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Hedge Funds and Earnings Momentum

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Abstract

This study determines if hedge funds take advantage of the earnings momentum anomaly. A five-factor model was used including Fama and French (1993) and Carhart (1997) factors as well as an earnings momentum factor based on Chordia and Shivakumar (2007). The average hedge fund does not take advantage of the post-earnings momentum drift; however, larger funds associated with equity long only and equity short bias strategies successfully arbitrage on the earnings anomaly, contributing 2-3% per year, respectively. In contrast, funds with event driven, fund timing, and convertible arbitrage strategies tend to employ a strategy opposite to that of the earnings momentum anomaly and suffer losses accordingly.

Keywords: hedge funds, earnings momentum, market anomalies, arbitrage, behavioral finance

1. Introduction

1.1 Savviness of Hedge Fund Managers

Managers of hedge funds are generally thought of as savvy investors that are able to produce superior returns due to their sophistication. It is generally believed that their superior returns come from exploiting market inefficiencies that the typical investor is either unaware of or unable to mimic. Since hedge funds are not limited to specific asset classes like mutual funds or other highly regulated funds, and their holdings are generally not made public, they would be in the best position to take advantage of any market anomalies that may exist. Return anomalies associated with momentum, accruals and equity financing have been well documented in the literature (Fama & French, 2007). This study specifically looks at earnings momentum, or post-earnings-announcement drift, which is the phenomenon first documented by Ball and Brown in 1968.

1.2 Test of Savviness

To determine whether or not hedge funds successfully arbitrage on the earnings momentum anomaly, the four-factor model of Fama and French (1993) and Carhart (1993) is used along with a factor capable of capturing the anomalous behavior of earnings momentum (Chordia & Shivakumar, 2007). Significant positive loadings on the earnings momentum factor are found with hedge funds with equity long only and equity short bias strategies. Significant negative loadings are found with hedge funds with event driven, convertible arbitrage and fund timing strategies. The results suggest that although the earnings momentum anomaly is persistent, the average hedge fund is unable to capitalize on it. Moreover, the average hedge fund manager that attempts to actively take advantage of the earnings announcements experiences significant negative returns, which bolsters support that markets are highly efficient.

2. Literature Review

2.1 Market Anomalies

Much of the earlier literature on hedge funds, including Fung and Hsieh (1997), Brown, Goetzman, and Park (1997), and Brown, Goetzman, and Ibbotson (1999), focuses on the general characteristics of hedge fund performance, revealing many different types of hedge fund strategies with very different return characteristics. Fung and Hsieh (1997) and others demonstrate that most hedge funds return have low correlation with standard asset indices, while Fung and Hsieh (1997, 2001), Mitchell and Pulvino (2001), and Agarwal and Naik (2004) show certain types of hedge funds have nonlinear risk return characteristics that exhibit payoffs resembling option-like features.

Earnings momentum, or post-earnings-announcement drift, is the phenomenon first documented by Ball and

Brown (1968) in which abnormal stock returns continue to drift up after favorable earnings announcements and down for unfavorable earnings announcements. Subsequent studies, including Foster, Olsen, and Shevlin (1984), Bernard and Thomas (1989), Hew, Skerratt, Strong, and Walker (1996), and Booth, Kallunki, and Martikainen (1996), confirm their findings. Loughran and Ritter (1995, 2000) find that firms issuing IPOs and SEOs have low subsequent returns. Lakonishok and Vermaelen (1990) and Ikenberry, Lakonishok, and Vermaelen (1995) find that stock repurchasing firms have strong subsequent returns. Pontiff and Woodgate (2005) show that the change in outstanding shares exhibits a strong cross-sectional ability to predict stock returns, and Daniel and Titman (2006) and others provide evidence that the issuance of shares is strongly negatively related to future returns. Cooper, Gulen, and Schill (2007) show that there is a strong negative correlation between a firm's asset growth rate and subsequent abnormal returns, while Fama and French (2007) find the asset growth anomaly is present only in average returns on microcap and small stocks. If hedge fund managers are actually arbitraging market anomalies, then there should be significant loadings on anomaly factors associated with the pricing inefficiencies exploitation strategies. In this study, we specifically test whether hedge funds successfully arbitrage on the earnings momentum anomaly.

