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WASHBURN UNIVERSITY
SCHOOL OF BUSINESS
WORKING PAPER SERIES
Number 116

December 2009

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Abstract

Hedge funds are a small proportion of the overall investment market, but do they have a significant impact on the market? We hypothesize that hedge funds have reduced the volatility in the seasoned equity offering (SEO) market and also influence the daily returns surrounding the offering. In analyzing the volatility in stock prices surrounding SEOs and find that a greater number of hedge funds reduce the volatility in the market, while higher monthly hedge fund returns increase the volatility in the market.

1. Introduction

Hedge funds have been around since the late 1940s but only started to grow in popularity in the 1990s. Since 1998, hedge funds have been growing at a rate of almost 30% annually (King & Maier, 2009). Although hedge funds have been growing in popularity and economic significance in the stock market, little research has been conducted into their impact on the market. The major problem of studying hedge funds is the availability of data. Unlike mutual funds, hedge funds are rarely required by the Securities Exchange Committee (SEC) to file buy and sell reports with the SEC. An exception is when a hedge fund is considered an insider by the 5% rule. Hedge funds must report trades, both buying and selling, to the SEC of stock in which they have at least 5% ownership; hence the 5% rule. Since hedge fund managers try to keep their trading strategies secret, this rule is also rarely used. Hedge fund managers are required to register with the SEC as investment advisors only if their clients are allowed to withdraw their invested funds within two years. The only required report, by the SEC, of these managers is to disclose the amount of money under management in long positions, like the futures market with actual ownership.

Some of the larger hedge funds are required by the SEC to file 13F filings. These SEC 13F filings are only required of institutions with greater than $100 million of securities to report their holdings to the SEC. Since most hedge funds have assets under management of less than $100 million (King & Maier, 2009), the usage of SEC 13F filings in hedge fund research does not accurately characterize the industry in that it will only get the holdings of the largest hedge funds. While using these 13F filings with the SEC, Gompers and Metrick (2001) found that large institutional investors cause a 4.5 percent increase in the demand for large stocks and a 29.1 percent decrease in the demand for small stocks. Other hedge fund research involving actual hedge fund data has often focused on the market impact of hedge funds or the actual performance of hedge funds (Hsieh and Fung, (2000); Markus and Nagel, (2004); Evans, Atkinson, and Cho, (2005).

The impact of hedge funds, if any, in the market as a whole is ambiguous. There is evidence that hedge funds, being a small percentage of the overall market, may not have any more impact on the market than other speculators. Fung and Hsieh (2000) found mixed results as to whether hedge fund activity had an impact on major economic events such as the stock market crash of 1987, the Asian Currency Crisis, and the European bond market rally. Hedge funds as a whole did not seem to cause the turmoil, but they may have had an impact in the aftermath.

Other researchers believe that hedge funds at least have some impact on the market in that they predict either a positive or negative impact of hedge funds on overall market volatility. One view on the impact of hedge funds in the market is expressed by King and Maier (2009). They believe that hedge fund liquidation can indirectly increase market volatility, as the funds must sell their assets with 2005 being a record year. In the market in which the hedge fund is active, systemic risk (systematic rist; other names are

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market risk, nondiversified risk and risk captured by "beta") is increased when these hedge funds are larger in size (have more assets), are highly leveraged, and there are high attrition rates (King & Maier, 2009).

The opposite point of view, and our hypothesis, is that hedge funds, as active market participants, will often take opposite positions on a security (one fund buying while the other is selling) and thus reduce market volatility. Garbaravicius and Derick (2005) contend that by being able to leverage their positions, hedge funds are able to take advantage of market inefficiencies and arbitrage away price differences across the market, making the market as a whole more stable. Other researchers found that hedge funds acted as market arbitragers as did Brunnermeir and Nagel (2002) during the technology bubble and Fung, Hsieh, and Tsatsaronis (2000) did during the Asian currency crisis of 1997.

