How Large is the Equity Premium Today?

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The equity premium

• The equity premium is the expected excess return on a broad stock index over a safe bond market investment
• To measure it, we need to make choices:
  – What stock index? (I will emphasize the World index but also show results for the US and Canada)
  – What safe investment? (I will use long-term inflation-indexed bonds)
  – What starting point? (I will use current conditions)
  – What investment horizon? (I will discuss forecasting methods suitable for a 5-10 year holding period)
  – What kind of expectation? (I will use a geometric average)
Key questions

• Do we believe that the equity premium has declined since 1950?
  – If so, then the historical mean return over-states future returns

• Do we believe in mean reversion? Price-earnings ratios are at historically high levels. Do we think they will fall?
  – If we believe in mean reversion, then we should be extremely pessimistic about stock market returns over the next five years
  – If we do not believe in mean reversion, then regression-based forecasts of the equity premium are overly pessimistic

• Corporate profits are at historical highs. Do we believe they will remain high?
Alternative ways to estimate the equity premium

Two extreme approaches:
1. Take an average of historically realized excess returns.

I prefer two compromise approaches:
3. Adjust historical averages to reflect the decline in market valuation ratios.
4. Predict the equity premium with valuation ratios. Use logic rather than historical statistics to determine the predictive model.
1. Historical average excess returns

- This gives you a high number
  - Dimson, Marsh, and Staunton (DMS, 2006) report geometric averages of 4.7% for the world, 5.5% for the US, and 4.5% for Canada over the period 1900-2005
  - The numbers are even higher in the late 20th Century

- Problem: you need a long historical sample because stock returns are noisy, but over a long period it is plausible that the equity premium changes
  - With 100 years of data and 15% standard deviation of returns per year, the standard error of the estimate is 1.5%
  - Since stock prices rise when the equity premium falls, a decline in the equity premium leads you to increase your estimate just when the true number is falling
2. Predict the market with yields

• In the US, the dividend-price ratio (dividend yield) is close to a historic low, and the smoothed earnings-price ratio (smoothed earnings yield) is also low relative to its 20th Century average

• Regression results in US data, 1881-2006:
  Realized Annual Premium = -.05 + 2.52 × Prior Dividend Yield
  Realized Annual Premium = -.06 + 1.78 × Prior Earnings Yield

• This predicts very low premia!
  – World dividend yield currently 1.8% → premium is -.5%
  – World earnings yield currently 4% → premium is 1.1%
2. Predict the market with yields

- Extrapolating from the historical relationship between yields and subsequent returns gives a very gloomy view.
- Why are the regression coefficients greater than 1?
  - Realized Annual Premium = \(-0.05 + 2.52 \times \text{Prior Dividend Yield}\)
  - When the dividend yield falls by 1%, the equity premium falls by 2.52%. Why is the effect so large?
- Historically, low dividend yields hurt you two ways
  - You earned low dividends
  - Mean reversion: dividend yields tended to rise back to historical norms through price declines
- Suppose that there has been a permanent shift in valuations, so we never return to historical norms
  - Then we get low dividends, but do not expect price declines
  - If we do not expect mean reversion, then the future is okay
S&P 500 10-Year Average Dividend/Price

Average D/P = 4.4%

D/P in 1/06 = 1.69%
1.7% in 2006

Historical average

Low 1973 D/P followed by price declines
Two flawed approaches

• The equity premium may have fallen
• When the equity premium falls, the historical mean becomes unreasonably bullish
• When the equity premium falls, forecasts based on the historical relationship between returns and yields become unreasonably bearish
• What I advocate: use yields to forecast the equity premium, but do not assume mean reversion. Low dividend yields mean low dividends, but do not mean that prices will collapse
3. Adjusting the historical average

- DMS and Fama-French (2002) propose the following:
- Historical average returns:
  \[ \text{Avg\{stock returns\}} = \text{Avg\{dividend yield\}} + \text{Avg\{price growth\}} \]
- Adjusted estimate:
  \[ \text{Avg\{stock returns\}} = \text{Avg\{dividend yield\}} + \text{Avg\{earnings growth\}} \]
- What’s the idea?
  - If the equity premium falls, historical price growth will be higher than in the future. Historical earnings growth will not be similarly overstated
  - Suppose that the price-earnings ratio is expected to be stable (so no mean reversion). Then going forward, average price growth equals average earnings growth
  - We estimate price growth going forward by averaging over historical earnings growth
3. Adjusting the historical average

- Adjustment to the 1900-2005 average returns give us a geometric equity premium of 4.0% for the world, 4.8% for the US, 3.5% for Canada
  - This adjustment lowers the historical average by about 0.7% in the US and globally, and about 1% in Canada

- We can further adjust the estimate using today’s dividend yield:
  - $\text{Avg\{stock returns\}} = \{\text{Today’s dividend yield}\} + \text{Avg\{earnings growth\}}$
  - This adjustment leads to a geometric equity premium of 2.5% for the world, 3.3% for the US, 2% for Canada