3. Methodology

3.1 Baseline Data

We use return data of 3,068 individual hedge funds from Barclay Hedge Fund DataFeeder from January 1990 through December 2005, a period with both high and low growth. We exclude hedge funds with less than 24 consecutive months of return data, non-U.S. currency and returns reported other than in net-of-fees. This leaves a final sample of 1,460 individual hedge funds. Fama and French (1993) and Carhart (1997) factors are obtained from Kenneth French's website and data used to construct the earnings momentum factor are obtained from Bloomberg.

3.2 Survivorship Bias

Since providing information to any hedge fund database is voluntary, certain biases need to be considered when interpreting return data. The most notable source of bias is referred to as survivorship bias, which occurs when all or part of the returns of liquidated or non-reporting funds are excluded from the data set. These "graveyard" funds typically had substandard performance, so excluding these from the analyses produces an upward bias to a true hedge fund portfolio. Another bias is the "instant history" bias (Park, 1995). Fung and Hsieh (2000) explain that new hedge funds typically go through an incubation period where they trade on money from friends and family, and, once they have achieved a record of good performance, they market themselves to the database vendors. This "instant history" bias has the potential to upwardly bias return estimates since entering hedge funds may exclude prior months of substandard performance. Fung and Hsieh (2006) estimate the survivorship bias to be around 1.8% to 2.4% and the incubation bias to be approximately 1.5% annually. These biases will be present in the alphas reported here. If arbitraging the earnings anomaly contributes to fund success, then it is possible our loading estimates on the anomaly factor may be upwardly biased.

3.3 Creation of Earnings Momentum Anomaly Factor

To create PMN, we sort non-financial NYSE, AMEX, and NASD firms were sorted into deciles based on their standardized unexpected earnings (SUE), where SUE is defined as the current-quarter earnings per share less earnings per share four quarters ago standardized by the earnings standard deviation over the past eight quarters. Earnings were obtained from Compustat. Decile portfolios (SUE portfolios) were formed monthly by equally weighting all firms in the decile rankings, and the positions were held for the following six months. This created portfolios with overlapping holding periods since the portfolio in month t consists of the position in the current month, as well as the positions held in the previous five months. Each of the six portfolios received one-sixth weight. By updating the decile portfolios monthly, the weights were revised on one-sixth of the securities in the entire portfolio every month. PMN is defined as the difference in returns between the highest and the lowest SUE portfolios. Chordia and Shivakumar (2006) find a strong link between PMN and future stock returns and that PMN subsumes the effect of stock-price momentum. A positive coefficient is expected on PMN if the factor is being successfully arbitraged.

To avoid multi-collinearity in the results, the PMN factor is orthogonalized to the Fama and French (1993) and Carhart (1997) factors, which allows us to view the specific contribution the earnings momentum factor makes towards the returns.

$$PMN_t = \lambda_0 + \lambda_1 MKT_t + \lambda_2 SMB_t + \lambda_3 HML_t + \lambda_4 UMD_t + \varepsilon_t \quad t = 1, 2, \ldots, T \tag{1}$$

where PMNt is the earnings moment factor, MKTt, SMBt, and HMLt are the Fama and French (1993) market, size,

and value factors, respectively, UMDt is the Carhart (1997) momentum factor, and ε_t is an error term. λs are coefficients to be estimated. The residual and intercept are then summed to form the orthogonalized earnings momentum factor:

$$PMNORTHANOM_t = \lambda_0 + \mathcal{E}_t \qquad t = 1, 2,\ldots, T \tag{2}$$

where PMNORTHANOMt is the orthogonalized earnings momentum factor. All regression results reported include only the orthogonalized earnings momentum values.

3.4 Model I

We use equally-weighted and value-weighted portfolios of hedge funds in all regressions. In the first set of regressions, the excess returns of all the hedge funds are regressed on the Fama and French (1993) and Carhart (1997) factors (hereinafter, four-factor model). We then regress the returns of strategy-specific hedge funds on the same four-factor model.

$$R_t = \lambda_0 + \lambda_1 MKT_t + \lambda_2 SMB_t + \lambda_3 HML_t + \lambda_4 UMD_t + \varepsilon_t \qquad t = 1, 2,.., T \tag{3}$$

where Rt is the monthly mean equal-weighted (value-weighted) return of the all hedge minus the risk-free rate of return in month t, MKTt, SMBt, and HMLt are the Fama and French (1993) market, size, and value factors, respectively, UMDt is the Carhart (1997) momentum factor, and εt is an error term. λs are coefficients to be estimated.

