Hedge Funds versus SEOs: A Comparative Analysis

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ABSTRACT

Recent research has claimed that hedge fund performance has been deteriorating over time. In this paper, we study this claim by comparing hedge fund returns with those of firms undergoing a positive corporate event. The corporate event we chose is a seasoned equity offering (SEO). This choice is justified based on two considerations. *First*, an SEO is one of the more common and most significant corporate events. *Second*, an SEO is associated with stock price run-ups exhibiting highly positive stock price performance. Thus, if hedge funds can perform similarly to SEOs, then we have evidence that hedge funds have performed well. We begin our study by comparing a portfolio of SEOs to a portfolio of hedge funds. In the process, we trace normalized price trajectories for these two portfolios and find virtually identical absolute portfolio performances for six years around the SEO announcement month. Both portfolios also have the same risk. We next conduct conventional statistical tests and find evidence that hedge funds outperform SEOs for a number of absolute performance tests especially when we adjust for outliers. Most importantly, when we adjust for risk as measured by total volatility, we find that hedge funds always outperform SEOs. This is true for periods up to six years around the announcement month. Given that hedge funds perform well compared to a corporate event known to take place during period of stock price run-ups, we conclude that the current negativity about hedge fund performance is not warranted.

Keywords Hedge Funds · Seasoned Equity Offerings · Investment Returns

JEL Classification G12 · G14 · G23

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1. Introduction

There has been growing concerns over time about the performance of hedge funds. Stein (2012) writes hedge funds perform poorly even when compared to portfolios containing stock and bonds. The Economist (2012) affirms this viewpoint while noting defenders of the hedge fund industry argue hedge funds provide diversification. Writing in May 2013, Denning (2013) states the hedge fund index lost 13.6% the past five years, while other indices added 8.6%. These attacks on the hedge fund industry raise questions about their performance. In response, this paper analyzes hedge fund performance in an innovative fashion by comparing it to the performance of firms undergoing a major and common corporate event: a seasoned equity offering (SEO). Despite the attacks on the hedge fund industry, this paper shows hedge funds have performed well compared to firms undergoing SEOs where large stock price-ups occur.

This paper perform two comparisons to document the performance of hedge funds. The first test is needed because our hedge fund data consists of monthly portfolio returns. To overcome this obstacle, we compute equal-weighted portfolio returns for seventy-three months for hedge funds and SEOs. We are able to use these returns to form a trajectory of normalized prices for each portfolio for six years around SEO announcement months. In doing this, we find very similar performances in an absolute sense as both returns round off to 59% or about 10% per year. The virtually identical performances are achieved with the same amount of risk as the portfolio standard deviations are the same rounding off to 19%.

Second, we perform traditional statistical comparison tests between our hedge fund portfolio returns and individual SEO returns. For these tests, we discover SEOs outperform hedge funds in an absolute sense in the pre-SEO market, while hedge funds outperform SEOs when risk-adjustments are made using total volatility. This holds for tests from a month prior to the announcement month to 36 months prior. Besides demonstrating hedge funds substantially outperform SEOs during the announcement month, we also show hedge funds outperform SEOs in the post-SEO aftermarket in both an absolute sense and a risk-adjusted sense. This holds from anywhere to one month to 36 months after the announcement month. From two months up to 73 months around the announcement month, SEOs outperform hedge funds in the absolute sense while hedge funds outperform SEOs when risk adjustments are made.

The remainder of the paper is organized as follows. Section 2 reviews the literature, while Section 3 presents this paper's hypotheses to be tested. Section 4 describes the sample, data, methodology and provides summary statistics. Section 5 contains our empirical results and Section 6 offers conclusions.

2. Literature Review

This paper extends the line of research that focuses on the actual performance of hedge funds (Ackermann, McEnally and Ravenscraft, 1999; Malkiel and Saha, 2005; Dichev and Yu, 2011; Ibbotson, Chen and Zhu, 2011). Ackermann, McEnally and Ravenscraft (1999) used a large sample of 906 hedge funds from 1988-1995 and discovered hedge funds consistently outperform mutual funds, but not standard market indices. However, their superior performance is at the expense of greater volatility than either mutual funds or market indices. They offered evidence that positive and negative survival-related biases offset each other. For a period from 1990 to mid-1999, Liang (2001) showed hedge funds have an annual return of 14.2% compared with 18.8% for the S&P 500 Index. The standard deviation for the index was 3.89% a month compared to only 1.67% a month for hedge fund returns. The latter is inconsistent with the greater volatility findings for hedge funds offered by Ackerman, McEnally and Ravenscraft. Most recently, Bessler, Drobetz and Holler (2015) document that, on average, hedge funds in Germany increased shareholder value in the short-run and long-run, while Wang and Zhao (2015) find hedge funds enhance firm value by increasing the quantity and quality of patents.

