

A REVIEW OF THE EQUITY RISK PREMIUM

OCTOBER 2013



INTRODUCTION

One of the most important numbers in investing is the expected return to be earned for taking on higher risk. No rational investor would accept greater risk, whether risk is measured by volatility or by potential loss of capital, without expecting a higher rate of return. An investor's allocation between lower risk/lower return assets and higher risk/higher return assets is the main determinant of investment results. The most basic investment risk premium that investors consider is the equity risk premium (ERP), meaning the additional return expected to be earned in the future for investing in risky equities instead of safer securities. The ERP is usually measured as the return of the broad equity market minus the return of US government securities, either 90 day T-Bills or 10-Year Treasury bonds.

With a bond, the investor knows the interest payments they will earn, the amount of principal that will be returned and the timing of these cash flows. Although there is risk that both the size of the cash flows and their timing could be different than expected, this risk is generally small for government issues and high quality corporate bonds. With an equity security, there are multiple uncertainties. The size and timing of any dividend payments or other distributions are uncertain and the price at which an investor can sell the equity is also uncertain. In return for these uncertainties, the equity investor demands a higher return on their investment. This required excess return is the equity risk premium.

While this risk premium is critical in determining an asset allocation, the process for estimating the ERP has been anything but clear to most investors. Further complicating the process is that there are different uses for the ERP. One of the original uses of the ERP was in determining financing costs in corporate project analysis and security analysis. For this use, a preference is placed on a stable ERP that can be used to compare projects. Portfolio investors, on the other hand, are mainly interested in the additional return that can be earned by taking on risk. For this purpose, a stable ERP estimate is not as important as an effective assessment of the current market opportunity.

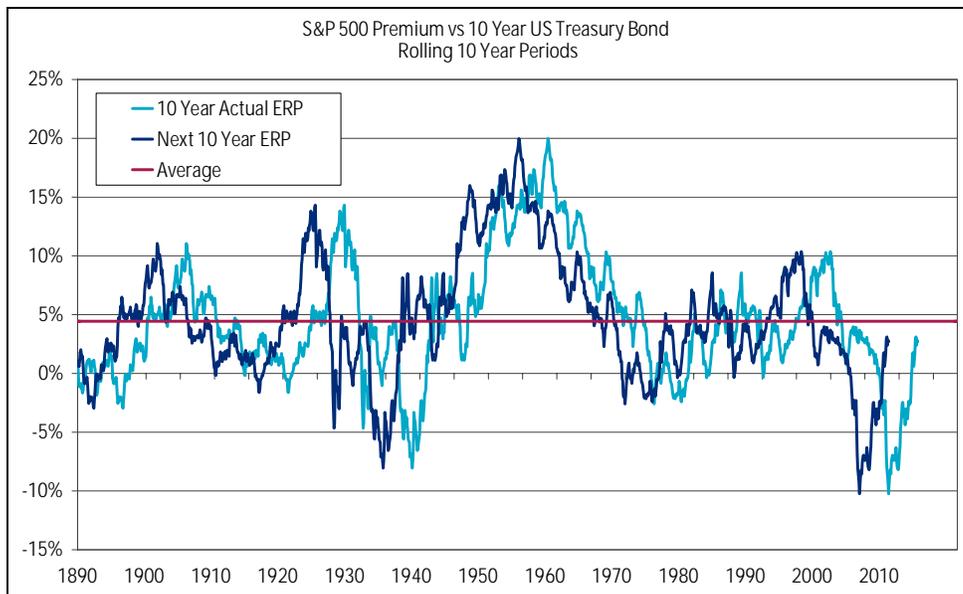
There are three broad methods of developing an estimate of the ERP: Historical, Fundamental Forecast (also called a supply model), and Market Implied (also called a market demand model). We'll review these in turn and discuss their effectiveness and uses.

HISTORICAL ERP

The easiest ERP calculation is the historical return of equities vs the historical return of bonds. This indicates the return premium (or deficit) that was actually earned in the past for investing in equities instead of bonds. Many investors have simply assumed that the actual historical excess return of stocks versus bonds is the most unbiased predictor of the future ERP.

To test the efficacy of using the historical ERP as an estimate of the future ERP, we show in Figure 1 the historical ERP for rolling ten year periods compared to the return for the following ten years. A quick glance indicates that the past results might be a reasonable predictor of the future ERP on average, but at many points in the past, the historical ERP is a terrible predictor of the future ERP. Essentially, if the recent history (the red line) isn't typical, then the future (black line) is likely to be unusual as well, and in the opposite direction.

