



Expected returns on value, growth, and HML[☆]

Oleg Rytchkov

Fox School of Business, Temple University, 1801 Liacouras Walk, 423 Alter Hall (006-01), Philadelphia, PA 19122, USA

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ABSTRACT

In this paper, I analyze the predictability of returns on value and growth portfolios and examine time variation of the expected value premium. As a primary tool, I use the filtering technique, which accounts for time variation in expected cash flows and explicitly exploits the constraints imposed by the present value relation. I demonstrate that returns on value and growth portfolios are predictable, and the predictability is stronger for growth stocks. Applying the filtering technique to the HML portfolio, I build a novel powerful forecaster for the value premium. The new forecaster appears to be only weakly related to business cycle variables.

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1. Introduction

Classification of stocks in the value–growth dimension has a long history, and there is an abundant literature studying value and growth portfolios. In particular, significant effort has been made to understand why value stocks historically deliver higher returns than growth stocks. Not surprisingly, most of the literature focuses on the cross-section of returns. However, the time series properties of returns on value and growth portfolios, as well as the dynamics of the expected value premium, also deserve detailed analysis. First, such analysis can give new evidence of time variation in expected stock returns. Second, it may cast new light on the origin of the value premium. Third, understanding the time series properties of returns on growth and value portfolios is important for practitioners investing in these portfolios, especially for those who follow the “style timing” strategy.

This paper explores the predictability of returns and dividends on value and growth portfolios and studies the time variation in the value premium. The distinguishing feature of the paper is a new econometric approach, which allows me to reconstruct time-varying expectations of future dividends and returns from the history of realized dividends and returns by imposing economic restrictions implied by the present value relation. This approach is based on the Kalman filter technique; the key idea is as follows. The present value relation imposes tight restrictions on the joint dynamics of expected returns, expected dividend growth, and the dividend–price ratio for any portfolio. Hence, the dividend–price ratio contains some information about expected returns and can be used for predicting future returns (Campbell and Shiller, 1988). However, if both expected returns and expected dividend growth rates are time varying, the ratio is a contaminated predictor, and the variation of expected dividends causes the errors-in-variables problem in the standard predictive regression. To separate the contributions of expected returns and expected dividend growth to the valuation ratio, I treat the expectations as unobservable state variables and filter them out from all available data

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E-mail address: rytchkov@temple.edu.

(the realized dividends, the realized returns, and the dividend–price ratio). By construction, the filtering approach does not suffer from the errors-in-variables problem. As a result, the obtained estimates of the latent expectations appear to be efficient predictors of future dividends and returns.¹

Although the described procedure can be directly applied to the value and growth portfolios, for handling the value premium it needs some modification. Indeed, the power of the suggested technique comes from the present value relation, which implicitly incorporates an economically motivated cointegration between prices and dividends (the no-bubble condition). In the case of the value premium, using the cointegration between dividend–price ratios of value and growth portfolios is more efficient than using the stationarity of individual ratios. There are no economic reasons to believe that the valuation ratios of different portfolios will diverge in the long run, and any deviation in the difference between valuation ratios from its average historic level is likely to be temporary. This difference appears to be much more stable than the dividend–price ratio of individual portfolios, and this stability makes the obtained estimate of the expected value premium more efficient. Similar to the case of individual portfolios, to avoid the errors-in-variables problem, the *difference* between expected log returns on value and growth portfolios and the *difference* between their expected log dividend growth rates is modeled as unobservable state variables.