When studying hedge fund performance, one must be cognizant of the deterioration in hedge fund returns over time so that conclusions can be dependent on a time frame studied. For example, Dichev and Yu (2011) found the hedge fund industry generated annual unadjusted value-weighted returns of 19.8% from 1980 to 1992, which is period in which the hedge-fund industry was still very small. The annual rate fell to 11.1% from 1993 to 2006. When Dichev and Yu converted to dollar-weighted numbers, they found hedge funds produced an annual return of 12% from 1980 to 2006. Ibbotson, Chen and Zhu (2011) adjusted

for biases and discovered hedge fund returns are 7.63% from 1995 to 2009. This is slightly lower than the S&P 500 return of 8.04% for the same period. The most damaging claim to hedge fund returns as deteriorating over time is given by Lack (2012) who argues hedge fund returns averaged 12% from 1994 to 1998 but only 2% from 2007 to 2011.

Despite the barrage of articles questioning the performance of hedge funds, the demand for hedge funds continues to grow with the growth spearheaded by institutions. Touryalai (2014) writes that, according to a Citigroup report, institutional ownership in hedge funds has increased from 20% in 2002 to 65% in 2014. Steinbrugge (2014) states most of the money flowing into hedge funds are from institutional investors concerned with fixed income portfolios. According to Steinbrugge, institutional ownership has a motive to continue investing in this manner because a diversified portfolio of hedge funds generates a return that is twice that of a fixed income portfolio. Ownership in a portfolio of hedge funds for all investors became a possibility at the beginning of 2013 when Goldman Sachs began a mutual fund consisting of investments in hedge funds.

3. Hypotheses

This paper's purpose is to determine if the negative perception of hedge fund performance is warranted. To achieve this purpose, we compare the performance of hedge funds to SEOs. Because SEO take place during periods of huge stock price run-ups, if hedge funds can perform well compared to SEOs, then this casts doubts on the negative perception of hedge fund performance. Given that we use portfolio hedge fund returns, we compare hedge fund returns with both a portfolio of SEOs and individual SEOs. Our first two hypotheses, discussed in this section, refers to the hedge fund comparison with individual SEOs for which we conduct statistical tests. If we support these hypotheses, we have evidence that hedge funds perform well relative to a corporate event known to be associated with favorable stock price performance. This evidence can add to any favorable hedge fund performance outcome generated from the portfolio comparison approach.

3.1 First Hypothesis

SEOs typically take place after large price run-ups (Baker, Malcolm and Wurgler, 2002; Hull, Kwak and Walker, 2012). Thus, for pre-SEO period comparisons, we expect firms undergoing SEOs to outperform hedge funds in terms of absolute returns. Because SEO returns are so dominantly positive prior to SEOs, we expect the superior SEO performance to also hold for periods around SEOs that include both pre-SEO and post-SEO periods. Our hedge fund returns are, in essence, hedge fund portfolio returns and these returns have less risk. Therefore, when we adjust for risk such as given Sharpe's risk measure, we expect a portfolio of hedge funds to outperform SEOs. The just-mentioned expectations lead to our first research hypothesis (*H–1*):

H–1: Prior to the registration date, a portfolio of hedge funds should make less absolute returns than SEO firms but on a risk-adjusted basis they should outperform SEOs. This should also hold for periods around SEOs due to the dominance of SEOs known to exist prior to its final registration.

H–1 calls attention to the possibility that even for a known period of exorbitant stock returns, a portfolio of hedge funds can still perform in a superior manner when we adjust for risk. Since the average investor can now invest in a portfolio of hedge funds, the test of this hypothesis has practical implications for all investors.

3.2 Second Hypothesis

SEOs can perform below benchmarks in the SEO aftermarket (Loughran and Ritter, 1995; Jegadeesh, 2000; Hull, Kwak and Walker, 2012). Thus, for post-SEO return comparisons, we expect hedge funds to outperform SEOs in terms of absolute returns and even more so for returns adjusted for risk. This lead to our second hypothesis (*H–2*):

H–2: During the SEO registration month and in the post-SEO aftermarket, hedge funds should make greater absolute returns than SEO firms and should perform even better on a risk-adjusted basis.

H–2 reflects the fact hedge funds can use financial investments and a variety of strategies to make positive profits for all periods including periods where SEOs underperform benchmarks such as the announcement month (month 0).

4. Sample, Data, Methodology and Descriptive Statistics

4.1 Sample and Data

Our initial sample of 2,448 SEOs was identified from the *Investment Dealer's Digest* (*IDD*) for the period from January 2004 through December 2010. Because we look at three years before and three years after, our time period extends from January 2001 through December 2013. This is 13-year period during which hedge fund performance has declined compared to earlier years. Besides *IDD*, other major sources are final prospectuses, Compustat, Capital IQ and the Center for Research in Security Prices (CRSP). A final prospectus serves to identify the registration date for the equity offering that determines month 0. This month will typically include the offer date since it typically comes six business days after the registration date. Major details from the final prospectus include the offer price, estimated offer price, number of primary and secondary shares, shares outstanding, issue costs, purpose of proceeds, and change in proportional insider ownership. The latter insider requirement helps restrict our sample making it more manageable since we hand-gather data to insure accuracy. Our final sample contains 648 SEOs.

