0500	8.3%	6,354
BOSTON SCIENTIFIC	8.78	0.00	0.1348	13.5%	11,352
BRISTOL MYERS SQUIBB	23.94	1.28	0.1067	16.7%	45,986
BROADCOM 'A'	29.23	0.00	0.1200	12.0%	7,491
BROWN-FORMAN 'B'	51.06	1.20	0.0841	11.0%	4,992
BURL.NTHN.SANTA FE C	88.92	1.60	0.1286	14.9%	27,078
C R BARD	78.64	0.68	0.1425	15.2%	8,263
CA	22.18	0.16	0.1160	12.4%	9,666
CABOT OIL & GAS 'A'	39.53	0.12	0.0900	9.3%	3,031
CAMERON INTERNATIONAL	38.94	0.00	0.1250	12.5%	5,108
CAMPBELL SOUP	33.22	1.10	0.0815	11.8%	10,924
CAPITAL ONE FINL.	38.36	0.20	0.1100	11.6%	12,940
CARDINAL HEALTH	30.10	0.70	0.1257	15.2%	12,849
CARNIVAL	31.78	0.00	0.1500	15.0%	15,657
CATERPILLAR	56.60	1.68	0.1150	14.8%	27,718
CB RICHARD ELLIS GP.	11.88	0.00	0.0607	6.1%	891
CBS 'B'	13.01	0.20	0.0248	4.1%	5,410
CELGENE	53.59	0.00	0.3874	38.7%	24,907
CENTERPOINT EN.	13.19	0.76	0.1800	25.0%	4,522
CENTURYTEL	34.59	2.80	0.0643	15.3%	2,819
CEPHALON	57.16	0.00	0.1443	14.4%	5,493
CF INDUSTRIES HDG.	86.60	0.40	0.0350	4.0%	2,739
CH ROBINSON WWD.	57.66	1.00	0.1482	16.8%	9,095
CHARLES SCHWAB	18.21	0.24	0.1675	18.3%	18,044
CHESAPEAKE ENERGY	25.48	0.30	0.1133	12.6%	10,895
CHEVRON	76.23	2.72	0.0304	6.8%	155,757
CHUBB	50.10	1.40	0.1000	13.1%	17,810
CIGNA	31.31	0.04	0.1040	10.5%	4,932
CINCINNATI FINL.	25.83	1.58	0.1000	16.9%	4,662
CINTAS	28.47	0.47	0.1083	12.7%	3,615
CISCO SYSTEMS	23.58	0.00	0.1150	11.5%	100,180
CITIGROUP	4.08	0.00	0.0500	5.0%	38,583
CITRIX SYS.	39.52	0.00	0.1382	13.8%	4,302
CLOROX	59.86	2.00	0.0975	13.5%	7,817
CME GROUP	316.18	4.60	0.1860	20.3%	14,089
CMS ENERGY	14.29	0.50	0.0700	10.8%	2,423
COACH	34.65	0.30	0.1500	16.0%	7,160
COCA COLA	55.86	1.64	0.0821	11.4%	105,128
COCA COLA ENTS.	20.12	0.32	0.0008	1.7%	6,275
COGNIZANT TECH.SLTN.'A'	42.03	0.00	0.2450	24.5%	5,541
COLGATE-PALM.	81.34	1.76	0.1040	12.8%	34,336
COMCAST 'A'	15.51	0.38	0.1242	15.2%	35,099
COMERICA	28.77	0.20	0.0537	6.1%	2,922
COMPUTER SCIS.	53.85	0.00	0.1150	11.5%	5,690
CONAGRA FOODS	22.03	0.80	0.1025	14.3%	7,431

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
CONSOL EN.	47.33	0.40	0.5600	57.3%	6,318
CONSOLIDATED EDISON	42.51	2.36	0.0232	8.1%	10,800
CONSTELLATION BRANDS 'A'	16.26	0.00	0.1135	11.4%	3,218
CONSTELLATION EN.	32.73	0.96	0.1390	17.3%	4,710
CORNING	16.33	0.20	0.1300	14.4%	16,445
COSTCO WHOLESALE	58.73	0.72	0.1307	14.5%	22,654
COVENTRY HEALTH CARE	21.92	0.00	0.1100	11.0%	2,263
CSX	46.33	0.88	0.1484	17.0%	13,941
CUMMINS	45.92	0.70	0.1467	16.4%	6,045