3.5 Model II

In the second set of regressions, the excess returns of all hedge funds are regressed on the Fama and French (1993) and Carhart (1997) factors and the earnings momentum factor (hereinafter, five-factor model). We then regress the returns of strategy-specific hedge funds on the same five-factor model.

$$R_t = \lambda_0 + \lambda_1 MKT_t + \lambda_2 SMB_t + \lambda_3 HML_t + \lambda_4 UMD_t + \lambda_5 PMN_t + \varepsilon_t \qquad t = 1, 2,., T \tag{4}$$

where PMNt is the earnings momentum factor (positive minus negative). The monthly mean equal-weighted (value-weighted) excess returns of the strategy-specific portfolios are regressed on all of the same specifications described above.

4. Results

4.1 Descriptive Statistics

Descriptive statistics for the earnings momentum factor, the Fama and French (1993) market, size and value factors, and the Carhart (1997) momentum factor are provided in Table 1. The average monthly return for the earnings momentum factor is 1.08%, which is similar to the value reported by Chordia and Shivakumar (2006).

Table 1. Mean monthly returns of regression factors

	MKT	SMB	HML	UMD	PMN
Observations	192	192	192	192	191
Mean %	0.598	0.199	0.364	0.911	1.076

4.2 Model I – Regression Results of All Hedge Funds

Table 2 reports the net-of-fees monthly mean excess returns of all hedge funds on an equal-weighted and value-weighted basis. Table 2 has been condensed for brevity. The complete table can be obtained by contacting: dlawson@iup.edu. Coefficients on the Fama and French (1993) factors are all positive and statistically significant at the 1% level, while the Carhart (1997) momentum factor is positive and significant at the 10% and 5% level for the equal-weighted and value-weighted regressions, respectively. Alphas (intercept) are positive and significant indicating that the average hedge fund returns are not fully explained by this model. The coefficient for PMN is negative and significant at the 10% level for the equal-weighted regression and insignificant for the value-weighted regression. These results suggest that the earnings momentum is not a significant strategy employed by the average hedge fund, which is not surprising given the variety of strategies employed by these funds. The next set of regressions will examine whether the earnings momentum anomaly is taken advantage of by specific strategies of hedge funds.

Table 2. Earnings momentum factor loading

Equal-weighted	-0.044
Value-weighted	-0.035

4.3 Model II - Strategy Specific Regression Results

Panels A1 and A2 of Table 3 report the regression results of hedge funds with equity long only strategies. Table 3 has been omitted for brevity. The complete table can be obtained by contacting: dlawson@iup.edu. Coefficients on the Fama and French (1993) factors are significant, while the coefficients on the Carhart (1997) momentum factor are insignificant. In the five-factor model, the coefficient on PMN is positive and significant at the 1% level for the value-weighted regression, which indicates that PMN contributes .18% per month (.171 x 1.076, coefficient times the mean, respectively) or 2.16% per year to the returns of larger hedge funds that employ an equity long only strategy.

Panels B and C of Table 3 report the regression results of the hedge funds with equity long bias and equity long short strategies. Coefficients on the Fama and French (1993) factors are significant (except for HML for equity long short), and the coefficients on the Carhart (1997) momentum factor are insignificant. In the five-factor model, the coefficients on PMN are insignificant, suggesting that these funds do not employ a strategy consistent with earnings momentum.

Panels D1 and D2 of Table 3 report the regression results of the hedge funds with equity short bias strategies. Coefficients on the Fama and French (1993) factors and the Carhart (1997) momentum factor are significant at the 5% level or greater. Not only are betas significantly negative, they are below negative one, indicating the shorting of high risk stocks. In the five-factor value-weighted model, PMN is positive and significant at the 10% level with a reported coefficient of .224. This indicates that using PMN contributes .24% per month (2.89% annually) to the returns of larger funds with equity short bias strategies. Alphas are positive and highly significant.