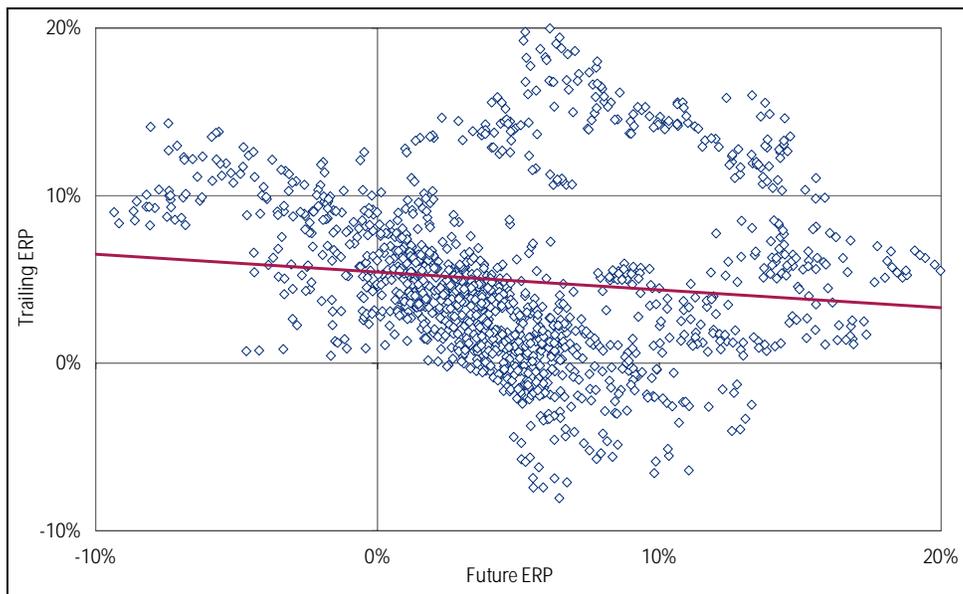
Figure 1: Historical Equity Risk Premium



Source: Shiller; Stock Market Data Used in "Irrational Exuberance" Princeton University Press, 2000, 2005, updated

The historical results show a long pattern of positive excess returns for equities vs bonds, affirming the existence of an equity risk premium in the past. The average excess return of equities vs bonds since 1890 is around 4.4%. In the middle of the 20th century, following the world wars and the Great Depression in the first half of the century, equity returns rose sharply, reflecting a greater tolerance for risk and confidence in the future. Rising interest rates in the 1970's lowered bond returns and equity returns alike. The dot com bubble was the last period of strong ERPs. The actual ERP has been below average in the 21st century.

Figure 2: Trailing ERP vs Future ERP



Source: Shiller; Stock Market Data Used in "Irrational Exuberance" Princeton University Press, 2000, 2005, updated

Figure 2 compares the Trailing 10 year ERP vs the subsequent 10 year ERP as a scatter diagram. Clearly the ERP varies significantly over time and the actual ERP has been a poor predictor of the future ERP. As the trend line shows, there is actually a negative correlation between the recent past and the future ERP. Investors need a more dynamic measure of the expected ERP in order to make effective decisions.

Fundamental Model of equity returns

Since history isn't a reliable guide to future ERP prospects, current conditions can be considered to create a forward looking ERP estimate. In order to develop a forward assumption, the components of the returns of equities and bonds need to be understood and then estimated.

Bond Returns

The expected return on a bond is very straight forward to estimate. At any given point in time, the expected return on a bond held to maturity is the bond's current yield. So, in measuring the equity risk premium, we can simply subtract the current bond yield from the equity return estimate to get the ERP. Of course, if the bond is sold before maturity, its return will depend on the movement of interest rates, which impact the price received.

