The Debate over Future Stock Market Returns

The impressive performance of the stock market over the last two decades and the resultant increase in investor expectations have spurred numerous articles that call attention to the historical market return and caution investors about their overly optimistic expectations. The articles point to the recent stock market performance which was well below its historical average, while the bond market, on the contrary, has performed quite well. In fact, many studies are predicting stock returns that are much lower when compared to the historical average. A few even predict that stocks won't outperform bonds in the future.

Approaches to Calculating the Equity Risk Premium

The expected return on stocks over bonds, the equity risk premium, has been estimated by a number of authors who have utilized a variety of different approaches. Such studies can be categorized into four groups based on the approaches they have taken. The first group of studies derive the equity risk premium from historical returns between stocks and bonds. Supply side models, using fundamental information such as earnings, dividends, or overall productivity, are used by the second group to measure the expected equity risk premium. A third group adopts demand side models that derive the expected returns of equities through the payoff demanded by equity investors for bearing the additional risk. The opinions of financial professionals through broad surveys are relied upon by the fourth and final group.

This section is based upon the work by Roger G. Ibbotson and Peng Chen, who combined the first and second approaches to arrive at their forecast of the equity risk premium.[11] By proposing a new supply side methodology, the Ibbotson-Chen study challenges current arguments that future returns on stocks over bonds will be negative or close to zero. The results affirm the relationship between the stock market and the overall economy.
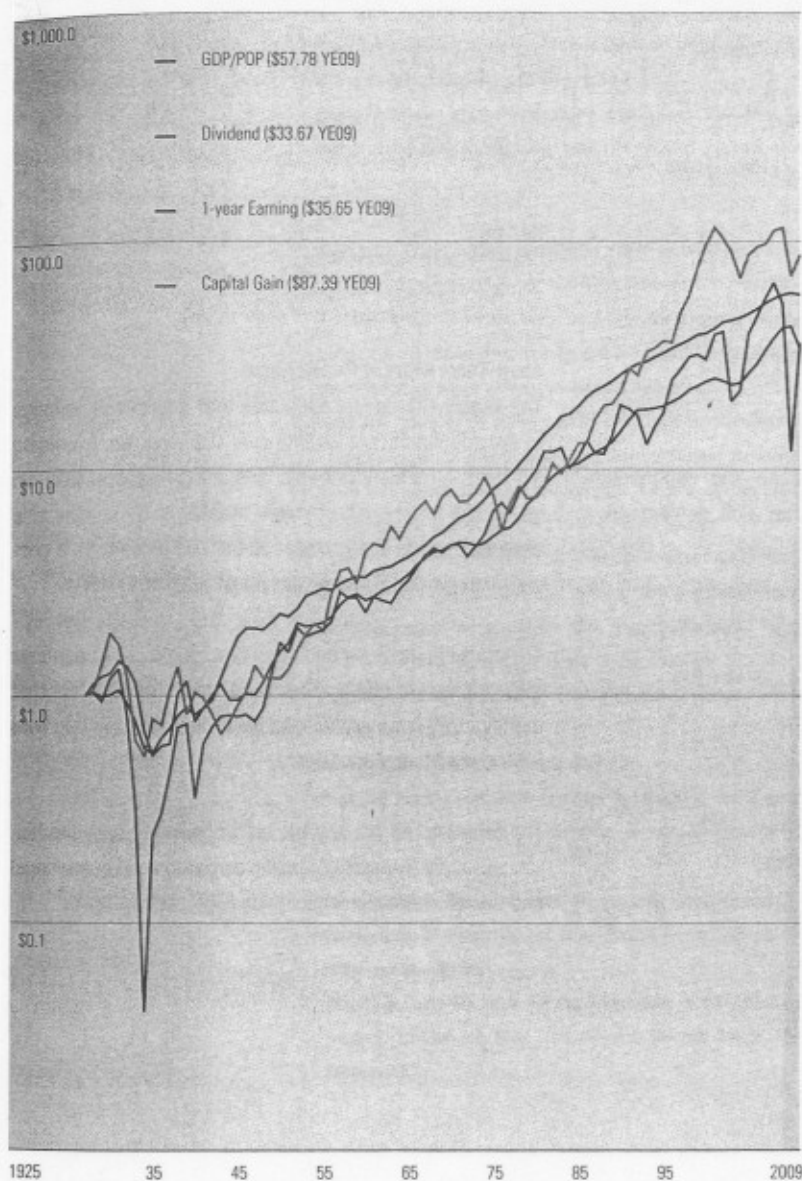
Supply Model