Regression results for hedge funds with equity market neutral strategies are reported in Panels E1 and E2 of Table 3. Coefficients on the market, value, and momentum factors are significant at the 10% level or greater. Although numerically very close to zero, the positive and significant coefficients on the market factor indicate that these funds are not "neutral" in the absolute sense. However, the returns of these funds depend significantly less on the market portfolio then the average hedge fund in Table 3. For all hedge funds, the coefficients for the market factor are positive and significant at the 1% level. In the equal- (value) weighted regression, the market factor contributes .218% (.179%) per month to returns. For the equity market neutral equal- (value) weighted regression, the market contribution is .020% (.015%) per month to returns. Coefficients on the size factor are insignificant. The coefficient for PMN is positive and significant for the equal-weighted five-factor model. This is in contrast to the insignificant coefficient for PMN in Table 2. Thus, relatively smaller equity market neutral funds appear to go long firms with positive earnings surprises and/or short negative surprise firms, a position that contributes .05% per month to returns. Alphas are positive and highly significant, but somewhat smaller than in Table 2.

Panels F1 and F2 of Table 3 report the regression results of the hedge funds with event driven strategies. Coefficients on the Fama and French (1993) factors are significant at the 1% level. Coefficients on the Carhart (1997) momentum factor are significant at the 5% level for the value-weighted regression and insignificant for the equal-weighted regression. The coefficient for PMN is negative and marginally significant in the value-weighted five-factor model, which is different from the insignificant coefficient for PMN in Table 2 for all hedge funds. Thus, some of the relatively larger event driven funds seem to go long firms with negative earnings surprises and/or short firms with positive earnings surprises, a position that lowers returns by .090% per month. Alphas are positive and highly significant.

Regression results for hedge funds with fund timing strategies are reported in Panels G1 and G2 of Table 3. Coefficients on the market and value factors are significant at the 1% level. The coefficients on the size factor are significant at the 5% level for equal-weighted regressions and insignificant for value-weighted regressions. Coefficients on the earnings momentum factor are negative and significant at the 1% level for the equal-weighted regression, suggesting that the smaller fund timing hedge funds employs a strategy opposite to the earnings momentum factor and loses .15% per month by doing so. Alphas are positive and highly significant.

Panels H1 and H2 of Table 3 report the regression results of the hedge funds with convertible arbitrage strategies. Coefficients on the Fama and French (1993) factors are significant at the 5% level or greater and the coefficients on the Carhart (1997) momentum factor are insignificant. The coefficients on the market factor are considerably smaller than those in Table 3, indicating that, unlike the average hedge fund, convertible arbitrage funds tend to be more market "neutral." For the five-factor model specifications, the coefficients on PMN are negative and statistically significant at the 1% level for the equal-weighted regression and at the 10% level for the value-weighted regression. This suggests that the hedge funds with convertible arbitrage strategies tend to go long firms with negative earnings surprises and/or short firms with positive earnings surprises and the larger funds, a position that lowers the larger funds by approximately 1.57% per year. Alphas are positive and highly significant.

Tables 3 show statistically significant positive and negative loadings on PMN for different hedge funds. Although the PMN factor is insignificant for the average hedge fund (Table 2) and for some of the strategy specific funds, it is evident that positive loadings on PMN provides economically significant returns for larger hedge funds with equity long only and equity short bias strategies (2.16% and 2.89% per year, respectively. It is also clear that negative loading on PMN provides economically significant losses for event driven and convertible arbitrage hedge funds and smaller fund timing hedge funds.

5. Discussion

This study uses a five-factor model to determine whether hedge funds successfully arbitrage the earnings momentum anomaly. The results indicate that the average hedge fund does not take advantage of the post-earnings announcement drift. However, the observed alphas indicate that these funds do employ strategies that provide excess returns not explained by the traditional Fama and French (1993) and Carhart (1997) factors.

Larger hedge funds with strategies of equity long only and equity short bias do appear to arbitrage on the earnings momentum factor, a strategy that contributes 2-3% to their returns each year. In contrast, funds with strategies such as event driven, fund timing and convertible arbitrage tend to employ a strategy opposite of the earnings momentum anomaly and suffer losses accordingly. The positive and negative loading on the earnings momentum factor suggest that these findings are both statistically and economically significant.

The results of this study are interesting for a few reasons. First, it is surprising that the average hedge fund fails to exploit an anomaly that has been known for more than forty years. Second, and perhaps more surprising, many hedge funds employ a strategy counter to the earnings momentum anomaly and lose money by doing so. This raises the question as to whether it is possible to consistently arbitrage on the earnings momentum anomaly, whether the earnings momentum anomaly still exists, and/or whether the average hedge fund manager is as financially savvy as purported.

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