

What Is the Equity Premium Today?

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1. Introduction

The equity premium is the expected excess return on a broad stock index over a safe bond market investment. It is the reward that investors can expect to receive for taking on equity risk, and thus has an important influence on asset allocation decisions.

Estimates of the equity premium depend on a number of details: the choice of stock market index (for example, US or global), safe investment (bills or long-term inflation-indexed bonds), starting point (today's market conditions or unknown future market conditions), investment horizon (one quarter, one year, or one decade), and return concept (continuously compounded log return vs. simple return, or equivalently geometric average return vs. arithmetic average return). It is tempting to neglect the distinction between geometric and arithmetic average returns, but at around 1.5% the difference is too large to ignore.

This paper compares four commonly used methods for estimating the equity premium. The first method presumes that the true equity premium is a constant, independent of current market conditions; the other methods adjust their estimates to reflect the prices at which a stock market investment can be made today. None of the methods use high-frequency predictors of stock returns, so they deliver longer-run estimates for an investment horizon of 3 to 10 years, relevant for strategic but not for tactical asset allocation. These methods are illustrated using both US and global equity data.

2. Alternative methodologies

There are four major approaches to estimating the equity premium.

- A. *Take an average of historically realized excess returns.* If the true equity premium is a constant, then realized excess stock returns equal the equity premium plus noise, and the equity premium can be estimated by averaging these excess returns. This method delivers a high number. Dimson, Marsh, and Staunton (2006) report geometric averages of 5.5% for the US and 4.75% globally over the period 1900-2005. It requires a very long historical sample because stock returns are noisy. With a 15% standard deviation per year and returns that are uncorrelated over time, the standard error of the historical average is 1.5% even with 100 years of data. But over long periods of time it is plausible that the equity premium changes, which invalidates the method. This problem is particularly severe if stock prices rise when the equity premium declines; then the historical average return rises when the true equity premium falls. Plausibly, this is exactly what happened in the late 20th Century.
- B. *Estimate a historical relationship between realized returns and initial conditions, specifically market valuations relative to dividends or earnings.* Value investors have always argued that the level of stock prices influences the return that investors can expect to receive. If this is correct, then realized excess stock returns should be lower when valuations are higher, a relationship that can be estimated by regression analysis of historical data. Campbell and Shiller (1998, 2005) applied this method to US data and found that it implied a negative equity premium in the late 1990's and the year 2000. Despite strong earnings growth since then, valuations are still high enough today for this method to generate bearish forecasts.

A problem with this method is that valuations are so high relative to the 20th Century norm that the forecasts require extrapolating historical relationships beyond the range of the historical data, a practice that is always dangerous. In addition, high valuations have lasted long enough to raise the suspicion that there has been a permanent change. Goyal and Welch (2007) point out that the out-of-sample results of the regression-based approach are mediocre, especially in the last two decades. Campbell and Thompson (2007) respond that reasonable restrictions on the forecasts, for example the restriction that the equity premium should always be positive, make this method perform about as well as method A.

- C. *Adjust historically realized excess returns for conditions that are unlikely to repeat in the future.* This method is advocated by Fama and French (2002) and Dimson, Marsh, and Staunton.
- a. Increases in market valuations, relative to dividends or earnings, cannot continue indefinitely; to the extent that historical average returns have been generated by such increases, they should be adjusted downwards to reflect static valuation ratios going forward. Dimson, Marsh, and Staunton find that the adjustment is about 0.7% in the US and globally, so the adjusted geometric equity premia are 4.8% in the US and 4.0% globally.
 - b. Valuation ratios represent initial conditions for an investor. Dividend yields have fallen by over 2.5% in the US relative to the long-term historical average. Even with a 1% adjustment for share repurchases, the decline is over 1.5%. This decline can be subtracted from the historical average return to generate an equity premium for an investor buying stocks at today's prices. With this further adjustment, the implied equity premium is 3.3% in the US.
- D. *Infer the equity premium from steady-state valuation models, using current valuation ratios and historical averages for other inputs to the models.* In a steady state with a constant expected stock return and constant dividend growth, the dividend-price ratio is constant and equals the expected stock return less the dividend growth rate. This relationship, the famous Gordon growth model, can be used to estimate the expected stock return. Campbell and Thompson advocate this approach, which is similar to method C with both adjustments a and b.