Long-term expected equity returns can be forecasted by the use of supply side models. The supply of stock market returns is generated by the productivity of the corporations in the real economy. Investors should not expect a much higher or lower return than that produced by the companies in the real economy. Thus, over the long run, equity return should be close to the long-run supply estimate.

Earnings, dividends, and capital gains are supplied by corporate productivity. Graph 10-8 illustrates that earnings and dividends have historically grown in tandem with the overall economy (GDP per capita). However, GDP per capita did not outpace the stock market. This is primarily because the P/E ratio increased 2.45 times during the same period. So, assuming that the economy will continue to grow, all three should continue to grow as well.

Forward-Looking Earnings Model

Roger G. Ibbotson and Peng Chen forecast the equity risk premium through a supply side model using historical data. They utilized an earnings model as the basis for their supply side estimate. The earnings model breaks the historical equity return into four pieces, with only three historically being supplied by companies: inflation, income return, and growth in real earnings per share. The growth in the P/E ratio, the fourth piece, is a reflection of investors' changing prediction of future earnings growth. The past supply of corporate growth is forecasted to continue; however, a change in investors' predictions is not. P/E rose dramatically from 1980 through 2001 because people believed that corporate earnings were going to grow faster in the future. This growth in P/E drove a small portion of the rise in equity returns over the same period.

Graph 10-8: Capital Gains, GDP Per Capita, Earnings, and Dividends

Index (Year-End 1925 = $1.00

GDP/POP ($57.78 YE09)

Dividend ($33.67 YE09)

1-year Earning ($35.65 YE09)

Capital Gain ($87.39 YE09)

Year-end

Data from 1925–2009

Graph 10-9 illustrates the price to earnings ratio from 1926 to 2009. The P/E ratio, using one-year average earnings, was 10.22 at the beginning of 1926 and ended the year 2009 at 25.06, an average increase of 1.07 percent per year. The highest P/E was 136.55 recorded in 1932, while the lowest was 7.07 recorded in 1948. Ibbotson Associates revised the calculation of the P/E ratio from a one-year to a three-year average earnings for use in equity forecasting.

This is because reported earnings are affected not only by the long-term productivity, but also by "one-time" items that do not necessarily have the same consistent impact year after year. The three-year average is more reflective of the long-term trend than the year-by-year numbers. The P/E ratio calculated using the three-year average of earnings had an increase of 1.31 percent per year.

Graph 10-9: Large Company Stocks

P/E Ratio

1-year P/E   3-year P/E

Year-end
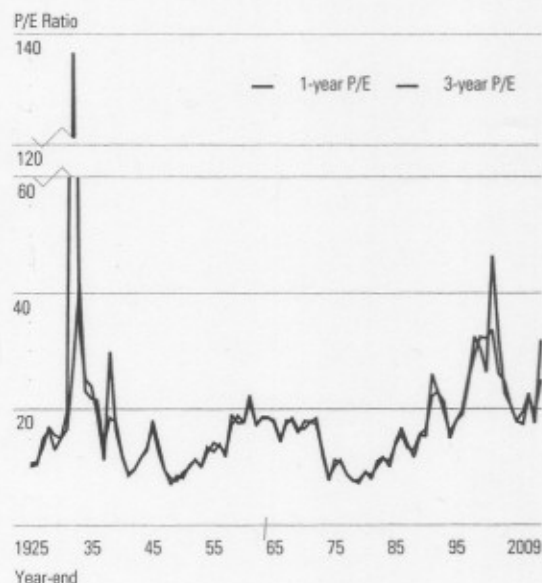
The historical P/E growth factor, using three-year earnings, of 1.31 percent per year is subtracted from the equity forecast, because it is not believed that P/E will continue to increase in the future. The market serves as the cue. The current P/E ratio is the market's best guess for the future of corporate earnings and there is no reason to believe, at this time, that the market will change its mind.

