Is the Time Variation in Equity Returns Predictable?

Rajnish Mehra

Arizona State University
and
NBER

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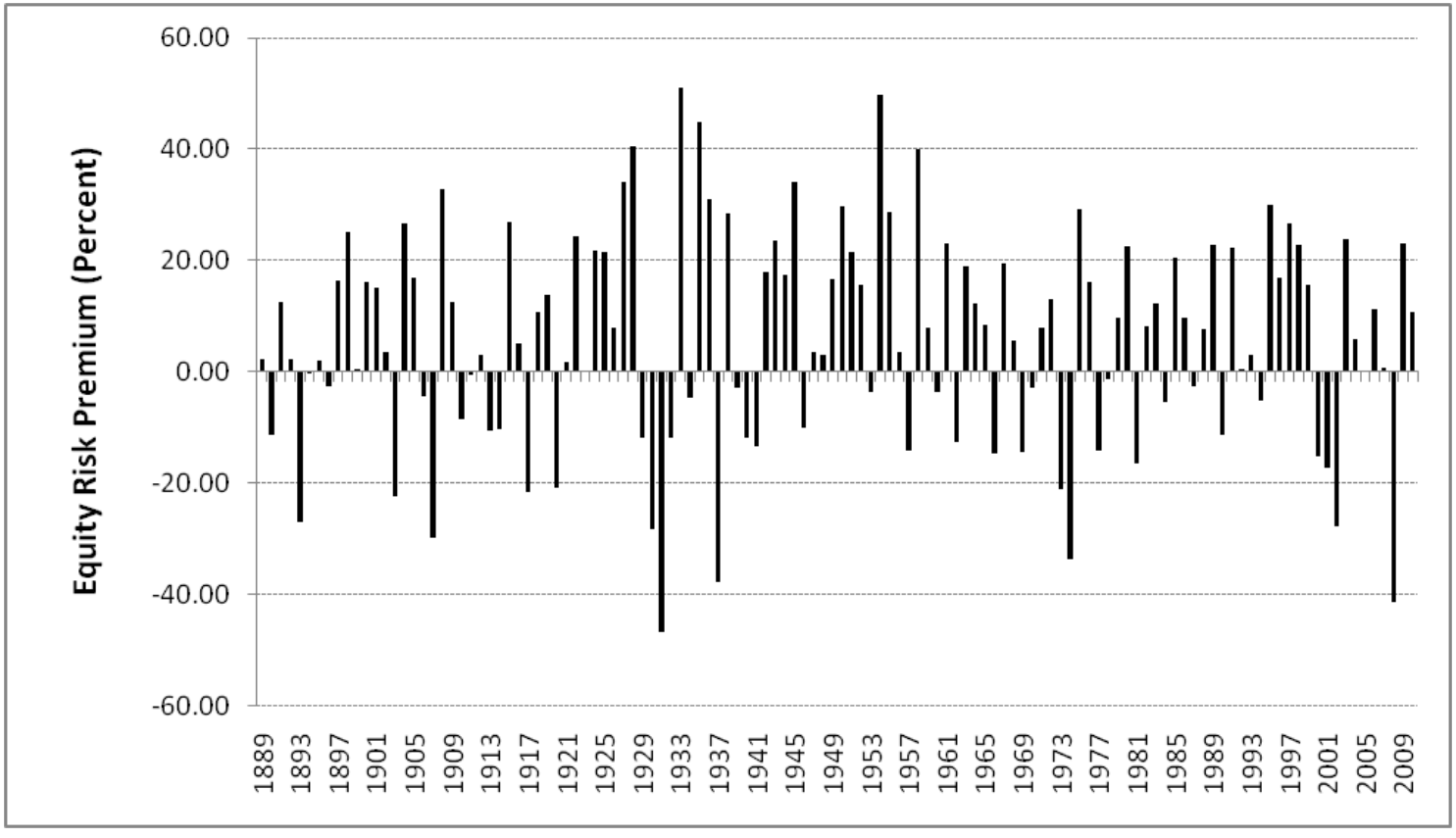
