Does Investor Disagreement Explain Stock Returns or Managed Fund Returns?

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1. Background and aims of project

An enormous body of empirical research over the past 15 to 20 years has demonstrated evidence against the prediction of the Sharpe (1964), Lintner (1965) and Black (1972) Capital Asset Pricing Model (CAPM). This evidence suggests that the cross-section of expected stock returns are not sufficiently explained by their beta and that variables such as firm size (Banz, 1981), earnings yield (Basu, 1977), leverage (Bhandari, 1988) and the firm's book value of equity to its market value (Chan, Hamao and Lakonishok, 1991, Fama and French 1993, 1996, 1998) adequately explain the cross-section of average stock returns. In essence, the proponents of risk-based explanations argue that asset pricing models are mis-specified and that additional risk-factors need to be incorporated into these models (Fama and French, 1993). On the other hand proponents of behavioural finance argue that investors are irrational and that this is the cause of the CAPM's failure (Lakonishok, Shleifer and Vishny, 1994). Very few studies have concurrently tested a risk-based and a behavioural hypothesis in the context of asset pricing.[1] This study proposes to do exactly that by assessing whether investor disagreement is priced in equity returns.

Prior literature in this area has led to conflicting conclusions. For instance, Diether, Malloy and Scherbina (2002) observe a negative relationship between investor disagreement and equity returns and advance a behavioural explanation based on Miller (1977). They state that since high divergence in opinion stocks are expensive to short, stocks with high divergence in opinion will have lower returns than stocks with low opinion divergence. This is because the price of a stock is set by optimists who overestimate the value of a stock resulting in lower future returns.[2]

Conversely, Doukas, Kim and Pantzalis (2002) observe a positive relationship between investor disagreement and stock returns. They argue that investors perceive the cashflows of growth stocks as less risky than value stocks and that opinion divergence captures this perception. They propose a four-factor model in the spirit of Fama and French with the fourth factor capturing opinion divergence.

Given the above the aims of this study are to: (1) examine the relationship between investor disagreement and stock returns and investigate whether a disagreement factor is significant in explaining cross-sectional variation in returns; and, (2) examine the relationship between investor disagreement and managed fund returns.

2. Significance and Innovation; Description of Approach

The first proxy we employ for investor disagreement is the standard deviation in analysts' earnings forecasts. We begin our analysis be examining the relationship between our disagreement proxy, the standard deviation in earnings forecasts, and returns. To do this, we form portfolios based on disagreement and analyse their subsequent returns. We then create a mimicking portfolio that captures the return difference between a portfolio of high and low opinion divergence stocks. This mimicking portfolio will subsequently be employed in our asset pricing tests.

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[1] A notable exception is Daniel and Titman (1997) which was performed in Australia by Gharghori, Chan and Faff (2006).

[2] Short-sale restrictions prohibit pessimists from influencing stock prices.

A problem with using analyst forecasts is that they generally only cover the larger stocks in the market.[3] A major innovation of our approach is that we aim to use an alternate proxy for opinion divergence, maximum share turnover (Diether, 2004).[4] Diether argues that this proxy captures opinion divergence as it measures the difference between a firm's highest five day turnover period and its average turnover in the last year. According to this proxy, firms with high (low) maximum share turnover are assumed to have higher (lower) opinion divergence. The major advantage of this proxy is that it should not suffer from the large firm bias inherent in using analyst forecasts to measure disagreement.[5]

After establishing whether a relationship exists between investor disagreement and returns we estimate the following system which is based on a momentum and disagreement enhanced Fama-French (1993) model.

$$r_{it} = b_i RMF_t + s_i SMB_t + h_i HML_t + m_i MOM_t + d_i DRF_t + e_{it} \quad (1)$$

$$RMF_t = \lambda_m + e_{mt} \quad (2)$$
$$SMB_t = \lambda_{SMB} + e_{st} \quad (3)$$
$$HML_t = \lambda_{HML} + e_{ht} \quad (4)$$
$$MOM_t = \lambda_{MOM} + e_{mt} \quad (5)$$
$$DRF_t = \lambda_{DRF} + e_{dt} \quad (6)$$

Where i = 1,2,.., N and where r_i is the excess return on portfolio i, RMF is the excess market return and SMB, HML, MOM and DRF are the size, book-to-market, momentum and disagreement mimicking portfolios, respectively.