We use the Hedge Fund Research (HFR) database to get monthly hedge fund data.[1] The most important month is month 0. When getting hedge fund data for month 0 for each of our 648 SEOs, we match these 648 announcement months with the same month in HFR. We then use this "HFR" month to get data for hedge fund variables near the same point in time as SEO data that occurs in month 0.The key hedge fund variable for this study is the monthly hedge fund return. To illustrate how we get this variable, consider an SEO with a registration date of Wednesday, June 13, 2007 with June being month 0. The monthly June return for each active hedge fund in the HFR data base would be computed from the last day of May 2007 to the last day of June 2007. From all of these computations, we can generate an average equal-weighted hedge fund monthly return for June 2007. In essence, this monthly hedge fund return is a monthly portfolio hedge fund return as it is an average of many hedge fund returns. This monthly hedge fund return can be matched with our SEO's monthly individual return for June 2007 that is computed by CRSP using the prices from the last trading day of May to the last trading day of June. Thus, for each of our 648 SEOs, we have an equal-weighted hedge fund monthly return that occurs in the same month of the SEO announcement. If June is month 0, then May would be month –1 while July would be month +1 and so forth until we can obtain monthly hedge fund returns from months –36 through +36. Counting month 0, we can compute a compounded monthly hedge fund return that uses up to 73 monthly returns.

For each SEO (with non-missing data), we gather monthly returns from CRSP for months –36 through +36. For comparison purposes, each monthly SEO return can be matched to the same month in time as the corresponding monthly hedge fund return. Using these monthly returns, we can choose any short-run and long-run period before, after or around month 0 and compare SEO and hedge fund compounded monthly returns for these periods at the same point in time. We can also trace a trajectory of normalized portfolio prices over time because each month from –36 to +36 will have an equal-weighted portfolio return.

4.2 Methodology

The established return methodologies are described by researchers (Lyon, Barber and Tsai, 1999; Li and Zhao, 2006; Viswanathan and Wei, 2008).[2] Compounded stock returns are computed by compounding monthly stock returns for a designated holding period. A holding period's abnormal return equals that period's compounded raw stock return minus its compounded expected return. Expected returns can be

[1] For this paper's time period of study, we estimate the HFR data base has about 2/3 of all hedge funds. Fung and Hsieh (2006) describe the potential biases in the commercial data bases like HFR. By using the HFR data base, this paper avoids survivorship bias as this data base keeps hedge funds that have ceased to exist. Malkiel and Saha (2005) discusses the biases in reported hedge fund returns.

[2] Researchers (Ritter and Loughran, 1995; Kothari and Warner, 1997; Lyon, Barber and Tsai, 1999; Lyandres, Sun and Zhang, 2008; Panagiotis, 2009) disagree over the best method to use especially when computing long-run expected return. A comparative study, like this paper, can be immune from errors in methodology if the same expected return applies to the set of returns being compared because the expected returns would offset one another in a simple comparison process.

computed in various ways for each month. The simplest is to use a market monthly index return such as an equal-weighted, exchange-based index as provided by CRSP. One can also use the *OLS* procedure described by Brown and Warner (1980) where alpha and beta *OLS* parameters are calculated using a chosen market index and an estimation period. Once expected returns are computed for each period, we are then able to calculate the holding period's compounded expected return. Subtracting the compounded expected return from the compounded raw return gives the compounded abnormal return. For our comparison test that adjusts for expected returns, we avoid problems described by Dichev and Yu (2011) by computing compounded expected returns and subtracting them out at the end of the period being tested instead of each month.

Three comparisons are deemed suitable for this study. *First*, we do a simple comparison of raw SEO returns with the hedge fund returns. *Second*, we compare actual returns adjusted for expected using the Fama-French method (described below). *Third*, we conduct risk-adjusted comparisons using the Sharpe ratio where we subtract the risk-free rate from the raw return and then divide by the standard deviation of returns. The formula for this ratio is

$$\text{Sharpe Ratio} = \frac{r - r_f}{\sigma} \tag{1}$$

where r is the return, r_f is the T-bill rate and σ is the standard deviation of the return. When seeking to apply the Sharpe ratio and its variations, we turn to the standard volatility research (Duffee, 1995; Grullon, Lyandres and Zhdanov, 2012; Ang, Hodrick, Xing and Zhang, 2009). For this research, measures for risk involve total volatility, idiosyncratic volatility and systematic volatility. While the below procedure is described for SEOs, we can note the procedure is the same for hedge fund returns.