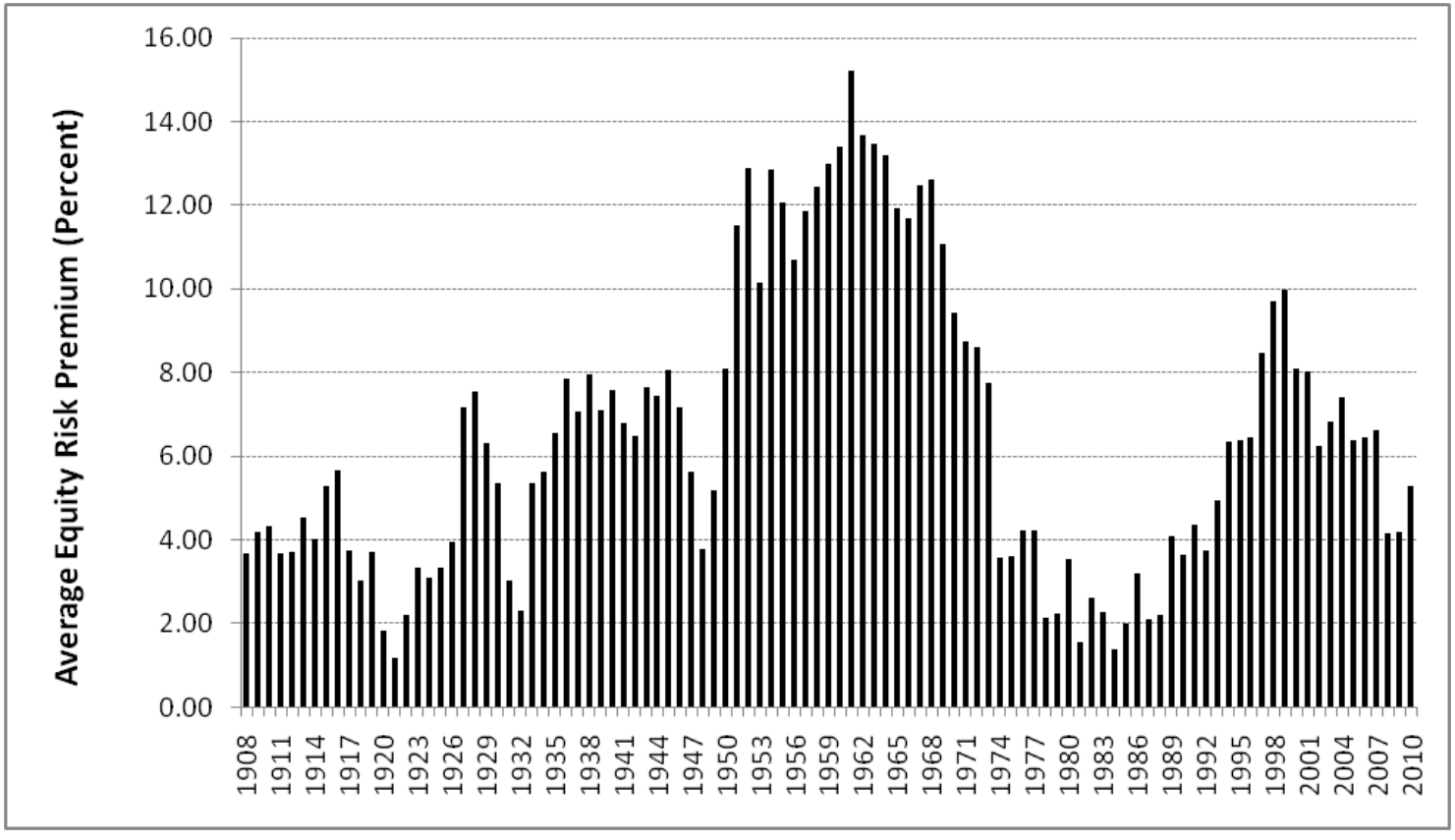
Realized equity risk premium per year: 1889-2010



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.