Using the described technique, this paper makes several empirical contributions into the existing literature. First, the filtering approach yields new proxies for expected dividends and expected returns for value and growth portfolios. While returns on both portfolios can be predicted by these new variables, I find that returns on growth stocks are more predictable than returns on value stocks.² In particular, the R^2 statistic for the growth portfolio is approximately 9%, whereas it is only 5% for value stocks. Moreover, dividends on the growth portfolio are also highly predictable, and the constructed forecaster manages to explain 20% of their time variation. These findings corroborate the variability of the market risk premium and indicate that the predictability of aggregate stock returns is not an outcome of data snooping.³

The second set of results pertains to the HML portfolio. I demonstrate that the filtered expected value premium \widehat{VP} is indeed a statistically significant predictor of the future value premium. For the sample period 1950 to 2008, it forecasts the value premium with the R^2 statistic of 4%. To study the business cycle behavior of the expected value premium, I run contemporaneous regressions of \widehat{VP} on several countercyclical variables such as the filtered expected aggregate stock return, the default premium *DEF*, the term premium *TERM*, and the NBER recession dummy *NBER*. The slope coefficient for *DEF*, *TERM*, and *NBER* appears to be positive, although statistically insignificant for *TERM* and *NBER*. Thus, although I obtained some evidence that the expected value premium is countercyclical, this evidence is relatively weak.

An important advantage of the filtering technique is that it does not require exogenous variables, because all predictors are constructed from realized dividends and returns on the given portfolio. However, if such exogenous instruments are available, they can easily be incorporated into the framework. One of the most successful predictors of the value premium is the value spread (Cohen et al., 2003). It contains additional information relative to the history of prices and dividends, and, hence, it can further improve the quality of the forecast. I demonstrate how to exploit the flexibility of the filtering approach and include this variable as an additional observable. A simple OLS regression shows that the value spread can explain on its own approximately 4% of in-sample time variation of the value premium. However, the expected value premium filtered from the data on returns, the dividend–price ratios, and the value spread is a much better predictor with the R^2 statistic of 11%.

Understanding time variation of the expected value premium is very important from the theoretical point of view. The origin of the value premium has attracted much attention in the asset pricing literature, and the empirical analysis of value premium dynamics can shed new light on this problem. Indeed, alternative models explaining the value premium have different implications for time series of expected returns on value and growth portfolios. Hence, the value premium dynamics may serve as an additional yardstick for measuring empirical validity of those theories.

For instance, rational risk-based theories predict countercyclical behavior of the value premium (Gomes et al., 2003; Kiku, 2006; Zhang, 2005). Zhang (2005) argues that this pattern naturally results from costly disinvestment coupled with a countercyclical price of risk. In bad times, it is more difficult for value firms to scale down their capital than for growth firms. As a result, value firms are adversely affected to a greater extent, and this makes them more risky in bad times. To compensate investors for this risk, expected returns go up, widening the value premium. By contrast, the theories explaining the value premium by various irrationalities in the behavior of a typical investor do not predict any cyclicity in the value premium.⁴

The business cycle properties of the value premium have been studied by several authors. Petkova and Zhang (2005) argue that the value premium varies countercyclically, because value betas have positive correlation with the expected market risk premium, whereas growth betas have negative correlation. These results were extended to international markets by Fujimoto and Watanabe (2005). The countercyclical variation of the value premium is confirmed by Chen et al. (2008), who estimate conditional expected return spread

¹ The idea to treat aggregate expected returns as a latent state variable and filter it out from available data is also used by Brandt and Kang (2004) and Conrad and Kaul (1988). However, these authors do not use the power of the present value relation and rely on econometric assumptions only. The contemporaneous papers by van Binsbergen and Koijen (in press), Pástor and Stambaugh (2009), and Rytchkov (2008) apply the filtering technique augmented with economically motivated restrictions to analyze aggregate stock returns.

² Using a completely different framework, Guo et al. (2006) also find that growth portfolios are generally more predictable than value portfolios or stock market indexes.

³ The volatility of expected returns on the value and growth portfolios may result from changing betas instead of the changing market risk premium. However, empirically this is not the case since filtered expected returns on portfolios are highly correlated with the filtered expected return on the market, and the correlation between conditional betas and the market risk premium is relatively small (Lewellen and Nagel, 2006). Cochrane (2008), Boudoukh et al. (2008), Goyal and Welch (2008) and Ferreira and Santa-Clara (2010) exemplify the recent discussion on predictability of aggregate stock returns.

⁴ For arguments in favor of a behavioral explanation of the value premium, see Lakonishok et al. (1994), La Porta et al. (1997), Rozeff and Zaman (1998).

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