In this study, we use actual hedge fund data to analyze the impact of hedge funds on seasoned equity offerings (SEOs). Most hedge funds are market timers; hedge funds buy undervalued securities and short overvalued securities. As market timers, they increase (decrease) the demand and therefore the price of undervalued (overvalued) stock. This causes a reduction in the volatility of securities. The more firms that are using these techniques to arbitrage improperly valued stocks, the less volatility there should be in the market and in individual securities. Therefore, the first major hypothesis is that as the proliferation of hedge funds increases, the equity offering market will become less volatile. For the first hypothesis, we plan on regressing hedge fund activity and firm characteristics on the volatility of the stock price before and after the SEO. The independent variables of interest are the number of hedge funds, hedge fund assets, and hedge fund returns and the control variables are firm size, leverage, and insider ownership.

Hedge funds, by chasing profits, are impacting the market and the asset pricing fundamentals no longer have the same relevance. In this way hedge funds have obscured the market fundamentals. For example; Hull, Kwak, and Walker (2009) find that SEO firms with the greatest reductions in insider ownership have the greatest increases in short-run stock returns. Their result is contrary to signaling theory. Therefore, the second major hypothesis is that hedge funds have influenced the market so that trading signals are obscured. For the second hypothesis, we will run regressions with SEO returns as the dependent variable, and the independent variables as just described in the previous paragraph.

The remainder of the paper is organized as follows. Section two presents the model and the hypothesis to be tested, and then section three describes the data and presents the summary statistics. Section four presents the empirical results and section five summarizes the results.

2. The Hypothesis and the Model

2.1 Hypothesis

King and Maier (2009) state that "Hedge funds use aggressive trading strategies designed to earn positive returns in all market environments, such as short sales, leverage, program trading, arbitrage, and the use of derivatives." One such time that these aggressive trading strategies and manipulative trading can be used by these hedge funds is around an SEO. Henry and Koski (Henry & Koski, 2008) found that there was more short selling prior to an SEO when the offering contained larger issue discounts and after issue stock price recovery. With hedge funds attempting to take advantage of inefficiently priced SEOs by purchasing shares of underpriced SEOs (e.g., sometime during a ten-day period before the SEO announcement) and selling during the post-issue recovery when the price is high (e.g., sometime during a ten-day period after the SEO announcement), their buying will increase the demand for the SEOs when the price is low, thus causing the price to increase; and, their selling will increase supply for the SEOs when the price is high, thus causing the price to fall. The extra buying and selling of SEO shares by hedge funds should reduce the volatility in the market. Therefore, our first hypothesis is:

H-1: The proliferation of hedge funds has caused the equity offering market to become less volatile.

For the time frame of our study, Gao and Ritter (2008) find that 79.4% of all SEOs are fully marketed and as such are issued in much the same way as initial public offerings with a book building process that includes

road shows. With the book building process, the potential for the investment bankers to offer the best SEOs to their favored customers or create laddering schemes exists. Same phenomenon documented by Hull, Kwak, and Walker (2005) in their IPO study. These laddering schemes allow both the offering to rise in value, increasing the offering returns, and at the same time increase the return of the investors purchasing the offering. When hedge funds follow this type of strategy they obscure the market. The high returns made by the recipients of these laddering schemes are not related to market fundamentals of stock valuation. If it is just a few firms following these strategies, then they would not have a huge impact on the market, but there are now thousands of hedge funds with trillions of dollars in the market influencing the demand and supply of stocks surrounding the announcement periods for both IPOs and SEOs.

Hull, Kwak, and Walker (2009) study the stock price behavior of seasoned equity offerings (SEOs) from 1999 through 2005 and find that SEO firms with the larger reductions in insider ownership have greater increases in stock returns for the ten days after the offering announcement. This positive increase contrasts with negative returns found for a similar period before SEO announcements. Their result is anomalous in that it goes against signaling theory as represented by Leland and Pyle (1977) who argue that greater decreases in insider holdings should be followed by a negative response from the market and not a positive response. We hypothesize that this anomalous result is partly due to hedge fund trading that manipulates the prices so that negative signaling cannot be detected because hedge fund trading dominates.