CVS CAREMARK	33.23	0.30	0.1425	15.3%	42,800
D R HORTON	11.18	0.15	0.0575	7.2%	2,533
DANAHER	70.98	0.16	0.1225	12.5%	18,189
DARDEN RESTAURANTS	32.53	1.00	0.1203	15.5%	3,937
DAVITA	56.98	0.00	0.1290	12.9%	4,931
DEAN FOODS NEW	17.59	0.00	0.1125	11.3%	2,902
DEERE	49.66	1.12	0.0900	11.5%	18,113
DELL	14.70	0.00	0.1000	10.0%	20,630
DENBURY RES.	14.39	0.00	0.1715	17.2%	3,389
DENTSPLY INTL.	34.25	0.20	0.1380	14.5%	4,193
DEVON ENERGY	68.21	0.64	0.0650	7.5%	31,338
DEVRY	55.08	0.20	0.2250	22.9%	3,839
DIAMOND OFFS.DRL.	99.42	0.50	0.1720	17.8%	9,260
DIRECTV 'A'	29.45	0.00	0.1210	12.1%	24,335
DISCOVER FINANCIAL SVS.	15.46	0.08	0.0700	7.6%	4,679
DOMINION RES.	36.09	1.75	0.0816	13.5%	21,161
DOVER	40.24	1.04	0.1633	19.4%	6,630
DOW CHEMICAL	26.37	0.60	0.1618	18.8%	13,903
DR PEPPER SNAPPLE GROUP	27.82	0.60	0.0450	6.8%	4,290
DTE ENERGY	39.27	2.12	0.0600	11.8%	5,963
DUKE ENERGY	16.47	0.96	0.0446	10.7%	19,954
E I DU PONT DE NEMOURS	33.10	1.64	0.0117	6.3%	23,759
E*TRADE FINANCIAL	1.62	0.00	0.1450	14.5%	704
EASTMAN CHEMICAL	56.95	1.76	0.0700	10.3%	2,396
EATON	62.78	2.00	0.0900	12.5%	8,562
EBAY	23.47	0.00	0.1377	13.8%	18,860
ECOLAB	45.22	0.62	0.1278	14.3%	8,711
EDISON INTL.	33.74	1.26	0.0664	10.7%	10,892
EL PASO	9.97	0.04	0.0900	9.4%	6,154
ELECTRONIC ARTS	18.29	0.00	0.1743	17.4%	5,359
ELI LILLY	35.22	1.96	0.0593	12.0%	44,864
EMC	17.12	0.00	0.1166	11.7%	21,836
EMERSON ELECTRIC	40.47	1.34	0.1233	16.1%	28,619
ENTERGY	79.68	3.00	0.1042	14.6%	16,176
EOG RES.	89.00	0.58	0.0900	9.7%	17,638
EQT	42.81	0.88	0.1167	14.0%	4,703
EQUIFAX	28.95	0.16	0.1025	10.9%	3,501
ESTEE LAUDER COS.'A'	45.11	0.55	0.1100	12.4%	3,677
EXELON	48.71	2.10	0.0844	13.2%	37,725
EXPEDIA	24.99	0.00	0.1000	10.0%	2,404
EXPEDITOR INTL.OF WASH.	33.41	0.38	0.1545	16.8%	7,097
EXPRESS SCRIPTS 'A'	83.17	0.00	0.1733	17.3%	14,135
EXXON MOBIL	72.11	1.68	0.0232	4.7%	415,223
FAMILY DOLLAR STORES	29.09	0.54	0.1180	13.9%	3,538
FASTENAL	38.09	0.74	0.1513	17.4%	5,407

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
FEDERATED INVRS.'B'	26.57	0.96	0.0933	13.3%	1,878
FEDEX	81.15	0.44	0.0916	9.8%	19,907
FIDELITY NAT.INFO.SVS.	23.28	0.20	0.1483	15.8%	3,258
FIFTH THIRD BANCORP	9.83	0.04	0.0500	5.4%	4,850
FIRST HORIZON NATIONAL	13.01	0.00	0.0550	5.5%	2,195
FIRST SOLAR	131.40	0.00	0.4638	46.4%	12,796
FIRSTENERGY	44.44	2.20	0.0933	14.8%	15,784
FISERV	47.39	0.00	0.1675	16.8%	6,108
FLIR SYS.	29.50	0.00	0.2107	21.1%	4,391