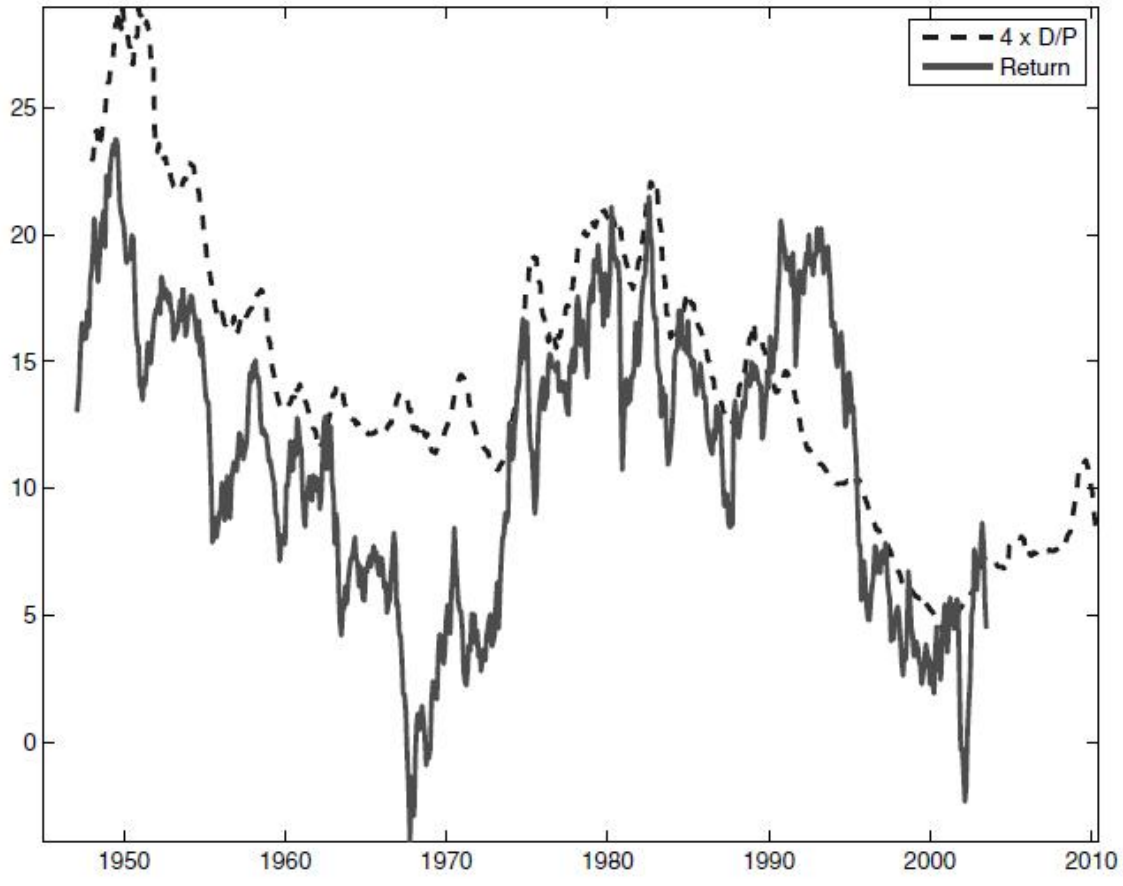
- "It is now **widely accepted that excess returns are predictable** by variables such as dividend-price ratios, earnings-price ratios, dividend-earnings ratios, and an assortment of other financial indicators".