H-2: Hedge funds have confused the market so that trading signals are obscured.

2.2 The Model

To test the first hypothesis, we will test whether the proliferation of hedge funds is reducing market volatility in the SEO market because they arbitrage, or increase volatility because they are highly leveraged. We will use regression analysis to predict the volatility in the stock prices around the time of an equity offering. The model we will predict is:

$$y = \beta_0 + \beta_1 H + \beta_2 X + \varepsilon \qquad (1)$$

where y is the volatility of returns both before and after the SEO. H represents the proliferation of hedge funds, X represents firm specific control variables that are predicted to influence stock volatility such as firm size, leverage, and insider ownership. It is hypothesized that the coefficients on number of hedge funds and hedge fund assets should be negative (both before and after the offering).

To test the second hypothesis, a similar regression will be run, except that the dependent variable will be the stock market return both before and after the SEO. It is hypothesized that the coefficients on number of hedge funds, hedge fund assets should be negative and the coefficient on hedge fund returns should be positive. As more hedge funds attempt to time the market and pick the market winners (losers), there will be less easily identifiable winners (losers) to choose from. Therefore, hedge funds will be more likely to choose opposite positions in regards to investments. These opposite strategies will dampen shifts in demand or supply for SEOs. Therefore, as more hedge funds (and hedge fund assets) enter the market, the returns to SEOs will decrease. The coefficient on hedge fund returns should be positive, because if investment bankers have laddering schemes set up for the SEOs, as explained in the hypothesis section, then higher hedge fund returns will be associated with higher SEO returns in the short-run.

There should be a positive coefficient on the firm size and the leverage control variables. Brav, Geczy, and Gompers (2009) find that SEO underperformance is largely concentrated in the smallest issuing firms. Jensen (1986) and Stultz (1990) contend that highly leveraged firms reduce the management's discretion and reduce agency costs. With these reduced agency costs investors may be less concerned with misuse of funds and returns will be higher.

As a control variable, the number of insiders before the offering is expected to have a negative regression coefficient. However, the change in ownership percentage should have a positive coefficient, if signalling theory holds. Previous research on the insider ownership finds that returns are more negative for

firms with higher inside ownership percentages (Cornett and Travlos, (1989); Hull and Mazachek, (2001); Gerard and Nanda (1993); Kahle (2000); Ching, Firth, and Rui (2006)). Signaling theory and Leland and Pyle (1977) predicts that larger reductions in insider percentages will result in more negative stock returns although Hull, Kwak, and Walker (2009) study the stock price behavior of seasoned equity offerings (SEOs) from 1999 through 2005 and find that SEO firms with the larger reductions in insider ownership have greater increases in stock returns for the ten days after the offering announcement.

3. Sample, methodology, and summary statistics

3.1 Sample

We began with a sample of 2,371 SEOs gathered from the *Investment Dealer's Digest* (*IDD*) for the time period from January 1999 to December 2005. The *IDD* reports recently offered SEOs and gave us our starting sample. From this sample, we were able to find 2,305 SEOs that had trading data recorded by the Center for Research in Security Prices (CRSP). Of these 2,305 SEOs, we found 1,571 SEOs that had registration prospectuses filed with the SEC[1]. Prospectuses were used to determine the proportion of insiders at the time of the offering and after the offering. Prospectuses also served to verify the registration date, which serves as our announcement date (or Day 0). For all firms with prospectuses, we found 706 firms with necessary insider data used for our tests. All 706 of these firms also had *Compustat* data needed to help provide descriptive statistics and variables used in empirical tests.

In addition, we use hedge fund data from Hedge Fund Research (HFR), which is one of the three commercial databases that have more than ten years of data collecting experience. HFR provides monthly data on the performance of the funds in their database as well as descriptive statistics and values for other variables found in our empirical tests. The monthly data is reported as of the last day of the calendar month, for example June 30. We matched the announcement date (Day 0) with the hedge fund data that represents the same trading period (or Month 0), hence an announcement "day 0" of June 15 would have a "month 0" of June 30 and the return data from HFR would include the average return of all hedge funds in the database for the month of June.