First, we compute total volatility (*TVOL*). For each of the 648 SEOs, we use monthly stock return data from CRSP to compute volatility in excess monthly stock returns (*ER*) defined as

$$ER_{i,\tau} = R_{i,\tau} - r_{\tau}^{f} \tag{2}$$

where $Er_{i,\tau}$ is the SEO's monthly excess return for stock i for month τ, $R_{i,\tau}$ is the SEO's monthly raw return for stock i for month τ; and, r_{τ}^{f} is the risk-free return for month τ given by the one-month T-bill. Volatility in excess returns can be computed for chosen short-run and long-run t periods. $TVOL_{i,t}$ is the standard deviation of $Er_{i,\tau}$ given in (2). Using logarithmic returns to lessen the mechanical effect from skewness due to large positive returns, we have

$$TVOL_{i,t} = \sqrt{\frac{\sum_{\tau \in t}(r_{i,\tau} - \overline{r_{i,t}})^2}{n_t - 1}} \tag{3}$$

where $r_{i,\tau}$ is the natural logarithm of $(1 + Er_{i,\tau})$; $\overline{r_{i,t}}$ is the mean of all $r_{i,\tau}$ values during period t; and, n_t is the number of non-missing returns during period t.

Second, we compute the firm-specific component of total volatility. This component is the idiosyncratic volatility ($IVOL_{i,t}$) for stock i for period t and is calculated as

$$IVOL_{i,t} = \sqrt{\frac{\sum_{\tau \in t} \varepsilon_{i,\tau}^{2}}{n_t - 1}} \tag{4}$$

where $\varepsilon_{i,\tau}$ is the Fama and French (2009) residual for day τ and is calculated from the following regression:

$$\varepsilon_{i,\tau} = Er_{i,\tau} - [\alpha + \beta 1_{i,t}(MKT_{\tau} - r_{\tau}^{f}) + \beta 2_{i,t}(HML_{\tau}) + \beta 3_{i,t}(SMB_{\tau})] \tag{5}$$

where $Er_{i,\tau}$ and r_{τ}^{f} were given in (2); α is the intercept of the regression line (describable as the average excess return); the three $\beta_{i,t}$ values are the three sensitivity factors for stock i for period t; MKT_{τ} is the return on the value-weighted CRSP index for month τ; HML_{τ} is the average return for month τ for value

portfolios minus the average return for day τ for growth portfolios; SMB_τ is the average return for month τ for small-sized portfolios minus the average return for day τ for large-sized portfolios; and, the last part of the equation is the expected return used in one of our comparison tests. For the latter, we have: expected return $= \alpha + \beta 1_{i,t}(MKT_\tau - r_\tau^f) + \beta 2_{i,t}(HML_\tau) + \beta 3_{i,t}(SMB_\tau)$.

Third, we calculate the market (or nondiversified) component of total volatility. This component is the systematic volatility ($SVOL_{i,t}$) for stock i for period t and is computed as

$$SVOL_{i,t} = \sqrt{\frac{\sum_{\tau \in t}(R_{i,\tau} - \varepsilon_{i,\tau} - \overline{R_{i,t}})^2}{n_t - 1}} . \quad (6)$$

where $\overline{R_{i,t}}$ is the mean of all $R_{i,\tau}$ during period t where $R_{i,\tau}$ is the raw return for stock i for day τ found in (2).[3]

Our comparison tests that adjust for risk focus on *TVOL* but also use *IVOL* and *SVOL*. To understand the risk environment under which returns operate, we analyze how risk changes over time. One way to do this is to look at how the three volatilities change or shift from a pre-SEO period to a post-SEO periods. The general formula we will use involves the change in volatility for stock i that is symbolized as $\Delta VOL_{i,\Delta t}$ where $\Delta VOL_{i,\Delta t} = VOL_{i,t} - VOL_{i,t-1} = VOL_{i,post\text{-}SEO} - VOL_{i,pre\text{-}SEO}$. In terms of the change in volatility for our three volatility measures between periods, we have:

$$\Delta TVOL_{i,\Delta t} = TVOL_{i,post\text{-}SEO} - TVOL_{i,pre\text{-}SEO} \quad (7)$$

$$\Delta IVOL_{i,\Delta t} = IVOL_{i,post\text{-}SEO} - IVOL_{i,pre\text{-}SEO} \quad (8)$$

$$\Delta SVOL_{i,\Delta t} = SVOL_{i,post\text{-}SEO} - SVOL_{i,pre\text{-}SEO} \quad (9)$$

4.3 Descriptive Statistics for HFVs and NFVs

Panel A of Table 1 gives descriptive statistics for hedge fund variables (*HFVs*). This panel reports a mean of $2,340 million for "Mean Assets under Management for all Firms." This is the mean of all 648 "mean" values for month 0 from our sample of the 648 SEOs. The mean for the "Median Assets under Management for all Firms" variable is $243 million. The mean for "Mean Hedge Fund Size" and "Median Hedge Fund Size" are $312 million and $68.3 million, respectively. The mean for "Number of Hedge Funds" is 3,788. The means for the proportion of hedge funds that are fund of funds is 0.256. Finally, the mean hedge fund return for month 0 is 0.011, which annualized in percentage terms is 13.6%. The latter would be greater if we add back in the fees that typically include the annual charges of 2% of the assets and 20% of profits. Were we to consider earlier years this 13.6% could be much higher. For example, consider a hedge fund in the 1990s where making 100% for some years was a greater possibility. The fees would be 2% of assets plus 0.2 times 100% or 22% per year.