  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)

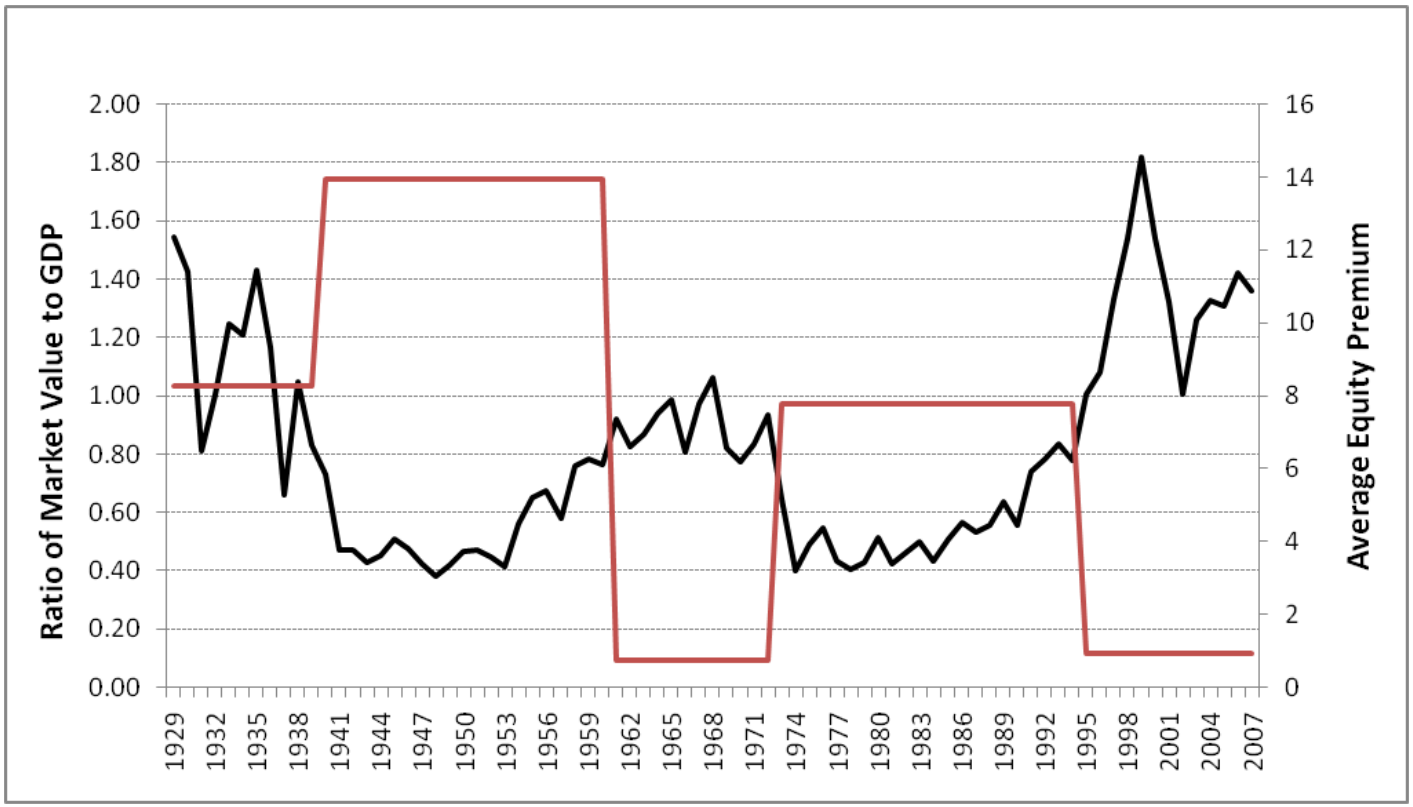
Dividend yield and following 7-year return



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)



From Mehra and Prescott (2008). Updated by the author.