3.2 Methodology

For each firm in our SEO database, we used the stock price (as given by CRSP) at the end of the day to calculate both the raw return and the volatility of the stock prices. The return and volatility were calculated for various ten-day periods before the offering and also for a ten-day period immediately after the registration day (day 0). From the prospectuses, we got both the percentage of insiders before the offering and the shares outstanding. The percentage of insiders before the offering is measured as the ratio of the common stock holding of insiders where insiders are defined as (i) the directors and officers as a group, and (ii) all 5% owners of outstanding common stock. We measure the change in insiders, ΔINS, as the difference in the number of insider before and after the offering. This captures the impact of combination offers where there is also selling by current owners, half of whom are insiders. The number of common shares outstanding at the time of the SEO announcement is taken from the prospectus. This number is multiplied by the estimated offer price (given by IDD) to give the market value of common equity (MVE). Finally, the leverage ratio was and is calculated as the ratio of total liabilities divided by the value of the firm where the value of the firm is MVE plus the liquidation value of preferred stock plus total liabilities.

Excess returns are computed for each SEO by subtracting CRSPs daily return for the company stock by their value weighted index. This excess return is used to compute the volatility measure. There are three measures of volatility as explained by (Grullon, Lyandres, & Zhdanov, 2008): volatility of daily stock returns, volatility of the systematic component of returns, and volatility of the idiosyncratic component of these returns. The following formula is used to calculate the volatility of daily stock returns:

[1] The lack of a prospectus indicates an offering is likely a private placement since these offerings do not have to be filed with the SEC.

$$Vol_t = \sqrt{\frac{\sum_t (r_t - \bar{r})^2}{n_t - 1}} \quad (2)$$

where r is the natural log of the CRSP value weighted excess return +1 for each day in time t, $\bar{r}$ is the mean of the natural log of the excess return and n is the number of observations. The volatility of daily stock returns uses the logarithmic returns to mitigate potential return skewness.

The HFR database contained monthly data on each hedge funds returns and assets. This data was aggregated by month to calculate the total number of active hedge funds, the total assets of these active hedge funds, and their average return net of all fees. These data was added to the SEO database based upon the month of the SEO. Since we are using a ten-day window both before and after the offering, we are on average matching the SEO window with the hedge fund month.

3.3 Summary Statistics

Simple descriptive statistics, including means and standard deviations are given in Table 1. The table shows that there was an average of 2,540 hedge funds that held approximately $1.19 billion (Are you sure about these numbers? The table says the total assets of all hedge funds, not on average.) in assets. These hedge funds earned on average 1.19% monthly return for "month 0", slightly less than the ten-day post offering SEO return. The firms offering the SEO had an average leverage ratio of 25% and insiders held just under 50% of the outstanding shares of stock before the offering and reduced their holdings by 10.66%. The volatility in stock price was higher before the offering, approximately 3.85%, than after the offering, an average of 3.48%. The difference between the before and after offering volatility is statistically significant at the 1% level, with a t-statistic of 4.91. The excess stock return is dependent on the time period used for the ten-day return. It was -3.12% for days one to 10 before the offer date and 0.50% for days three to fourteen prior to the offer. The excess returns are positive after the offering, 2.18%. The excess return for days -9 to 0 of -3.12% and days 1 to 10 of +2.18% is indicative of a laddering scheme.

The proliferation in hedge funds over the period from 1999 to 2005 is shown in Table 2. The table shows that in 1999 there were only 1,304 hedge funds, but the number grew to 5,030 by 2005, a 286% increase. The total assets controlled by the hedge funds grew from $297 million in 1999 to $3.864 billion in 2005, a 1,199.7% increase. On the other hand, the average volatility (VOL days -9 to 0) in SEO offerings fell with a high in 2000 of 6.21% before the offering. This occurred during the internet bubble. The returns of the hedge funds and the raw stock returns were much more volatile. After an SEO, firms on average saw their stock prices increase in all years.