Two sets of test portfolios will be employed. First, 25 size and book-to-market sorted portfolios will be used and second, 27 size, book-to-market and disagreement sorted portfolios will be used.[6]

The system shall be estimated using the GMM approach[7] and the factor premiums, specified by equations (2) to (6), will concurrently be estimated. The augmented system not only allows us to test the over-identifying restrictions, using the GMM statistic, but also allows us to assess the significance of the estimated factor premiums. We also propose to use nested tests, such as the GMM difference statistic (Newey and West, 1987) or the Modified Likelihood Ratio Test (Rao, 1974), to assess the ability of the disagreement factor to price the test assets in the context of the entire system.

The systems based testing we employ is a significant improvement on the primitive asset pricing tests used by Diether et al. (2002) and Doukas et al. (2004) and is a major innovation of our approach. However, we also propose to estimate individual regressions using an unrestricted model (i.e. constant included) on the 25 (27) test portfolios. This will help identify the number of significant intercepts and we can observe the R^2s from the regressions. We can then compare these results to Fama-French (1996) and Carhart (1997) regressions. This will enable us to draw stronger inferences on whether the disagreement factor is significant in pricing the test assets.

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[3] This problem was faced and acknowledged by Diether et al. (2002) and Doukas (2004).

[4] Diether (2004) uses his maximum share turnover measure to assess the long-run performance of SEOs. We would be the first to use this proxy to examine the relationship between opinion divergence and returns.

[5] Another advantage of this proxy is that by taking the difference between highest 5-day turnover and average turnover, this proxy should be purged of the effects of liquidity (Diether, 2004).

[6] Ideally, 27 size, book-to-market and disagreement sorted portfolios should be used to ensure maximum dispersion in the test assets. However, we are concerned that the amount of companies in these portfolios will be too low as we suspect that only a small proportion of firms will have analyst forecasts. Thus, 25 size and book-to-market sorted portfolios will also be employed.

[7] MacKinlay and Richardson (1991)

Doukas et al. (2004) claim that investor disagreement may explain the value/growth anomaly. The systems based method we employ allows us to directly test this contention by comparing the estimated factor premiums on the book-to-market and disagreement factors. If this claim is true, the factor premium on HML (DRF) will be insignificant (significant and positive). This is a further innovation of our approach. If we observe a relationship between investor disagreement and returns and our disagreement factor is significant in pricing the test portfolios, we will then proceed to comprehensively analyse whether our disagreement factor explains managed fund returns. The test assets for this analysis will be managed fund portfolio returns formed by sorting funds based on fund size, past fund performance, and cashflows in/out of funds.[8] For this analysis, we will employ a modified version of the system specified above and we will also perform individual regressions on each of the portfolios.[9,10] This will be the one of the first attempts to link the literature on behavioural finance with managed funds. This would be a major innovation. In summary, the outcomes of this project would further the scholarly debate in the areas of asset pricing and funds management.

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[8] The number of portfolios formed will be conditional on the number of funds in our sample. We will most likely focus on domestic equity funds i.e. funds that are predominantly invested in domestic equities.

[9] Specifically, the system estimated will not be augmented with equations (2) to (6), i.e. factor premiums will not be estimated. The reason for this is that we are not actually testing the asset pricing model in this case, we are testing whether the model explains the returns on managed fund portfolios.

[10] The analysis will be in the spirit of Carhart (1997). Our innovation is that we will also employ system based hypothesis testing.

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