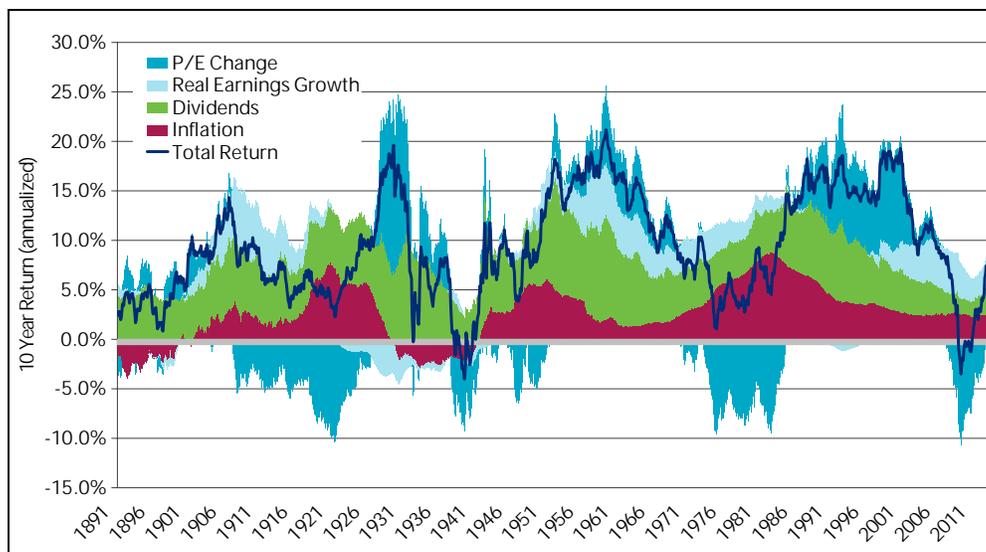
Equity returns come from three main sources:

- **Income:** Cash or securities returned to investors, through dividends, stock buybacks, or other means. The income return should account for any new shares that are issued by the company, which dilutes existing shareholders. This adjustment can also be made in the growth calculation, discussed next.
- **Growth of Dividends and/or Earnings:** Growing earnings creates the potential for growing dividends, either through a hike in the dividend or through reinvestment of the earnings in the company, creating future growth. In a simple model where price = P/E Ratio * Earnings, the price will increase in proportion with the earnings growth.
- **Valuation / Repricing:** Markets place different values on future earnings at different times, depending on the market environment, prospects for the future, political uncertainty, etc. The well known PE ratio is one metric of valuation that expands and contracts over time. The ERP can also be a measure of valuation. Valuation / Repricing is the most volatile component of equity returns.

Historical Components of Equity Returns

We can decompose actual historical equity returns into these three primary components to see how each has contributed to actual returns in the past. The following chart shows the components of the S&P 500 return over time (inflation must be removed to distinguish real equity returns from nominal equity returns).

Figure 3: Decomposition of Equity Returns (10 Year Windows)



Source: Shiller; Stock Market Data Used in "Irrational Exuberance" Princeton University Press, 2000, 2005, updated

Clearly, income and inflation are the most stable components of equity returns. Earnings growth is moderately stable. Repricing (P/E expansion or contraction) is clearly the most volatile component of equity returns. A reasonable estimate of the forward equity risk premium must consider the likely impact of repricing in order to be effective.

Dividend Discount Model

In order to develop an estimate of future equity returns using current conditions, a basic pricing model of the equity market is needed. The Dividend Discount Model (DDM) is the common basis for most equity valuation models. This model says simply that a stock's value is equal to the present value of its future cash flows.

$$P_t = \sum (D_{t+1}) / (1+k)^t$$

The discount rate (k) used to determine the present value of these cash flows, plus the current dividend, is in essence the expected equity return. If this number can be estimated, then subtracting the expected bond return will provide the ERP.

If the discount rate (k) and the growth rate of dividends over time (g) can be assumed to be constant, this formula can be simplified to $P = D_1 / (k-g)$. We can re-arrange this formula to provide expected return or extract components of valuation, such as the growth rate or discount rate. A simple return forecast model using the DDM is:

Expected Return = Current Income + Growth + Repricing. This structure matches the attribution of returns shown in the chart above.