FLOWSERVE	100.43	1.08	0.1017	11.4%	3,118
FLUOR	45.33	0.50	0.1520	16.5%	9,037
FMC	54.59	0.50	0.1000	11.0%	3,333
FMC TECHNOLOGIES	55.28	0.00	0.1967	19.7%	3,307
FOREST LABS.	29.90	0.00	0.0886	8.9%	7,902
FORTUNE BRANDS	41.22	0.76	0.1000	12.0%	6,359
FPL GROUP	52.32	1.89	0.0973	13.7%	21,229
FRANKLIN RESOURCES	107.68	0.88	0.1050	11.4%	15,556
FREEPORT-MCMOR.CPR.& GD.	78.08	0.60	0.1000	10.8%	10,657
FRONTIER COMMUNICATIONS	7.65	1.00	0.0157	15.5%	2,677
GAMESTOP	24.59	0.00	0.1850	18.5%	3,903
GANNETT	11.77	0.16	0.0400	5.4%	2,030
GAP	21.87	0.34	0.1200	13.8%	9,827
GENERAL DYNAMICS	66.57	1.52	0.0900	11.5%	23,290
GENERAL ELECTRIC	15.51	0.40	0.0950	12.4%	165,559
GENERAL MILLS	67.29	1.96	0.1000	13.2%	19,933
GENUINE PARTS	36.87	1.60	0.0826	13.0%	6,159
GENWORTH FINANCIAL	10.79	0.00	0.1018	10.2%	1,226
GENZYME	51.48	0.00	0.1799	18.0%	18,314
GILEAD SCIENCES	44.84	0.00	0.1705	17.1%	46,436
GOLDMAN SACHS GP.	173.24	1.40	0.1458	15.5%	39,253
GOODRICH	58.75	1.08	0.1425	16.4%	4,871
GOOGLE 'A'	560.79	0.00	0.1931	19.3%	78,579
H&R BLOCK	19.85	0.60	0.1175	15.2%	7,823
HALLIBURTON	29.16	0.36	0.1550	16.9%	17,580
HARLEY-DAVIDSON	26.40	0.40	0.1000	11.7%	4,407
HARMAN INTL.INDS.	36.50	0.00	0.2250	22.5%	1,121
HARRIS	42.95	0.88	0.1700	19.4%	5,366
HARTFORD FINL.SVS.GP.	25.39	0.20	0.1000	10.9%	5,179
HASBRO	29.35	0.80	0.0900	12.0%	4,095
HCP	30.16	1.84	0.1050	17.4%	6,463
HEALTH CARE REIT	44.12	2.72	0.1600	23.3%	3,997
HESS	57.01	0.40	0.0700	7.8%	19,098
HEWLETT-PACKARD	49.13	0.32	0.1250	13.2%	87,781
HJ HEINZ	41.45	1.68	0.0700	11.4%	12,194
HOME DEPOT	27.03	0.90	0.0975	13.4%	41,895
HONEYWELL INTL.	38.46	1.21	0.1000	13.5%	25,042
HORMEL FOODS	37.59	0.84	0.0815	10.6%	4,232
HOSPIRA	47.04	0.00	0.1095	10.9%	4,304
HUDSON CITY BANC.	13.31	0.60	0.1480	20.1%	7,855
HUMANA	39.88	0.00	0.1383	13.8%	6,431
HUNTINGTON BCSH.	3.91	0.04	0.0800	9.1%	2,852
ILLINOIS TOOL WORKS	47.29	1.24	0.1042	13.3%	18,540
IMS HEALTH	18.20	0.12	0.1167	12.4%	2,955
INTEGRYS ENERGY GROUP	37.61	2.72	0.1110	19.4%	3,396

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
INTEL	19.76	0.56	0.1200	15.2%	82,929
INTERCONTINENTAL EX.	104.27	0.00	0.2200	22.0%	5,274
INTERNATIONAL BUS.MCHS.	125.53	2.20	0.1100	13.0%	116,639
INTERPUBLIC GP.	6.67	0.00	0.2050	20.5%	1,878
INTL.GAME TECH.	19.30	0.24	0.1360	15.0%	3,928
INTL.PAPER	24.45	0.10	0.0600	6.4%	5,130
INTUIT	29.59	0.00	0.1420	14.2%	7,960
INTUITIVE SURGICAL	271.22	0.00	0.3160	31.6%	4,910