Insert Table 1 (about here)

Panel B of Table 1 reports descriptive statistics for non-hedge fund variables (*NFVs*). The proportional change in ownership by insiders averages –0.110. Institutional ownership as a proportion of outstanding shares averages 0.241. Underpricing averages –0.038 revealing the offer price is 3.8% below the price that the final prospectus reports near the time of the final registration.[4] The mean of 0.457 for the listing variable (which is a

[3] A standard deviation is computed as $\sqrt{\sum(Statistic - Mean\,of\,Statistic)^2/(n-1)}$. In this case, we have the "statistic" = (Raw Return – Fama-French residual) = $R - \varepsilon$ with "mean of statistic" = $\overline{R-\varepsilon} = \overline{R}$ since the mean of ε is 0. Thus, we have *SVOL* as found in (6). Because we use the log in (3) for *TVOL*, the expression of *TVOL* = *SVOL* + *IVOL* does not hold.

[4] We follow Hull and Kerchner (1996) and compute underpricing as a negative value to represent a negative impact on shareholder wealth from selling a security below its market value.

dummy variable where EXC = 1 if NYSE/AMEX; else 0) indicates 45.7% of the SEOs are listed on NYSE/AMEX with 54.3% listed on NASDAQ. The mean market value of outstanding common stock is $2,137 million, while the median is $642 million. The "Relative Size of Offering" has a mean value of 0.202 disclosing about two million secondary and primary shares are being offered for every 10 million shares outstanding.

The mean of 0.412 for the secondary variable (which is a dummy variable where SEC = 1 if at least 1/3 of offering are secondary shares; else 0) reveals 41.2% of the offerings include secondary shares that are 1/3 or more of the total shares. The Tobin Q ratio averages 3.789 indicating the market value is nearly four times greater than the book value. The median of 2.203 indicates the typical SEO's Tobin Q ratio is high as the historical median is below one. The profitability, financial liquidity and leverage ratios average –0.003, 0.265 and 0.292, respectively.

4.4 Hedge Fund Returns versus SEO Returns

Panel A of Table 2 shows that mean short-run SEOs compounded returns outperform those for hedge funds for pre-SEO periods up to three month before and including month 0. These results appear to be driven by outliers because medians for hedge funds show resemblance to medians for SEOs. For the period that includes months –2, –1 and 0, hedge funds have a compounded monthly median return of 0.039 compared to –0.075 for SEOs. Thus, a median comparison paints a different picture in that a typical portfolio of hedge funds can outperform a typical SEO. Furthermore, hedge funds are seen in Table 2 to outperform SEOs for month 0. For the post-SEO short-run periods up to three month after and including month 0, hedge funds outperform SEOs.

For the last three rows of Panel A that gives results for up to seven months surrounding the final registration announcement (months –3 to +3), we discover SEOs outperform hedge funds for all comparisons. Thus, in the short-run that includes seven calendar months around SEOs, hedge funds cannot outperform SEOs in the absolute sense. However, removing outliers and considering a typical situation as captured by medians, it appears that a portfolio of hedge funds perform remarkably well in the short-run compared to a known period of strong positive stock price run-ups that embody SEOs.

Insert Table 2 (about here)

Panel B of Table 2 reports long-run results for up to 73 months around the SEO announcement month. This panel demonstrates long-term results follow the same pattern as the short-run results in Panel A in that SEOs outperform hedge funds for pre-SEO periods and the opposite occurs for post-SEO periods.[5] The first three rows of Panel B reveal the superior long-run SEO performance before month 0 is largely explained by the first twelve months (e.g., one-year before month 0) where the averaged compounded monthly return for SEOs is 0.728 compared to 0.126 for hedge funds. While not shown in Panel B, SEO median performances for the third and second years before the announcement month are respectively 0.100 and 0.021 compared to 0.093 and 0.078 for hedge funds. Thus, for a typical situation, hedge fund performance appears to be superior for periods prior to month –12.

When we look at long-run performance surrounding the announcement dates, we see SEOs perform in a superior fashion and this is due to their superior pre-SEO performance for the year before month 0 with much of this superiority attributed to a small minority of firms that represent large positive outliers. To illustrate using the 73 months surrounding month 0, there are 24 SEOs that have returns in the range of 500% to 2400%. Given the hedge funds do not have these outliers, it is no surprise that the median hedge fund return of 0.686 is greater than 0.527 for SEOs for these 73 months.

Besides reporting mean and median returns, Table 2 also reports standard deviations. While the standard deviations for hedge funds are much lower, we should emphasize this is expected since our data for hedge fund returns represent portfolios of hedge funds for each month. Since more and more investors are able to invest in fund resembling a portfolio of hedge funds, the standard deviations given in Table 2 are achievable. For example, at the time of this writing, there are mutual funds that attempt to mimic hedge fund investing.