4. Results

In an attempt to control for potential multicollinearity, the Pearson's correlations between the independent variables in the regression model were examined[2]. As seen in Table 3, the highest correlation between the independent variables was -0.466 between the proportion of insiders before the offering and the change in insider percentage. Otherwise, all the correlation coefficients fall below 0.30. The correlations are not strong enough to eliminate them because we cannot separate the independent variables. Eliminating any of these variables cause more problems than keeping them in creates. Keeping correlated independent variables in may cause the assessment of the relative strength of the independent variables to be unreliable. However, there was a significant correlation between two of the hedge fund variables, as presented on Table 4. The correlation between the number of firms and hedge fund assets was nearly perfect at 0.952 and was even higher using the Spearman's rank correlation. This correlation is so strong that we will be unable to separate these two independent variables in any regression. Therefore, the regressions presented below will only contain the number of hedge funds. Regardless of which variable is chosen to be used in our tests, both yield the same results.

[2] Spearman's rank correlation coefficients were also examined, but no significant difference with the Pearson correlations was found.

Also presented in Table 4 is the Pearson's correlations between the hedge fund variables, and the returns and volatility during the ten days surrounding the SEO. The table shows that no matter what ten-day time period we choose, there is as hypothesized a significant negative correlation between the number of funds (and hedge fund assets) and the SEO stock price volatility. Additionally, higher hedge fund returns are associated with higher volatility in the SEO stock price. There also seems to be a statistically positive association between hedge fund return and pre-offering SEO return, but no relationship after the offering. However, hedge funds and hedge fund assets seem to be associated with reduced post-offering returns.

In an attempt to test the first hypothesis, that more hedge funds have reduced the volatility in the SEO market, regression analysis was used. The regression output is presented in Table 5. We used various time periods to measure the ten-day pre-offering volatility to account for the problem of accurately timing when the offering was known to the market[3]. Prior to the offering, reduced volatility in the market appears to be caused by the proliferation of hedge funds, increased leverage, larger firms, and reduced proportions of insiders. After the offering firm size becomes insignificant in determining market volatility, but hedge fund returns becomes significant. The results support our hypothesis of the proliferation of hedge funds having reduced market volatility.

In an attempt to test the second hypothesis, that the managers of hedge funds, by chasing profits, have manipulated the SEO pricing market and the true asset pricing relationship is obscured, we regressed stock returns on hedge fund and firm characteristics. The results are presented in Table 6 for various ten-day time periods surrounding offering. Prior to the offering greater excess returns are associated with higher hedge return, less insiders, smaller insider ownership reductions, and larger firms. Additionally, the number of hedge funds was also significant, but only for days 0 to 9 prior to the offering. However, only the hedge fund data was significant after the offering. The control variables have the sign predicted in the hypothesis section, but are largely insignificant. This shows limited supporting evidence for the second hypothesis that hedge funds have obscured the SEO market because all the control variables are insignificant and the number of hedge funds and their return are significant after the offering.

5. Summary

With the common belief that hedge funds are playing havoc with the markets, we looked into the impact of hedge funds on one portion of the market, namely SEOs. The belief that hedge funds reduce volatility is confirmed at least as regards the SEO market; they actually reduce price volatility both immediately before and after an SEO. We also found that when hedge funds had higher short-run returns, the SEOs also had higher short-run returns. One possible interpretation of the significant coefficient on hedge fund return is that hedge funds are finding arbitrage opportunities surrounding an SEO when the offering is priced below market value. Thus when hedge funds make higher returns they are arbitraging mispriced offerings and reducing market volatility.

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[3] We are using various ten-day prior to the offering ranges, because the registration dates are not accurate and the market can learn up to three days prior to the listed offer date.