INVESCO	22.29	0.41	0.1200	14.1%	5,432
IRON MNT.	24.80	0.00	0.2000	20.0%	5,001
ITT	51.93	0.85	0.1300	14.9%	9,119
J M SMUCKER	56.45	1.40	0.0787	10.6%	5,192
JABIL CIRCUIT	14.41	0.28	0.1875	21.1%	1,555
JACOBS ENGR.	40.60	0.00	0.1640	16.4%	6,275
JANUS CAPITAL GP.	13.64	0.04	0.0975	10.1%	1,419
JDS UNIPHASE	7.05	0.00	0.1714	17.1%	973
JOHNSON & JOHNSON	62.02	1.96	0.0824	11.7%	166,613
JOHNSON CONTROLS	26.22	0.52	0.1350	15.8%	11,314
JP MORGAN CHASE & CO.	42.81	0.20	0.0967	10.2%	109,171
JUNIPER NETWORKS	26.27	0.00	0.1906	19.1%	9,762
KELLOGG	51.88	1.50	0.0933	12.5%	17,096
KEYCORP	5.85	0.04	0.0460	5.3%	4,198
KIMBERLY-CLARK	63.09	2.40	0.0767	11.8%	21,921
KIMCO REALTY	12.82	0.64	0.0800	13.5%	5,006
KLA TENCOR	34.00	0.60	0.1375	15.8%	3,782
KOHL'S	55.87	0.00	0.1325	13.3%	11,445
KRAFT FOODS	26.93	1.16	0.0915	13.9%	40,577
KROGER	22.43	0.38	0.0925	11.1%	17,401
L3 COMMUNICATIONS	78.72	1.40	0.1067	12.7%	9,232
LABORATORY CORP.OF AM. HDG.	71.45	0.00	0.1340	13.4%	7,091
LEGG MASON	29.87	0.12	0.1033	10.8%	3,314
LEGGETT&PLATT	19.88	1.04	0.3598	43.2%	2,399
LENNAR 'A'	13.41	0.16	0.0867	10.0%	1,318
LEXMARK INTL.	25.18	0.00	0.0750	7.5%	2,204
LIFE TECHNOLOGIES	49.17	0.00	0.1517	15.2%	4,305
LIMITED BRANDS	18.00	0.60	0.1236	16.2%	3,530
LINCOLN NAT.	24.31	0.04	0.1075	10.9%	5,581
LINEAR TECH.	27.73	0.88	0.1633	20.1%	5,035
LOCKHEED MARTIN	74.36	2.52	0.1150	15.3%	33,591
LORILLARD	78.51	4.00	0.0800	13.6%	9,414
LOWE'S COMPANIES	21.56	0.36	0.1125	13.1%	33,739
LSI	5.55	0.00	0.1750	17.5%	2,109
M&T BK.	64.33	2.80	0.0245	7.0%	5,951
MACY'S	17.82	0.20	0.0960	10.8%	4,904
MARRIOTT INTL.'A'	26.45	0.00	0.1167	11.7%	7,265
MARSH & MCLENNAN	23.26	0.80	0.0867	12.5%	12,605
MARSHALL & ILSLEY	5.93	0.04	0.0644	7.2%	3,370
MASCO	13.35	0.30	0.1500	17.6%	4,222
MASSEY EN.	34.91	0.24	0.8600	87.3%	1,455
MASTERCARD	229.35	0.60	0.1810	18.4%	15,078
MATTEL	19.68	0.75	0.0900	13.2%	5,860
MCAFEE	40.80	0.00	0.1264	12.6%	5,129
MCCORMICK & CO NV.	35.30	1.04	0.1050	13.8%	3,768
MCDONALDS	60.68	2.20	0.0938	13.4%	70,840

Company	P$_0$	D$_0$	Growth	Cost of Equity	Market Cap $ (mils)
MCKESSON	61.10	0.48	0.1238	13.3%	10,929
MEADWESTVACO	25.46	0.92	0.1100	15.1%	1,944
MEDCO HEALTH SLTN.	59.68	0.00	0.1675	16.8%	22,018
MEDTRONIC	39.97	0.82	0.1232	14.6%	36,432
MEMC ELT.MATERIALS	13.40	0.00	0.1525	15.3%	3,537
MERCK & CO.	34.46	1.52	0.0457	9.3%	64,546
METLIFE	35.23	0.74	0.1164	14.0%	28,165
METROPCS COMMS.	7.01	0.00	0.2850	28.5%	5,440