[5] Table 2 reveals there are only 316 SEOs for the long-run period consisting of months –36 to +36 that have complete monthly data for the 73 months. This is largely explained by the large number of firms in our sample that have had an IPO in the past 36 months and for which they would have at least one missing pre-SEO return.

5. Empirical Results

5.1 Hedge Fund Portfolio Returns versus SEO Portfolio Returns

Given that we have data for the same relative point in time from –36 to +36, we can aggregate our hedge fund and SEO return for each month and thus compute equal-weighted hedge fund and SEO portfolio monthly returns for months –36 to +36. Since hedge fund returns are already portfolio returns, aggregating them at the same point in time simply makes them a larger portfolio. Having computed these monthly portfolio returns, we are now in position to trace each change in portfolio over a 73 month period. Because we have missing SEO values for some months, the average SEO return for any month consists only of those SEOs with a return for that month.

Insert Figure 1 (about here)

Figure 1 traces the change in value over time for both portfolios after we normalize each portfolio by pricing it at $1 at the beginning of month –36 (or the end of month –37). After the first month or by the end of month –36, we see from Figure 1 that the SEO portfolio increases to $1.014 while the hedge fund portfolio increases to $1.009. The $1.014 value results from its return of 0.014 for month –36 and is obtained by multiplying (1 + 0.014) times the beginning normalized value of $1. Similarly, for the hedge fund portfolio, the $1.009 results from the monthly return of 0.009 for month –36 and is obtained by multiplying (1 + 0.009) times the beginning value of $1. We proceed in like manner for each month so that by the end of month –24, Figure 1 reveals the SEO portfolio is valued at $1.105 while the hedge fund portfolio is valued at $1.104. Thus, after a year, there is very little difference in value between the two portfolios. By the end of month –12, the SEO portfolio is $1.216 giving it about 1.5% edge compare with the hedge fund portfolio at $1.197. Figure 1 depicts how this gap widens after month –12 with the SEO portfolio outperforming the hedge fund portfolio as we approach the month 0. Although not shown in Figure 1, by the end of month –1, the SEO portfolio is worth $1.395 and the hedge fund portfolio is worth $1.332. This is a 4.73% advantage. However, by the end of month 0, this advantage has disappeared as the hedge fund portfolio is valued at $1.345 and has overtaken the SEO portfolio valued at $1.325. For this month alone there was a 6.1% turnaround!

By the end of month +12, the SEO portfolio is at $1.440 and slightly less than the hedge fund portfolio that stands at $1.449. By the end of month +24, the SEO portfolio has regained a very slight advantage at $1.469 compared to the hedge fund at $1.466. By the end of +36, the two portfolios are still neck to neck and hardly distinguishable as the SEO portfolio has grown from $1 to $1.591 and the hedge fund portfolio has increased from $1 to $1.587. Thus, after 73 months or slightly over six years, both portfolios have remarkably achieved almost the same value. This outcome using our portfolio approach paints a different picture compared to the long-run returns in Table 2 where SEOs in an absolute sense often outperformed hedge funds. For our portfolio approach, a lost SEO observation for a month does not prevent this observation's impact for subsequent months where it does not have a missing value.

In conclusion, our portfolio comparison approach leads to almost identical performances, in an absolute sense, for SEOs and hedge funds over a long period as both prices round off to $1.59. The standard deviation of these two portfolio returns over time are virtually the same at 0.189 for SEOs and 0.190 for hedge funds. Thus, even on a risk-adjusted basis, they are essentially equivalent. From a portfolio perspective, we conclude an investment in hedge funds perform similarly compared a six-year period around SEOs where returns for firms undergoing SEOs are known to perform well if not very well.

5.2 Hedge Fund versus SEO Comparison Results

We now seek to further explore the performance of SEOs and hedge funds in a more conventional manner using statistical analysis to test *H–1* and *H–2*. We do this in Table 3 where we report results using standard parametric and nonparametric tests when comparing hedge fund returns with SEO returns.

Table 3 presents two sets of results that cover the same short-run and long-run periods given in Table 2. *First*, we compare raw returns with these results in the "No Adjustment" column. *Second*, we adjust raw returns by subtracting out expected returns as described in Section 4.2. These results are reported in the

"Expected Returns Adjustment" column. It can be noted that both sets of results given in Table 3 are alike so that adjusting for expected returns does not change the results given by the raw returns. To help overcome outliers, we winsorize all returns at the 1% on each side. Because *H–1* and *H–2* have definite predictions, Table 3 reports one-tailed parametric *t* and nonparametric *z* tests. A significant negative statistic for tests using pre-SEO returns is consistent with *H–1* as a negative statistic indicates SEOs perform better. A significant positive *t* or *z* statistic for tests confined strictly to post-SEO returns is consistent with *H–2* as a positive statistic indicates hedge funds perform better.

