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Asymmetric risk premium in value and growth stocks

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Abstract

There are two competing explanations for the existence of a value premium, a rational market risk explanation, whereby value stocks are inherently more risky than growth stocks, and a market over-reaction hypothesis, where agents overstate future returns on growth stock. Using asymmetric GARCH-M models this paper tests the predictions of the two hypotheses. Specifically, examining whether returns exhibit a positive (negative) risk premium resulting from a negative (positive) shock and the relative size of any premium. The results of the paper suggest that following a shock, volatility and expected future volatility are heightened, leading to a rise in required rates of return which depresses current prices. Further, these effects are heightened for value stock over growth stock and for negative shocks over positive shocks. Thus, in support of the rational risk interpretation, with a volatility feedback explanation for predictive volatility asymmetry.

JEL classification: C22; G12
Keywords: Value and growth portfolios; Value premium; Risk premium; Asymmetric GARCH model

1. Introduction

One of the most frequently used style investment strategies is value investing. Investors purchase value stocks (defined as those with a high book-to-market ratio) rather than growth stocks (defined as those with a low book-to-market ratio) in order to benefit from potential long-term over-performance of value stocks in the form of higher average returns. Moreover, there is

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general recognition of the existence of such a value premium, that is, the on average greater stock market returns of high book-to-market firms over the returns of low book-to-market firms, across international stock markets (see Fama & French, 1998 for a summary of evidence).

As is well known, there is a topical debate regarding the reasons for the higher average returns of value stocks. On the one hand, papers such as Fama and French (1993, 1995, 1996), Liew and Vassalou (2000), Cooper, Gulen, and Vassalou (2001) and Vassalou (2003), argue that risk is the source of the value premium. That is, the premium arises from non-diversifiable risk inherent in high book-to-market stocks that is not captured by the standard CAPM model. However, other authors, such as Lakonishok, Shleifer, and Vishny (1994), Haugen and Baker (1996) and Daniel and Titman (1997), suggest that the source is due to market inefficiencies. That is, the premium results from investors consistently overestimating the performance of growth stock relative to value stock, by putting excessive weight on recent past history, and thus investors are making sub-optimal decisions. Further, this reasoning supports the rationale for contrarian portfolio strategies, that is, a strategy which exploits the short-run mean-reverting behaviour of stock prices, whereby an investor sells overvalued stocks and buys undervalued ones such that a current 'loser' portfolio outperforms a current 'winner'. The over-reaction hypothesis is also related to the (increasing) literature on the existence of 'noise' traders in financial markets, that is, those traders whose actions are based on non-fundamentals, such as 'trend-chasing' (e.g. Black, 1986; De Long, Shleifer, Summers, & Waldmann, 1990; Kyle, 1985; Schleifer & Summers, 1990).[1]

Given the forgoing, examination of the time series characteristics of value and growth portfolios should yield insight as to which of the hypotheses regarding the existence of the premium provide a better explanation. It is well-known that asset returns are typically characterised by negative skewness, excess kurtosis and volatility clustering, and can be modelled by a low-order generalised autoregressive conditional heteroscedasticity (GARCH, Bollerslev, 1986; Engle, 1982) model. This basic GARCH model can then be extended in several ways. First, to allow volatility to condition returns (the GARCH-in-mean model, Engle, Lilien & Robins, 1987), such that the parameter associated with the volatility variable proxies for the risk premium, and whereby higher volatility raises the required rate of return and depresses current prices. Further, that there may be an asymmetric relationship between positive and negative shocks in the variance equation (also referred to as predictive asymmetry). More specifically, negative shocks typically increase volatility greater than positive shocks of equal magnitude. This process is typically rationalised through a leverage effect (Black, 1976; Christie, 1982), whereby a negative price shock increases the debt/equity ratio such that the stock becomes inherently riskier so increasing returns volatility. An alternative explanation for volatility asymmetry, which also implies a negative correlation between stock returns and future volatility, is offered by 'volatility feedback' (Campbell & Hentschel, 1992). That is, where large items of 'news' increase expected future volatility, so increasing the required rate of return and depressing the current asset price, thereby magnifying the negative price effects of negative news and mitigating the positive price impact of positive news. As a consequence, returns are

[1] De Long et al. (1990) and Shleifer and Vishny (1990) provide an extension of the non-rational behaviour explanation and suggest that institutional investors, who may operate over a short-run horizon, opt for growth strategies which typically pay-off within that horizon, while value portfolio strategies typically return abnormal profits over a 3–5 year horizon. Further, investors who opt for a value strategy may be risking their employment if the time horizon over which their performance is evaluated is shorter than the pay-off horizon for such a strategy, as they will appear to under-perform relative to their peers.