MICROCHIP TECH.	26.23	1.36	0.1280	18.8%	3,520
MICRON TECHNOLOGY	8.03	0.00	0.1225	12.2%	2,536
MICROSOFT	28.68	0.52	0.1006	12.1%	182,537
MILLIPORE	69.53	0.00	0.1300	13.0%	2,918
MOLEX	20.04	0.61	0.1425	17.8%	1,468
MOLSON COORS BREWING 'B'	46.90	0.96	0.1133	13.6%	7,571
MONSANTO	76.38	1.06	0.3000	31.8%	40,710
MONSTER WORLDWIDE	15.93	0.00	0.1750	17.5%	1,457
MOODY'S	23.85	0.42	0.1500	17.0%	5,316
MORGAN STANLEY	31.64	0.20	0.1126	12.0%	18,933
MOTOROLA	8.38	0.00	0.1010	10.1%	10,153
MURPHY OIL	58.36	1.00	0.1372	15.7%	9,399
MYLAN	17.33	0.00	0.1013	10.1%	3,004
NABORS INDS.	21.49	0.00	0.1500	15.0%	3,674
NASDAQ OMX GROUP	19.34	0.00	0.2058	20.6%	5,346
NATIONAL OILWELL VARCO	43.97	0.40	0.1200	13.0%	11,852
NATIONAL SEMICON.	14.20	0.32	0.1271	15.3%	2,475
NETAPP	29.91	0.00	0.1350	13.5%	4,751
NEW YORK TIMES 'A'	9.43	0.00	0.0300	3.0%	1,087
NEWELL RUBBERMAID	14.68	0.20	0.0875	10.2%	2,923
NEWMONT MINING	48.32	0.40	0.1715	18.1%	17,137
NEWS CORP.'A'	12.32	0.12	0.0715	8.2%	17,243
NICOR	38.95	1.86	0.0285	7.8%	1,557
NIKE 'B'	63.99	1.08	0.1300	14.9%	20,734
NISOURCE	14.10	0.92	0.0300	9.9%	3,063
NOBLE ENERGY	68.23	0.72	0.1067	11.8%	9,304
NORDSTROM	34.11	0.64	0.1050	12.6%	3,274
NORFOLK SOUTHERN	49.46	1.36	0.1072	13.8%	17,959
NORTHEAST UTILITIES	24.02	0.95	0.0672	11.0%	3,868
NORTHERN TRUST	51.54	1.12	0.1183	14.3%	11,754
NORTHROP GRUMMAN	53.06	1.72	0.1280	16.5%	16,118
NOVELL	4.14	0.00	0.1283	12.8%	1,309
NOVELLUS SYSTEMS	21.90	0.00	0.1333	13.3%	1,240
NUCOR	42.96	1.44	0.0900	12.7%	14,856
NVIDIA	14.06	0.00	0.1450	14.5%	4,764
NYSE EURONEXT	26.46	1.20	0.1375	19.0%	7,664
O REILLY AUTOMOTIVE	37.66	0.00	0.1442	14.4%	4,105
OCCIDENTAL PTL.	79.59	1.32	0.0441	6.2%	50,002
OFFICE DEPOT	6.55	0.00	0.1000	10.0%	1,017
OMNICOM GP.	36.80	0.60	0.0717	8.9%	8,718
ORACLE	22.14	0.20	0.1429	15.3%	91,285
OWENS ILLINOIS NEW	33.43	0.00	0.1863	18.6%	4,426
PACCAR	37.50	0.36	0.1175	12.8%	11,127
PACTIV	24.25	0.00	0.1050	10.5%	3,183
PALL	33.29	0.58	0.1333	15.3%	3,317
PARKER-HANNIFIN	54.75	1.00	0.1267	14.7%	7,285

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
PATTERSON COMPANIES	26.32	0.00	0.1333	13.3%	2,338
PAYCHEX	30.16	1.24	0.1325	18.0%	9,533
PEABODY ENERGY	42.88	0.28	0.4100	41.9%	7,156
PENNEY JC	31.16	0.80	0.1150	14.4%	4,781
PEOPLES UNITED FINANCIAL	16.32	0.61	0.1100	15.2%	6,010
PEPCO HOLDINGS	15.75	1.08	0.0400	11.3%	3,725
PEPSI BOTTLING GP.	37.55	0.72	0.0815	10.2%	4,882