Insert Table 3 (about here)

Panel A reports short-run results. Consistent with *H–1*, the pre-SEO statistics are negative and significant indicating SEOs outperform hedge funds for various short-run periods from months −3 to 0. Consistent with *H–2*, the significant positive *t* and *z* statistics for month 0 indicates hedge funds outperform SEOs during the month of the announcement. Unlike the significant negative statistics for the pre-SEO short-run periods, Panel A reports positive statistics for the three post-SEO short-run periods indicating hedge funds outperform SEOs for these periods. Consistent with *H–2*, all statistics are significant at or near the 10% level or better. The marginal positive *t* statistics for months 0 to +1 and months 0 to +2 became significant at the 1% level, respectively, when we winsorized at 5% on each side. Finally, the last three rows of Panel A report results for three periods around SEOs. Consistent with *H–1*, these short-run results agree with the pre-SEO short-run results indicating the superior SEO performance before the announcement month dominates the superior hedge fund performance after the announcement month.

Panel B of Table 3 reports long-run results. These results resemble the short-run results in that the pre-SEO tests generate significant negative statistics supporting *H–1*, the post-SEO results render significant positive statistics supporting *H–2*, and the three tests that include both pre-SEO and post-SEO periods supply significant negative statistics supporting *H–1*. Once again, there is not perfect agreement between *t* and *z* statistics for the post-SEO tests. As before, these can be explained by outliers. For example, winsorizing at the 5% on each side renders significant positive *t* statistics for the three post-SEO periods. In support of *H–1*, the results in the last three rows of Panel B have significant negative *t* and *z* statistics except for the *z* statistic for the six years around the announcement day period that includes months −36 to +36. Winsorizing at 10% on each side did not change these results.

5.3 Sharpe Ratio Comparison Tests

Before performing risk adjustments on SEO and hedge fund returns, we analyzed volatilities for these returns. *First*, we ran the Bartlett test to determine equality of variance between hedge fund and SEO monthly returns. All results were significant confirming greater volatility for SEOs as suggested by Table 2. *Second*, we examined if there were shifts in volatilities around SEO announcement dates. For all short-run and long-run periods from two months to six years around the SEO announcement dates, we found $\Delta TVOL$ and $\Delta IVOL$ from equations (7) and (8) were significantly negative indicating these volatilities fall or shift downwards after the SEO is announced. This is important because greater relative SEO volatilities in their pre-SEO periods will neutralize their greater positive pre-SEO returns when comparing SEO and hedge fund risk-adjusted performances during these periods. When testing shifts in systematic volatility using (9), we found $\Delta SVOL$ tended to be negative but was characterized as being much smaller in its risk shifts compared to $\Delta TVOL$ and $\Delta IVOL$. The change in volatilities for hedge fund returns were usually positive but were very small compared to SEOs. The smaller changes reflect the fact both pre-SEO and post-SEO volatilities for hedge funds are smaller than those for SEOs.

Having examined volatilities, we borrowed from the Sharpe ratio given in (1) to form risk-adjusted returns to test. For the first use of the Sharpe ratio, we substitute total volatility given by (3) for σ in (1). For the second test, we use idiosyncratic volatility given by equation (4) with *IVOL* replacing σ. For the third test, we use systematic volatility given by equation (6) with *SVOL* now replacing σ.[6] With our risk

[6] This latter test resembles the Treynor variation of the Sharpe measure. It was not possible to do the Sortino variation of the Sharpe ratio.

measures in place, we repeated the tests in Table 3. These risk-adjusted results are provided in Table 3 where there are no longer results for month 0 because the Fama-French volatility statistics cannot be computed for one month. *H–1* now predicts that hedge funds will perform better than SEOs for pre-SEO tests and those tests that include pre-SEO periods. *H–2* predicts that hedge funds will perform even better for post-SEO tests.

Insert Table 4 (about here)

Table 4 reports hedge funds perform better after we adjust for risk. In looking at the "Risk Adjustment" column for the *TVOL* tests, we find hedge funds outperform SEOs for all short-run and long-run periods as t and z statistics are positive and significant except for the negative t statistic for months −1 to 0. This negative statistic can be explained by positive outliers given the z statistic is 5.52. Furthermore, winsorizing at 5% on each side rendered a positive t statistic significant at the 10% level ($t = 1.51$). When comparing the results in the "No Adjustment" column with the *TVOL* results in the "Risk Adjustment" column, two important observations can be made. *First*, we find sign reversals for tests involving a pre-SEO period that are consistent with *H–1*. *Second*, the stronger positive statistics for the post-SEO periods are consistent with *H–2*.