A variant of this method, which Campbell and Thompson find to have worked particularly well in historical US data, estimates steady-state growth from the historical accounting return on equity (ROE) times the retention ratio, and replaces the dividend-price ratio with the ratio of smoothed earnings to prices times the payout ratio. Since the retention ratio and the payout ratio sum to one, this method delivers an expected real stock return that is a weighted average of the smoothed earnings-price ratio and historical average ROE. To convert from a real return forecast to an excess return forecast, the final step is to subtract an estimate of the short-term real interest rate or real yield on long-term inflation-indexed bonds.

3. An illustrative implementation

Figure 1 shows that smoothed earnings-price ratios, with earnings smoothed over three years to eliminate cyclical noise, have fallen dramatically since the early 1980's and have been in the 3% to 5% range for the last ten years.



Figure 1: Smoothed Earnings-Price Ratios

During the same period, however, Figure 2 shows that profitability has increased from a long-run historical average of around 6% to much higher values above 10%.

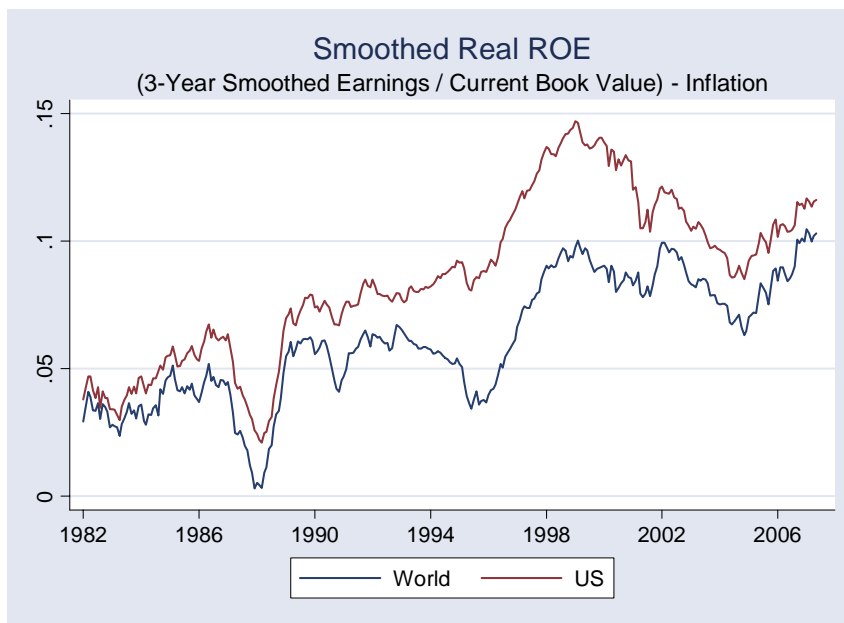


Figure 2: Smoothed Profitability

Meanwhile payout ratios have fluctuated widely around an average of about 50%.

Putting these numbers together, an earnings-based estimate of the real return on US equities, assuming constant 6% real profitability and a 50% payout rate, was about 9% in the early 1980's and fell to just above 4% in the

year 2000. Since then it has increased slightly to 5%. If one uses the 3-year moving average of profitability illustrated in Figure 2, and a similar 3-year moving average of the payout ratio, the current real return estimate increases by almost 4% to 9%, reflecting the high current profitability and low payout ratios of US corporations. At the world level, the current real return number is comparable to the US number if a fixed profitability estimate is used, but the adjustment for current profitability is somewhat smaller at about 2.5%.

To convert these numbers into estimates of the equity premium, one needs to subtract a safe real interest rate. Figure 3 shows that the real yield on inflation-indexed bonds was about 3.5% in the 1990's, fell below 2% in the early 2000's, and is now about 2.5%.