PEPSICO	61.19	1.80	0.0888	12.1%	86,354
PERKINELMER	19.59	0.28	0.1300	14.6%	1,740
PFIZER	17.79	0.72	0.0102	5.2%	122,452
PG&E	42.45	1.68	0.0720	11.5%	13,970
PHILIP MORRIS INTL.	49.36	2.32	0.1150	16.8%	89,964
PINNACLE WEST CAP.	34.27	2.10	0.0450	11.1%	3,391
PIONEER NTRL.RES.	42.32	0.08	0.1075	11.0%	2,288
PLUM CREEK TIMBER	33.70	1.68	0.0767	13.1%	5,522
PNC FINL.SVS.GP.	51.95	0.40	0.0900	9.8%	20,585
POLO RALPH LAUREN 'A'	78.47	0.40	0.1375	14.3%	2,634
PPG INDUSTRIES	59.03	2.16	0.0794	11.9%	7,107
PPL	30.66	1.38	0.1233	17.5%	11,870
PRAXAIR	81.84	1.60	0.1237	14.6%	19,697
PREC.CASTPARTS	103.15	0.12	0.1660	16.7%	9,147
PRICELINE.COM	191.94	0.00	0.2333	23.3%	3,044
PRINCIPAL FINL.GP.	25.79	0.50	0.1033	12.5%	5,986
PROCTER & GAMBLE	60.21	1.76	0.1000	13.3%	182,737
PROGRESS ENERGY	38.88	2.48	0.0596	12.9%	10,581
PROGRESSIVE OHIO	16.87	0.00	0.0733	7.3%	10,099
PROLOGIS	12.94	0.60	0.0600	11.0%	3,730
PRUDENTIAL FINL.	48.47	0.70	0.1507	16.7%	12,901
PUB.SER.ENTER.GP.	31.29	1.33	0.0300	7.4%	15,502
PUBLIC STORAGE	77.07	2.20	0.2900	32.7%	12,200
PULTE HOMES	9.64	0.00	0.1000	10.0%	3,126
QLOGIC	18.33	0.00	0.1040	10.4%	1,709
QUALCOMM	43.86	0.68	0.1400	15.8%	60,342
QUANTA SERVICES	20.81	0.00	0.1200	12.0%	3,724
QUEST DIAGNOSTICS	57.52	0.40	0.1317	14.0%	10,080
QUESTAR	40.22	0.52	0.0900	10.4%	6,330
QWEST COMMS.INTL.	3.80	0.32	0.0320	12.2%	5,928
R R DONNELLEY & SONS	21.27	1.04	0.1200	17.6%	2,979
RADIOSHACK	18.22	0.25	0.0833	9.8%	1,557
RANGE RES.	50.01	0.16	0.1392	14.3%	6,067
RAYTHEON 'B'	49.15	1.24	0.1240	15.3%	21,734
RED HAT	27.94	0.00	0.1925	19.3%	2,711
REGIONS FINL.NEW	5.46	0.04	0.0575	6.5%	6,034
REPUBLIC SVS.'A'	27.58	0.76	0.1200	15.1%	9,676
REYNOLDS AMERICAN	49.66	3.60	0.0650	14.4%	11,652
ROBERT HALF INTL.	24.44	0.48	0.1560	17.9%	3,202
ROCKWELL AUTOMATION	43.86	1.16	0.1233	15.3%	4,829
ROCKWELL COLLINS	52.22	0.96	0.1397	16.1%	6,505
ROPER INDS.NEW	51.89	0.38	0.1420	15.0%	4,027
ROSS STORES	45.49	0.44	0.1480	15.9%	3,916
ROWAN COMPANIES	24.54	0.00	0.1200	12.0%	1,949
RYDER SYSTEM	42.10	1.00	0.1153	14.2%	2,230
SAFEWAY	21.99	0.40	0.0833	10.3%	10,315
SAIC	18.23	0.00	0.1260	12.6%	4,030

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
SALESFORCE.COM	63.36	0.00	0.3827	38.3%	4,069
SANDISK	22.76	0.00	0.1417	14.2%	2,729
SARA LEE	11.77	0.44	0.0475	8.7%	6,983
SCANA	35.43	1.88	0.0501	10.7%	4,286
SCHLUMBERGER	63.73	0.84	0.0270	4.1%	56,005
SCRIPPS NETWORKS INTACT. 'A'	39.31	0.30	0.1047	11.3%	3,056