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Table 1: Descriptive Statistics

The mean, standard deviation, and quartiles of the independent variables are presented at the top of the table. They include the HFD (total number of hedge funds at the time of the offering), HMV (total market value of all hedge funds during the month that the offering occurs), HRT (average monthly return of the hedge funds at time of the offering), LEV (total debt of the firm divided by the sum of total debt, preferred stock outstanding, and market value of equity), INS (total common stock owned by the board of directors, managers, and 5% owners divided by total common stock outstanding before the offering), ΔINS (insider ownership before minus insider ownership after offering where negative value indicates a decrease in insider ownership), and SIZ (a size variable defined as shares outstanding at time of offering multiplied by estimated share price as given by *IDD* immediately prior to the registration date). The mean, standard deviation, and quartiles of the dependent variables are presented at the bottom of the table. They include VOL (standard deviation of the stock price for the periods listed, as presented in equation 2) and RET (the compounded excess stock return for the periods listed).

Variable	Mean	Std. Dev.	Min	25th Percentile	50th Percentile	75th Percentile	Max
HFD	2,540	1,234	7,090	1,518	2,038	3,431	8,650
HMV	$1.188B	$1.246B	$.237B	$0.413B	$0.455B	$1.965B	$5.168B
HRT	1.19%	1.59%	-1.52%	0.09%	0.84%	1.86%	6.35%
LEV	24.73%	24.37%	0.0%	4.02%	15.94%	40.54%	99.0%
INS	49.05%	24.30%	1.30%	29.20%	46.70%	66.33%	100%
ΔINS	-10.66%	8.01%	-42.0%	-14.63%	-9.10%	-4.46%	7.50%
SIZ	$2.056M	$4.883M	$18,825	$0.309M	$0.661M	$1.723M	$46.134M
VOL (-9 to 0)	4.07%	2.47%	0.0%	2.31%	3.52%	5.20%	19%
VOL (-13 to -4)	3.81%	2.49%	1.0%	2.16%	3.20%	4.84%	18%
VOL (1 to 10)	3.48%	2.50%	1.0%	1.84%	2.91%	4.39%	24%
RET (-9 to 0)	-3.12%	15.23%	-81%	-11.06%	-2.97%	5.00%	69%
RET (-13 to -4)	0.50%	13.65%	-47%	-6.85%	-0.55%	6.84%	82%
RET (1 to 10)	2.18%	12.87%	-69%	-4.44%	1.82%	9.01%	52%

Table 2: Means by Year

For each year represented in a row, the columns show the total number of hedge funds (HFD), the total hedge fund assets (HMV, in billions), the average monthly hedge fund return (HRT, in percentage), volatility of the stock price for selected time periods (VOL), and excess stock return (RET) across all SEOs.

Year	Sample Size	HFD	HMV	HRT	VOL (-9 to 0)	VOL (-13 to -4)	VOL (1 to 10)	RET (-9 to 0)	RET (-13 to -4)	RET (1 to 10)
1999	140	1,304	0.297	2.15%	4.54%	4.11%	3.73%	-3.95%	0.37%	2.03%
2000	143	1,591	0.417	1.18%	6.21%	6.09%	5.60%	-4.12%	3.13%	4.77%
2001	101	1,982	0.452	0.83%	3.78%	3.67%	3.39%	-4.25%	-1.11%	3.64%
2002	82	2,517	0.513	0.38%	3.55%	3.00%	2.74%	-2.73%	-0.79%	1.78%
2003	75	3,221	1.552	1.51%	3.28%	2.94%	2.61%	-0.29%	0.82%	1.74%
2004	95	4,028	2.765	0.77%	2.72%	2.51%	2.31%	-4.08%	-1.75%	0.02%
2005	70	5,030	3.864	1.00%	2.46%	2.40%	2.21%	0.00%	1.94%	-1.01%