- 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:

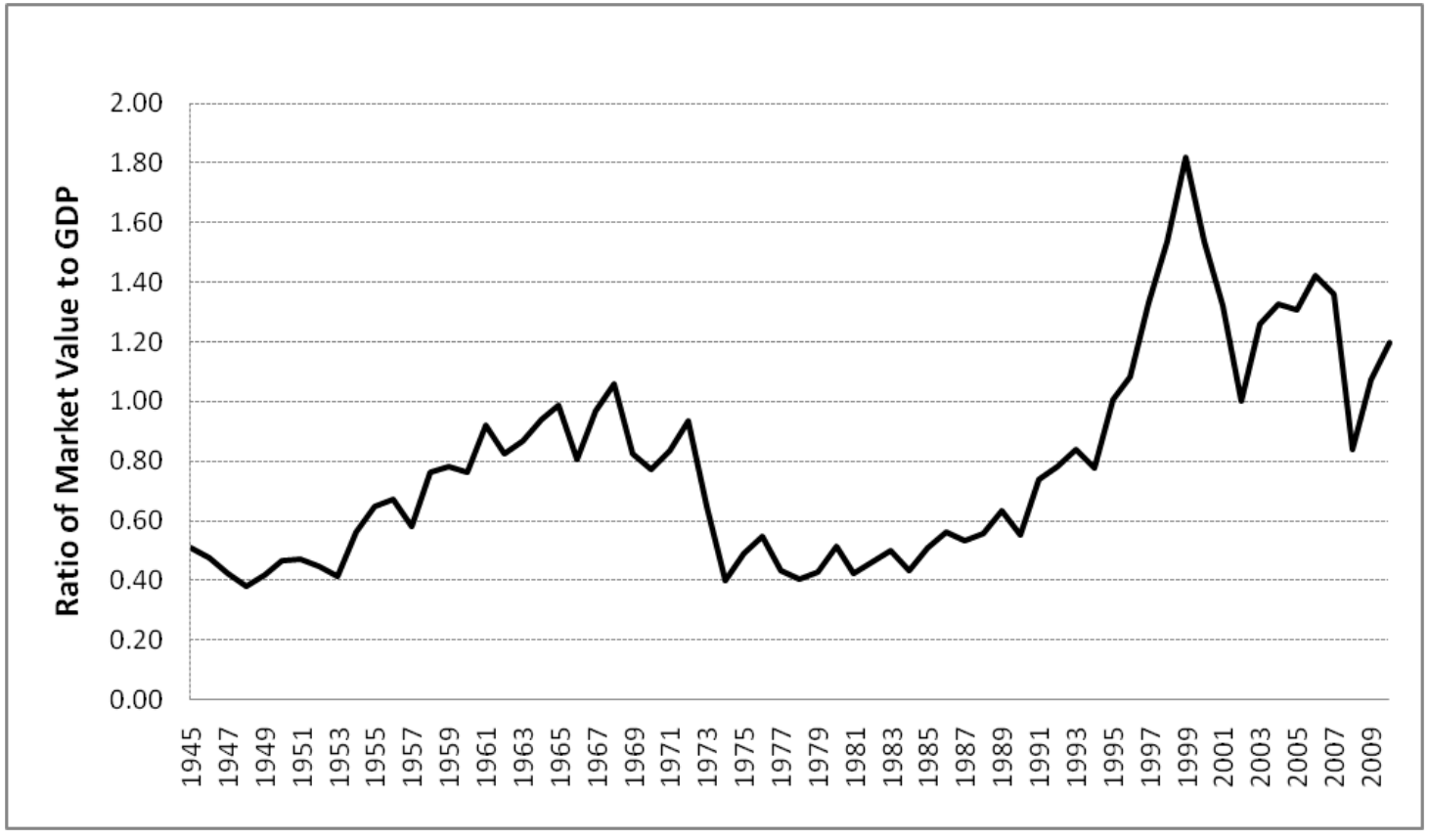
  "It seems reasonable to suspect that prices are not likely ever to drift too far from their normal levels relative to indicators of fundamental value, ... **when stock prices are very high relative to these indicators**, ... **then prices will eventually fall in the future to bring the ratios back to 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.