SEALED AIR	21.09	0.48	0.1067	13.2%	2,403
SEARS HOLDINGS	73.14	0.00	0.1000	10.0%	5,109
SEMPRA EN.	52.75	1.56	0.0699	10.2%	10,833
SHERWIN-WILLIAMS	60.46	1.42	0.1225	14.9%	6,995
SIGMA ALDRICH	53.40	0.58	0.0856	9.7%	5,242
SIMON PR.GP.	72.19	2.70	0.1300	17.3%	11,439
SLM	10.57	0.00	0.1350	13.5%	4,542
SMITH INTL.	28.56	0.48	0.2067	22.7%	5,792
SNAP-ON	37.90	1.20	0.1067	14.2%	2,359
SOUTHERN	32.46	1.75	0.0559	11.4%	28,404
SOUTHWEST AIRLINES	9.49	0.02	0.1100	11.2%	6,421
SOUTHWESTERN ENERGY	44.76	0.00	0.3350	33.5%	11,285
SPECTRA ENERGY	19.59	1.00	0.0950	15.2%	10,360
ST.JUDE MEDICAL	36.14	0.00	0.1449	14.5%	11,317
STANLEY WORKS	47.79	1.32	0.1000	13.1%	2,796
STAPLES	23.13	0.33	0.1357	15.2%	13,219
STARBUCKS	20.94	0.00	0.1816	18.2%	7,274
STARWOOD HTLS.& RSTS. WORLDWIDE	32.79	0.20	0.0975	10.4%	3,887
STATE STREET	44.24	0.04	0.1107	11.2%	17,939
STERICYCLE	53.70	0.00	0.1860	18.6%	4,480
STRYKER	48.73	0.60	0.1751	19.0%	16,464
SUN MICROSYSTEMS	8.60	0.00	0.0850	8.5%	3,301
SUNTRUST BANKS	21.37	0.04	0.0580	6.0%	9,873
SUPERVALU	14.98	0.70	0.0500	10.0%	3,176
SYMANTEC	17.40	0.00	0.1036	10.4%	11,999
SYSCO	27.04	1.00	0.1200	16.2%	14,577
T ROWE PRICE GP.	50.14	1.00	0.1164	13.9%	9,563
TARGET	48.19	0.68	0.1255	14.1%	27,205
TECO ENERGY	14.80	0.80	0.0768	13.6%	2,709
TELLABS	6.06	0.00	0.0650	6.5%	1,672
TENET HLTHCR.	5.33	0.00	0.1000	10.0%	525
TERADATA	29.34	0.00	0.0550	5.5%	2,728
TERADYNE	9.37	0.00	0.1500	15.0%	873
TESORO	14.00	0.20	0.0565	7.2%	1,990
TEXAS INSTS.	24.66	0.48	0.1388	16.1%	20,561
TEXTRON	19.26	0.08	0.1275	13.2%	3,636
THE HERSHEY COMPANY	37.48	1.19	0.0700	10.4%	5,905
THERMO FISHER SCIENTIFIC	46.69	0.00	0.1450	14.5%	14,909
TIFFANY & CO	41.25	0.68	0.1133	13.2%	3,159
TIME WARNER	28.94	0.70	0.1033	13.0%	37,668
TIME WARNER CABLE	41.57	0.00	0.0904	9.0%	19,789
TITANIUM METALS	10.16	0.00	0.1000	10.0%	1,731
TJX COS.	38.10	0.48	0.1317	14.6%	8,906
TORCHMARK	43.08	0.60	0.0826	9.8%	3,872
TOTAL SYSTEM SERVICES	16.66	0.28	0.1213	14.0%	2,923
TRAVELERS COS.	50.59	1.32	0.0967	12.6%	26,029
TYSON FOODS 'A'	12.54	0.16	0.1477	16.2%	2,706
UNION PACIFIC	61.59	1.08	0.1545	17.5%	26,360

Company	P_0	D_0	Growth	Cost of Equity	Market Cap $ (mils)
UNITED PARCEL SER.	56.81	1.80	0.1167	15.3%	37,385
UNITED TECHNOLOGIES	65.78	1.54	0.1000	12.6%	51,618
UNITEDHEALTH GP.	27.71	0.03	0.1163	11.8%	33,047
UNUM GROUP	20.13	0.33	0.1000	11.8%	6,440
US BANCORP	23.39	0.20	0.0757	8.5%	41,827