- The adjustments lead to lower but still sizeable equity premiums
4. Steady-state valuation models

- The simplest steady-state model is the Gordon growth model: $R = \frac{D}{P} + G$
- That is, returns come from income and capital gains, which in steady state must equal dividend growth
- Use current $\frac{D}{P}$ and an estimate of $G$ to infer $R$
- The problem with this is that US firms have shifted from dividends to share repurchases, which has altered $G$ in a way that is hard to estimate
- Campbell and Thompson (2006) find that an earnings-based approach works better
4. Steady-state valuation models

• Use two facts:
  – \( \frac{D}{P} = (\frac{D}{E})(\frac{E}{P}) \)
  – \( G = (1 - \frac{D}{E}) \text{ROE} \), where ROE is accounting return on equity

• Get an earnings-based formula:
  – \( R = (\frac{D}{E})(\frac{E}{P}) + (1 - \frac{D}{E}) \text{ROE} \)

• The rate of return is a weighted average of the earnings yield and profitability, where the payout ratio is the weight on the earnings yield

• In practice, you need to smooth earnings, ROE, and payout ratio to eliminate short-run cyclical noise

• Finally, to get an equity premium number you must subtract an estimate of the real interest rate
4. Steady-state valuation models

- Steady-state approach vs. regression
  - Assume that ROE = E/P. The steady-state prediction is:
    \[ R = \frac{E}{P} \]
  - Recall the regression results:
    \[ R = -0.06 + 1.78 \times \frac{E}{P} \]
  - The steady state approach over-rules the regression coefficients of -0.06 and 1.78 with 0 and 1.
- The steady-state approach uses logic rather than historical statistics to determine the relationship between valuation and future stock returns.
- The steady-state approach assumes no mean reversion.
- Campbell and Thompson (2006) find that in historical data the steady-state approach leads to more accurate stock forecasts than regression-based approaches.
Earnings yield

3-Year Smoothed Earnings / Current Price

- World
- US
- Canada
Smoothed Real ROE
(3-Year Smoothed Earnings / Current Book Value) - Inflation
Payout ratio

Smoothed Dividend Payout Ratio
Current Dividend / 3-Year Smoothed Earnings

- World
- US
- Canada
Real interest rate

Inflation-Indexed Government Bond Yields
The equity premium today

Implied equity premium, 03/30/2007

- Method 1: Assume constant real ROE of 6%, dividend payout ratio of 50%
- Method 2: Use 3-year smoothed ROE and dividend payout ratio
- Weighted average: 75% weight on Method 1, 25% weight on Method 2

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<thead>
<tr>
<th></th>
<th>Method 1</th>
<th>Method 2</th>
<th>Weighted Average</th>
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<tbody>
<tr>
<td>World</td>
<td>3.20%</td>
<td>5.51%</td>
<td>3.77%</td>
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<tr>
<td>US</td>
<td>3.05%</td>
<td>6.75%</td>
<td>3.97%</td>
</tr>
<tr>
<td>Canada</td>
<td>3.02%</td>
<td>4.89%</td>
<td>3.49%</td>
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Assume Constant Real ROE 6%, Dividend Payout Ratio 50%
Use 3-Year Smoothed ROE and Dividend Payout Ratio
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Use 3-Year Smoothed ROE and Dividend Payout Ratio
The world equity premium today

- The steady-state approach gives results that are highly sensitive to one’s beliefs about corporate profitability.
- If recent profitability is sustainable, with a high reinvestment rate, then the world equity premium is 5.51%.
- If profitability and reinvestment rates return to their late 20th Century averages, then the world equity premium is only 3.20%.
- A reasonable compromise number is 3.8%.
- This is almost one percentage point lower than the 1900-2005 historical average reported by DMS.
- Note that the equity premium is this high only because long-term real interest rates are low.
The equity premium in the US and Canada

- The US numbers are even more sensitive to the assumption about profitability. In Canada the recent profit boom is smaller, so profit sustainability is less important
- In the US, the compromise number of 4% is 1.5% below the 1900-2005 historical average
- In Canada, the compromise number of 3.5% is 1% below the 1900-2005 historical average
- Thus in the US and Canada, we should not expect the future to be as good as the past
- Reality check: Graham and Harvey (2007) survey CFO’s of US corporations and report a premium of 3.4%
Conclusion

• Sensible methods for estimating the equity premium give
  – Positive, significant numbers
  – World forecasts are 3.8% today versus 4.7% historically
  – If corporate profitability reverts to long run averages, the world premium falls to 3.2%.
  – Absolute returns will be lower still: real interest rates are about 2% today versus 3.5% in the 1990s

• If we believe in mean reversion, we become very pessimistic. In the past, rising earnings yields have come from falling prices

• If equities have been permanently revalued, then we are much less pessimistic