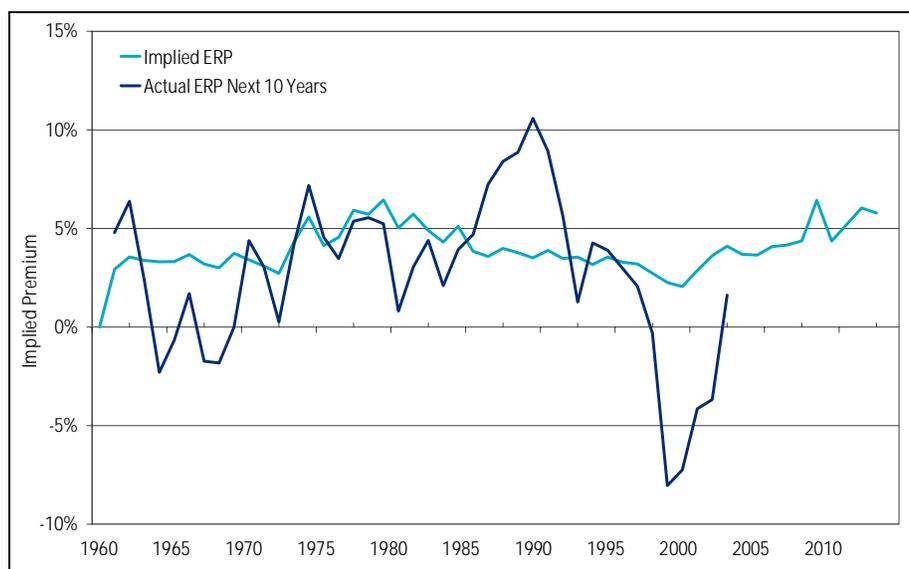
This model is quite simple, but also quite effective. One simplification that is often relaxed is the use of a constant growth rate in future dividends. In practice, most companies are expected to eventually grow no faster than the broad economy. To account for this, a multi-stage model can combine year by year dividend forecasts for the first few years, when such estimates might be more accurate, with a longer term estimated dividend growth rate that is similar to the broad economy.

MARKET IMPLIED ERP (DEMAND MODEL)

Market implied pricing provides a market driven estimate of the ERP. The implied ERP indicates the additional return current investors demand to invest in equities vs safe government securities. A workable model for the market implied ERP uses a two stage DDM with current analyst forecasts used for the first stage growth and a GDP or other fundamental rate for the terminal growth rate¹.

This calculation essentially identifies the DDM discount rate (k) that equates the average expected growth for the broad market to the current market price. This is the ERP currently required by the average investor.

Figure 4: Implied Equity Risk Premium for US Equity Market



Source: Implied ERP estimates from Aswath Damodaran, NYU; FCFE Model.

¹ A few additional assumptions are required for this model, including a terminal valuation

The results of the implied model are much more indicative of the future equity return prospect relative to bonds than a simple extrapolation of recent history. The implied returns are much more stable than the actual results, but generally have a similar pattern. Valuation is clearly not considered in the implied model, which is reflective of the market's typical process whereby current valuations are assumed to be reasonable.

The implied ERP model is most useful as an estimate of the current investor demanded risk premium. For a company considering issuing stock, for example, the market implied ERP is the appropriate figure to use in their pricing calculations. It indicates what expected return is needed in order to set the security price. However, this is also the main drawback of the implied ERP model for asset allocation: markets are known to be driven by behavioral biases and not fundamentals at critical times.

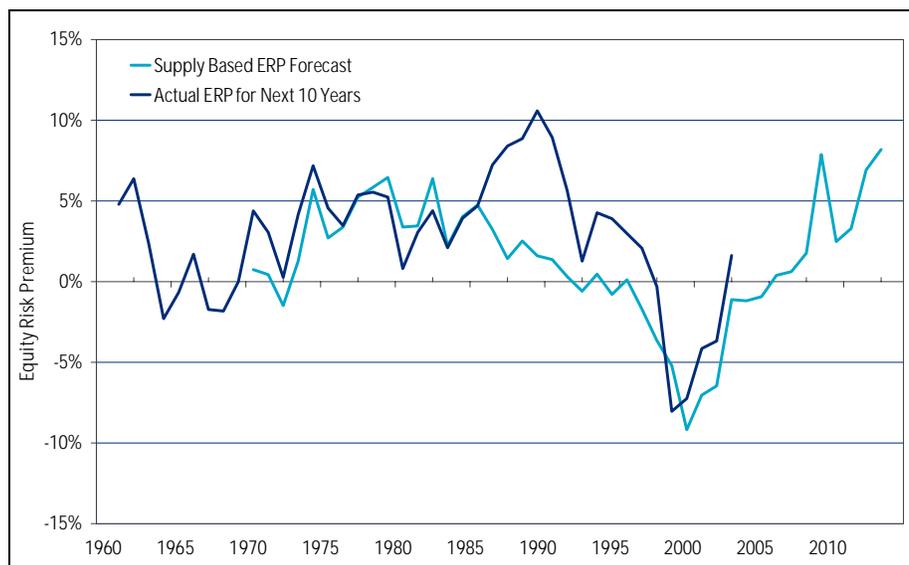
FUNDAMENTAL FORECAST ERP (SUPPLY MODEL)

The sources of equity returns are well known, as discussed above: Income, Growth and Repricing. Reasonable forecasts of these variables can provide an effective estimate of future equity returns by determining the supply of future equity returns, as opposed to the demand. This is a longer term view that uses the principle that prices follow fundamentals.