US.STEEL	43.26	0.20	0.1425	14.8%	4,590
V F	73.73	2.40	0.1040	14.0%	6,274
VARIAN MED.SYS.	44.02	0.00	0.1800	18.0%	4,267
VERISIGN	23.21	0.00	0.1643	16.4%	3,986
VERIZON COMMUNICATIONS	30.93	1.90	0.0634	13.0%	92,259
VIACOM 'B'	29.38	0.00	0.1023	10.2%	11,190
VISA 'A'	78.49	0.50	0.2040	21.2%	24,164
VORNADO REALTY TST.	64.46	2.60	0.0500	9.3%	8,869
VULCAN MATERIALS	49.35	1.00	0.2270	25.2%	7,705
WAL MART STORES	52.12	1.09	0.1145	13.8%	221,702
WALGREEN	38.39	0.55	0.1250	14.1%	26,484
WALT DISNEY	29.63	0.35	0.0914	10.4%	43,499
WASTE MAN.	31.68	1.16	0.1200	16.2%	16,468
WATERS	58.80	0.00	0.1265	12.7%	3,765
WATSON PHARMS.	36.92	0.00	0.1515	15.2%	2,631
WELLPOINT	51.37	0.00	0.1207	12.1%	22,637
WELLS FARGO & CO	27.76	0.20	0.0760	8.4%	105,379
WESTERN DIGITAL	37.78	0.00	0.1140	11.4%	2,663
WESTERN UNION	18.95	0.06	0.1242	12.8%	10,587
WEYERHAEUSER	39.52	0.20	0.0600	6.5%	6,746
WHIRLPOOL	75.03	1.72	0.0955	12.1%	3,415
WHOLE FOODS MARKET	29.10	0.00	0.1250	12.5%	1,427
WILLIAMS COS.	19.40	0.44	0.1500	17.6%	9,027
WINDSTREAM	10.26	1.00	0.0300	13.4%	4,003
WISCONSIN ENERGY	45.60	1.35	0.0936	12.6%	4,925
WW GRAINGER	95.81	1.84	0.1173	13.9%	5,995
WYNDHAM WORLDWIDE	18.30	0.16	0.1500	16.0%	1,438
WYNN RESORTS	61.94	0.00	0.2500	25.0%	5,440
XCEL ENERGY	20.03	0.98	0.0687	12.2%	8,379
XILINX	23.14	0.64	0.1300	16.2%	4,996
XL CAP.'A'	17.61	0.40	0.1100	13.5%	1,240
XTO EN.	43.26	0.50	0.1088	12.2%	22,900
YAHOO	16.13	0.00	0.1899	19.0%	17,821
YUM! BRANDS	34.40	0.84	0.1182	14.6%	15,204
ZIMMER HDG.	55.76	0.00	0.1082	10.8%	9,212
ZIONS BANCORP.	14.51	0.04	0.0700	7.3%	2,805

(4) An electronic version (Microsoft Excel) of all data and work papers used in the analysis, with all data and equations left intact is supplied on the CD provided with this filing. Please refer to folder named KAW_R_AGDR1#465_042610. Also see response to KAW_R_AGDR1#2.

For the electronic version of this response, refer to KAW_R_AGDR1#465_042610.pdf.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2010-00036
ATTORNEY GENERAL'S FIRST REQUEST FOR INFORMATION

Witness: Dr. James H. Vander Weide

466. Please provide an electronic version (Microsoft Excel) of the following Schedules, with all data and equations left intact: Schedules 1,2,3,4,5,6,7,and 8.

Response:

Dr. Vander Weide's electronic work papers are supplied in response to KAW_R_AGDR1#2.

For the electronic version of this response, refer to KAW_R_AGDR1#466_042610.pdf.