Is the Time Variation in Equity Returns Predictable?

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Realized equity risk premium per year: 1889-2010

Data from Mehra and Prescott (1985) and Ibbotson (2011)
Equity risk premium over the 20-year periods: 1889-2010

Data from Mehra and Prescott (1985) and Ibbotson (2011)
Campbell and Shiller (1988) show that variations in the price-dividend ratio must result from:

either

variations in the expected discount rates

or

variations in the growth rate of future dividends.
“This paper has presented strong and voluminous evidence in favor of the random walk hypothesis”.

Fama(1965)

- If stock prices follow a random walk or a martingale, then expected stock returns are not predictable.

- Hence, changes in price-dividend ratios must reflect changes in the expected future dividends or their growth rates.
A Paradigm Shift

“There is much evidence that stock returns are predictable”.

Fama and French (1988)
This paradigm shift was prompted by the observation that historically, high price-dividend ratios and other measures of market value relative to cash flows, such as the market value of equity as a ratio of GDP have preceded poor returns and vice versa.
“It is now widely accepted that excess returns are predictable by variables such as dividend-price ratios, earnings-price ratios, dividend-earnings ratios, and an assortment of other financial indicators”.

Lettau and Ludvigson (2001)

“... all price-dividend ratio volatility corresponds to variation in expected returns. None corresponds to variation in expected dividend growth, and none to “rational bubbles””.

Cochrane (2011)
Dividend yield and following 7-year return

Source: Cochrane (2011)
Market value to GDP ratio and average 3-year ahead equity premium
(average of sub-periods when the MV/GDP is > or < average MV/GDP)

These implication of these studies are based on a **statistical analysis of data**. There is no theoretical basis for this predictability.

The implicit underlying belief is that the predicting variables (dividend-price ratios, earnings-price ratios) follow a stationary process that **reverts to some unspecified normal value**.
The quote by Campbell and Shiller (2001) succinctly summarizes this view:

“It seems reasonable to suspect that prices are not likely ever to drift too far from their normal levels relative to indicators of fundamental value, ... when stock prices are very high relative to these indicators, ... then prices will eventually fall in the future to bring the ratios back to more normal historical levels”.
A key issue is whether these indicators indeed follow a stationary mean reverting process. If the process is non-stationary then the unconditional mean is not defined. **Nor is mean reversion.**

The statistical tests of stationary are sensitive to starting and ending dates and often contradictory.

Models that predict well in-sample often do poorly when predicting out-of-sample.
Market value to GDP ratio: 1945-2010
Non-stationary

Market value to GDP ratio: 1929-2010
Statistical tests: inconclusive

The Critics

- “... we interpret our results to suggest that a healthy skepticism is appropriate when it comes to predicting the equity premium, at least as of early 2006. The models do not seem robust”.

  Welch and Goyal (2008)

- “The evidence for return predictability in the data is very fragile. ... using the ... dividend-price ratio less the real risk-free rate, the level of return predictability declines from 31% to only about 9% at the five-year horizon”.

  Bansal, Kiku and Yaron (2009)
Recent Developments

- Constantinides and Ghosh (2011) observe that the predictability and volatility of aggregate consumption and dividend growth rates differ considerably across the regimes (recession and normal).

- They show that the model-implied state variables perform better at in-sample forecasting and significantly better at out-of-sample prediction of the equity premia than linear regressions.

- Bollerslev, Tauchen and Zhou (2009) and Drechsler and Yaron (2011) present evidence that the VIX and Variance Premium predict excess return in the short run.
An Equilibrium Approach

- McGrattan and Prescott (2005) extended the standard growth model to incorporate both intangible capital and taxes.

- The extended standard growth model can serve as a reference for over and undervaluation in capital markets.

- Mehra (2010) cautions that Tobin’s q and P/E ratios, which implicitly abstract from both tax rates and intangible capital, offer inadequate measures of under and over valuation of capital markets.
Concluding Comments

- Dividend price ratios weakly predict future returns (at a 3 to 7 year frequency) in out-of-sample data.
- The effect is stronger when using in-sample data.
- Results are sensitive to the data sample used, in particular, to the inclusion or exclusion of the 1973-75 period.
- Internationally, price-dividend ratios have given perverse investment signals. (Dimson, Marsh and Staunton (2004))
- Translating this predictability into an operational strategy for long-term investing is isomorphic to market timing.
- A portfolio manager embarking on such a venture should proceed with caution.
References