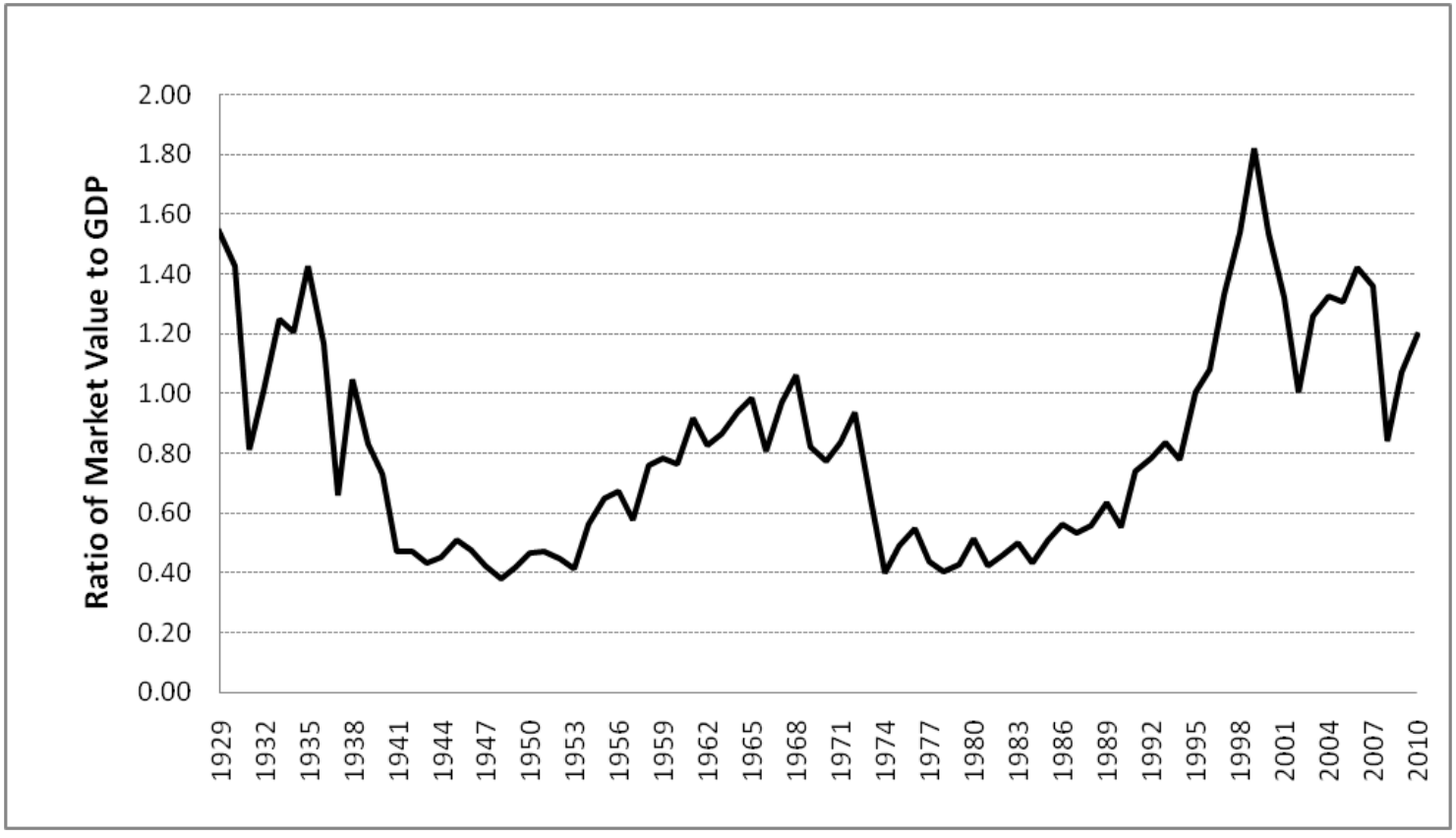
- Models that predict well in-sample often do poorly when predicting out-of-sample.

Market value to GDP ratio: 1945-2010
Non-stationary



From Mehra (1998). Updated by the author.

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



From Mehra (1998). Updated by the author.

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.

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