- **Income:** relatively easy to estimate, dividends plus share repurchases less new issuance. The format of the shareholder return has varied over time, with share repurchases growing in recent years. Over the long term, around 45% of earnings have been paid out, so that is a reasonable long term estimate of income to use in a model.²
- **Growth:** Dividend or earnings growth, which are considered the same in this model, is clearly difficult to estimate over the short to medium term. Over the longer term, it is easier to estimate, as the shorter term volatility will smooth out. Over the long term, we can assume that earnings or dividends will grow at a rate similar to that of the broad economy.
- **Repricing:** While unpredictable in the short to medium term, market valuation over the long term can be assumed to bear a relationship to interest rates and economic growth. We assume that the market valuation will revert to the long term average level over the next ten years. If the current PE is high, then the expected repricing impact is negative, and vice versa.

As shown in Figure 2, repricing is the most volatile component of returns and is therefore the most difficult to predict over the short to medium term. We use the 10 Year Shiller PE (Also called Cyclically Adjusted PE) in order to estimate the impact of repricing. The reason we use this long term PE calculation is that a PE multiple calculated using last year's earnings or the expected earnings for next year is very sensitive to the accuracy of that earnings estimate. Earnings in any one year might be high or low compared to a long term normal level of earnings, and a PE calculated from a skewed earnings number will be skewed itself. So by using an average of earnings over the last 10 years, we can be more confident that the earnings number we are basing our market valuation on is not well above or well below the likely earnings in the future.

Figure 5: Supply Based Equity Risk Premium for US Equity Market



Source: Mercer Calculations using data from Aswath Damodaran, NYU

² The 45% payout ratio is also consistent with the long term valuation and earnings growth estimates used.

The supply model is clearly a much more effective estimator of the future realized equity risk premium than either the historical ERP or the market implied ERP. The incorporation of valuation estimates through an assumption of reversion to the mean in the P/E ratio allows the DDM forecast model to more effectively track future realized equity returns. The results shown above use simple assumptions for income and growth, which result in a slightly higher ERP than Mercer would assume going forward. The P/E reversion in this model is assumed to occur over 10 years and to revert to the median historical PE since 1970.

CONCLUSION

The Equity Risk Premium is one of the most critical figures in finance and investing, but is also frequently mis-estimated. The confusion stems from the multiple ways to estimate it and the multiple ways in which it is used. Each of the calculations we have shown here is a correct calculation of the ERP, but each is useful in only some situations. We rely most heavily on the supply or forecast ERP in order to evaluate the benefit of riskier investments.

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ABOUT THE EQUITY STRATEGIC RESEARCH TEAM

Mercer's Equity Strategic Research Team (SRT) is comprised primarily of field consultants from Mercer's traditional Investment Consulting and Investment Management practices, as well as members of Mercer's Equity Research Boutique. The SRT seeks to provide a client-facing perspective on research, new ideas, intellectual capital, and to serve as a resource for questions regarding this asset class and related consulting processes.

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Jay Love is a partner and senior consultant in the Atlanta office of Mercer Investment Consulting, Inc. Jay's responsibilities include serving as a senior field consultant for large public and private pension plans and also serving in a strategic research role. Jay has worked with a wide range of clients in his 17 years with Mercer, ranging from hospital operating assets to sovereign wealth funds.

Jay serves on a number of research and policy groups for Mercer, including the Best of Mercer committee, which is a global committee charged with bringing Mercer's best ideas to our clients; Mercer's US Investment Policy Committee, which is responsible for developing Mercer's firm-wide views on current investment issues and guiding the direction of Mercer's client consulting; Mercer's US and International Equity Manager Ratings Review Committees, which determines Mercer's view of specific investment manager strategies.

Jay leads Mercer's US Capital Market Assumptions development, which produces the asset class return and risk assumptions used throughout Mercer in the US. Jay is also responsible for developing the stochastic economic simulation model used in Mercer's studies.

Jay is a member of Mercer's Financial Strategies Group (FSG), which provides specialty Asset Liability consulting to clients. Jay's area of focus in the FSG is alpha strategies and interest rate hedging implementation.

Jay holds a Bachelor of Science in economics from Millsaps College. He is a CFA charterholder, and a member of the Atlanta Society of Financial Analysts and CFA Institute.

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