Thus, the supply of equity return only includes inflation, the growth in real earnings per share, and income return. The forward-looking earnings model calculates the long-term supply of U.S. equity returns to be 8.44 percent:

$$SR = \left[(1+CPI) \times (1+g_{REPS}) - 1\right] + Inc + Rinv$$
$$9.00\%^* = \left[(1+3.01\%) \times (1+1.58\%) - 1\right] + 4.15\% + 0.20\%$$

where:
SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
g_{REPS} = the growth in real earning per share;
Inc = the income return;
Rinv = the reinvestment return.

The equity risk premium, based on the supply side earnings model, is calculated to be 3.08 percent on a geometric basis:

$$SR = \left[(1+CPI) \times (1+g_{REPS}) - 1\right] + Inc + Rinv$$
$$9.00\%^* = \left[(1+3.01\%) \times (1+1.58\%) - 1\right] + 4.15\% + 0.20\%$$

*difference due to rounding

where:
SERP = the supply side equity risk premium;
SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
RRf = the real risk-free rate.

Converting the geometric average into an arithmetic average results in an equity risk premium of 5.73%:

$$R_A = R_G + \frac{\sigma^2}{2}$$
$$5.18\% = 3.08\% + \frac{20.51\%^2}{2}$$

where:
R_A = the arithmetic average;
R_G = the geometric average;
σ = the standard deviation of equity returns.

Long-Term Market Predictions

The supply side model estimates that stocks will continue to provide significant returns over the long run, averaging around 8.44 percent per year, assuming historical inflation rates. The equity risk premium, based on the supply side earnings model, is calculated to be 3.08 percent on a geometric basis and 5.18 percent on an arithmetic basis.

In the future, Ibbotson and Chen predict increased earnings growth that will offset lower dividend yields. The fact that earnings will grow as dividend payouts shrink is in line with Miller and Modigliani Theory.

The forecasts for the market are in line with both the historical supply measures of public corporations (i.e. earnings) and overall economic productivity (GDP per capita). ▌

Endnotes

[1] **Page 114** The standard deviation is the square root of the variance; hence the term "mean-variance" in describing this form of the optimization problem.

[2] **Page 115** Markowitz, Harry M., Portfolio Selection: Efficient Diversification of Investments, New York: John Wiley & Sons, 1959.

[3] **Page 115** For more information about Morningstar *EnCorr®* software, refer to the Investment Tools and Resources page at the back of this book, or within the United States, call +1 866 910-0840. Outside the United States, call +44 020 3107-0020.

[4] **Page 115** It is also possible to conduct a simulation using entire data sets, that is, without estimating the statistical parameters of the data sets. Typically, in such a nonparametric simulation, the frequency of an event occurring in the simulated history is equal to the frequency of the event occurring in the actual history used to construct the data set.

[5] **Page 116** The expected capital gain on a par bond is self-evidently zero. For a zero-coupon (or other discount) bond, investors expect the price to rise as the bond ages, but the expected portion of this price increase should not be considered a capital gain. It is a form of income return.

[6] **Page 119** For more information about Morningstar *EnCorr®* software and other Morningstar products, refer to the Investment Tools and Resources page at the back of this book, or within the United States, call +1 866 910-0840. Outside the United States, call +44 020 3107-0020.

[7] **Page 120** See Chapter 11, "Wealth Forecasting with Monte Carlo Simulation" for more information.

[8] **Page 120** See Markowitz and Usmen [2003].

[9] **Page 123** Ranking investment strategies by forecasted GM is sometimes described as applying the Kelly Criterion; an idea promoted by William Poundstone [2005].

[10] **Page 125** Other researchers have also proposed using GM and CVaR as the measures or reward and risk in an efficient frontier. See for example Sheikh and Qiao, [2009].

[11] **Page 126** "Long-Run Stock Returns: Participating in the Real Economy," Roger G. Ibbotson and Peng Chen, Financial Analysts Journal, January/February 2003.