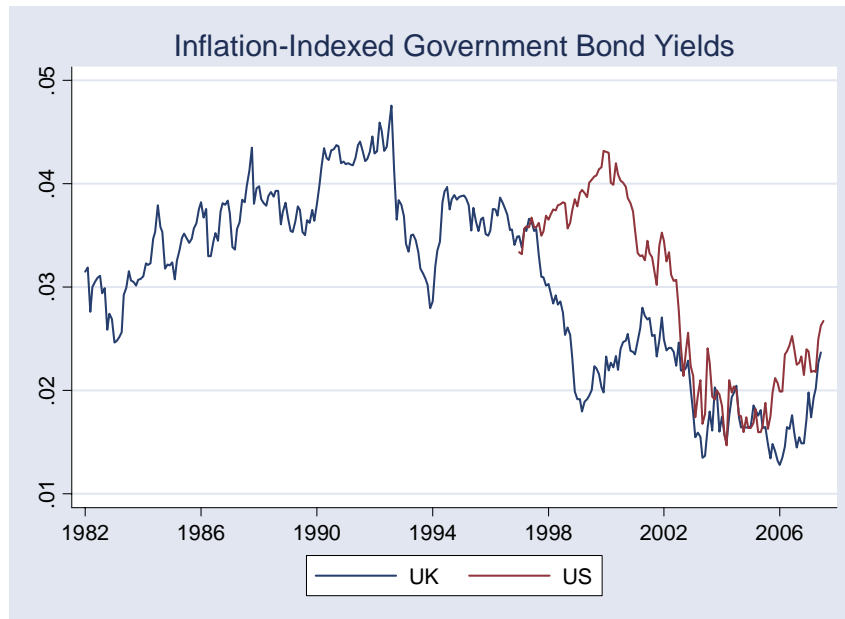


Figure 3: Inflation-Indexed Bond Yields

The implied equity premium, as of the end of May 2007, is 2.6% in the US with constant profitability and 6.5% with recent profitability; for the world, it is 2.8% with constant profitability and 5.2% with recent profitability. Figure 4 shows the history of the world equity premium under these two alternative assumptions.

Obviously a key question is whether the high profitability of US and global corporations can be expected to continue. On the one hand, globalization has increased the global supply of labor relative to capital, reducing wage pressure and increasing profitability; on the other hand, profitability has been increased by favorable business cycle and political conditions that may not continue. Historically, profitability has shown temporary fluctuations and low payout rates (high reinvestment rates) have predicted declining profitability; thus it seems wise to place more weight on long-term averages than on recent data. If one puts a weight of 0.75 on the long-term average, with 0.25 on the recent data, the implied equity premium is 3.6% in the US and 3.4% for the world as a whole. This number, like those reported earlier in this paper, is a geometric average equity premium; for a short-term arithmetic average, one should add a volatility correction of about 1.5%. Note that the equity premium is this high in large part because the safe real interest rate has declined over the past decade as illustrated in Figure 3.

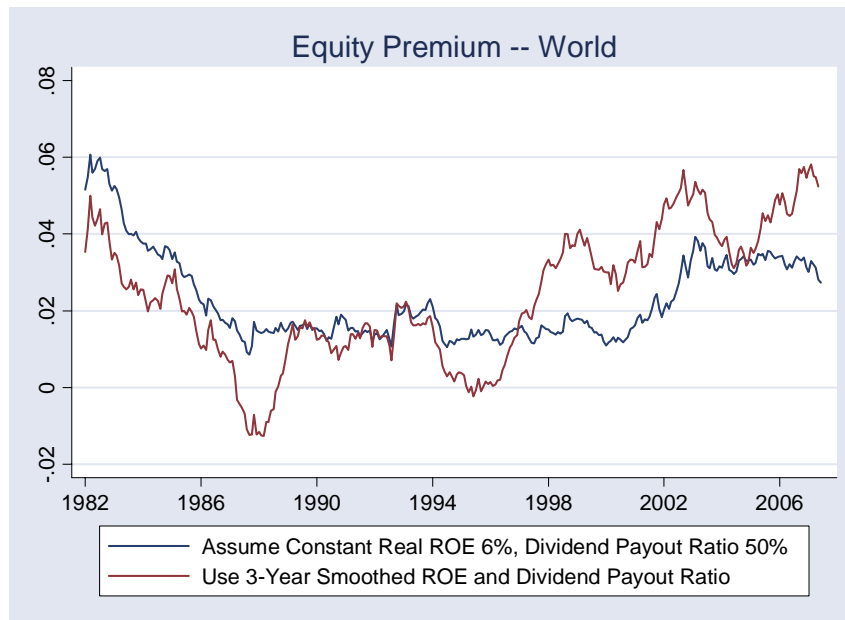


Figure 4: Historical World Equity Premium Estimates

It is important to ask why valuations increased, reducing the equity premium, in the late 20th Century. One plausible story is that increased stock-market participation and understanding of equity risk has reduced effective risk aversion. We are in a "new era", but it is a new investing era in which investors accept lower returns rather than a new fundamental era in which growth will proceed at a faster rate. As further evidence that investors have reduced return expectations, Graham and Harvey (2007) survey CFO's of major US corporations and report that the median forecast of the geometric equity premium is 3.4%, very much in line with the valuation analysis shown here.

While the equity premium is lower today than it was for much of the 20th Century, the current estimates discussed in this paper are all comfortably positive. Investors can still reasonably expect to earn a premium for taking equity risk above the relatively low real yields that are available from inflation-indexed government bonds.

4. References

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