Table 3: Correlations Independent Variables

The Pearson correlations between the independent variables are presented in the table below. The independent variables include the number of hedge funds (HFD, natural log of), the total hedge fund assets (HMV, natural log of), average hedge fund return (HRT), the firm's leverage ratio (LEV), the percentage of insider common stock holdings before the offering (INS), the difference in the percentage of insiders (ΔINS), and SEO firm's the market value of equity (SIZ, natural log of). Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	HFD	HMV	HRT	LEV	INS	ΔINS	SIZ
HFD	1						
HMV	.952***	1					
HRT	-0.189***	-0.108***	1				
LEV	0.269***	0.181***	-.0108***	1			
INS	-0.072**	-0.119***	0.041	-0.027	1		
ΔINS	-0.113***	-0.064	0.008	-0.100***	-0.466***	1	
SIZ	-0.144***	-0.138***	0.123***	-0.029	0.065	0.239***	1

Table 4: Correlations

The Pearson's correlation coefficients are presented for the test of an association between the volatility stock price (VOL) or the excess return (RET) and the number of hedge funds (HFD, natural log of), the value of hedge fund assets (HMV natural log of), and hedge fund returns (HRT) for the month of the SEO offering. Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	HFD	HMV	HRT
HFD	1		
HMV	.952***	1	
HRT	-.189***	-.108***	1
VOL (-9 to 0)	-.419***	-.364***	.046
VOL (-13 to -4)	-.401***	-.342***	.051
VOL (1 to 10)	-.361***	-.303***	.021
RET (-9 to 0)	.067	.069	.123***
RET (-13 to -4)	-.037	-.016	.093**
RET (1 to 10)	-.105***	-.114***	-.075**

Table 5: Regression Output for Volatility

This table presents estimates of

$$VOL = \beta_0 + \beta_1 H + \beta_2 X + \varepsilon$$

for volatility of returns (VOL) both before and after the SEO. H represents the hedge fund independent variables measured during the month of the return. They include the total number of hedge funds (HFD), and the average hedge fund return (HRT). X represents firm specific independent variables measured at the time of the offering. They include a leverage ratio (LEV), the proportion of common stock held by insiders (INS), change in insider holdings (ΔINS), and firm size (SIZ). Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Days	-9 to 0	-14 to -3	1 to 10
Constant	0.215***	0.195***	0.171***
	(13.724)	(12.160)	(10.513)
HFD	-0.020***	-0.019***	-0.016***
	(-10.646)	(-9.648)	(-8.156)
HRT	0.000	0.000	-0.001**
	(-1.258)	(-1.207)	(-1.860)
LEV	-0.025***	-0.026***	-0.029***
	(-7.024)	(-7.181)	(-8.024)
INS	0.009**	0.007*	0.008**
	(2.372)	(1.797)	(2.059)
ΔINS	0.007	0.009	0.020
	(.560)	(.678)	(1.585)
SIZ	-0.002***	-0.001*	0.000
	(-3.583)	(-1.751)	(-1.254)
R-squared	0.255	0.230	0.218

Table 6: Regression Output for Returns

This table presents estimates of

$$RET = \beta_0 + \beta_1 H + \beta_2 X + \varepsilon$$

for excess returns (RET) for ten days around the SEO offer date. H represents the hedge fund independent variables measured during the month of the return. They include the total number of hedge funds (HFD), and the average hedge fund return (HRT). X represents firm specific independent variables measured at the time of the offering. They include a leverage ratio (LEV), the proportion of common stock held by insiders (INS), change in insider holdings (ΔINS), and firm size (SIZ). Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Days	-9 to 0	-14 to -3	1 to 10
Constant	-0.313***	0.009	0.360***
	(-2.869)	(.093)	(3.867)
HFD	0.027**	-0.006	-0.039***
	(2.073)	(-.521)	(-3.476)
HRT	0.012***	0.007**	-0.008**
	(3.403)	(2.130)	(-2.463)
LEV	0.001	-0.018	0.009
	(0.038)	(-0.831)	(0.453)
INS	-0.083***	-0.040	-0.028
	(-3.023)	(-1.623)	(-1.214)
ΔINS	-0.186**	-0.168**	-0.029
	(-2.157)	(-2.144)	(-0.398)
SIZ	0.012**	0.006	-0.003
	(2.566)	(1.552)	(-0.699)
R-squared	0.041	0.018	0.025