For the *IVOL* results, we can note that their short-run results resemble those for *TVOL* as all z statistics are positive and highly significant. However, four short-run tests render negative t statistics and insignificant positive t statistics. However, once again winsorizing at the 5% on each side made t statistics more similar to z statistics with three t statistics now positive and significant. Except for the three post-SEO periods, the long-run results for *IVOL* differ from *TVOL*. In terms of the z statistics, there are just four periods where disagreements exist. While winsorizing at 5% on each side made a few results for *IVOL* more similar to *TVOL*, the same differences generally held. Thus, while generally consistent with *H–1* and *H–2*, the *IVOL* results cannot offer full support for these two hypothesis given some of the long-run results. In general, the results of *SVOL* are not consistent with the notion advanced in *H–1* and *H–2* that adjusting for risk will lead to superior hedge fund returns for all tests. We conclude that, in terms of total risk, hedge funds outperform SEOs and much of this can be contributed to idiosyncratic risk component, while the *SVOL* results indicate that systematic volatility has the same impact on both SEOs and hedge funds.

In looking at Table 3 and Table 4 together, we have six noteworthy findings in terms of absolute performance. *First*, SEOs perform better for short-run and long-run pre-SEO tests. *Second*, hedge funds perform better for month 0 and all short-run and long-run post-SEO tests. *Third*, SEOs perform better for any short-run or long-run period around the announcement month that include both pre-SEO and post-SEO months. *Fourth*, while SEOs perform better for long-run periods around the announcement month, a possible exception is the months –36 to +36 period where only the parametric statistic is significant. *Fifth*, if we adjust for risk using the Sharpe ratio and consider total volatility, hedge funds can be said to outperform SEO stock prices for all periods. *Sixth*, regardless of negative press in recent years on hedge fund performance, it is difficult to conclude anything other than hedge funds perform relatively well when compared to a corporate event that is known to occur during positive stock price run-ups.

5.4 Additional Tests and Future Research

Besides the tests of robustness mentioned throughout this paper, we ran additional tests to explore the validity of our findings. These tests involved deletion of six categories. For example, 7.1% of our SEOs have a second class of stock, 4.6% are REITs, 4.9% are ADRs, 3.9% are financials, 3.6% are utilities, and 7.1% of the SEOs are repeats where the same firm has two SEOs within 12 months of one another. An SEO firm can be in more than one of the six category. Deleting all observations separately or together did not materially alter our results. Due to the large number of missing observations because we deleted an observation with at least one monthly return, we decided to relax that constraint. We did this by allowing a computation for a year if at least half of the twelve observations were present. To fill in for the missing monthly data we substituted expected returns and were able to increase the sample sizes tested for long-run periods. For example, for the months −36 to +36 test, we increased the sample size from 316 to 415. However, the statistical results were unchanged.

Future research can build on this paper's findings in various areas. *First*, the fact the return for the announcement month determines whether or not SEOs outperform hedge funds needs further investigation and future research can explore this using a regression methodology where hedge fund variables representing hedge fund strategies are regressed against SEO returns. *Second*, our research has only examined one corporate event: an SEO. Further research can analyze other corporate events such as initial public offerings. *Third*, future research can use samples of SEOs with possibly a different characteristics as exhibited in Panel B of Table 1. *Fourth*, IPOs versus hedge fund returns can be explored.

6. Conclusions

With questions about the deterioration in hedge fund performance in more recent years, we set out to achieve a primary research goal: compare hedge fund performance with stock returns for companies undergoing a positive corporate event. From this comparison, we could make a statement concerning the performance of hedge funds such as hedge funds perform worst, the same, or better than companies undergoing an event with positive price performance. While there have been numerous papers written on hedge fund performance, to our knowledge no study has compared hedge fund returns to an important corporate event. Thus, this paper fills this void by comparing hedge funds to SEOs.

In other to make a statement about the relative performances of SEOs and hedge funds, we had to deal with a limitation in our research in that our hedge fund returns are in essence portfolio returns. Given this limitations, we developed a portfolio approach so both hedge funds and SEOs could be compared as portfolio. This approach enabled us to trace the trajectory of normalized prices over time for both portfolios. In the process, we discovered some striking findings. *First*, for a 73-month period or about six years, the two portfolios realized almost identical absolute performances. *Second*, the identical returns were not achieved with perfect consistency through these six years as SEOs outperformed hedge funds by 5.4% for the sixteen months prior to the announcement month. However, this advantage was erased when hedge funds outperformed by 6.1% during the announcement month. *Third*, both portfolios have virtually the same standard deviation. Thus, on a risk-adjusted basis using the Sharpe ratio, their performances would remain identical.

We next turned to more conventional comparison measures by using standard parametric and nonparametric tests to assess our first two hypothesis. In terms of the comparison for absolute performance, we found that SEOs outperformed hedge funds for pre-SEO periods, while hedge funds outperformed SEOs for post-SEO periods. However, when we considered both pre-SEO and post-SEO periods together, SEOs outperformed hedge funds. These results were true for both short-run tests covering up to seven months around the announcement month and long-run tests covering up to 73 months around the announcement month. They were also true when we adjusted raw returns for expected returns. When we adjusted for risk using total volatility, we found hedge funds outperformed SEOs for all tests. Because the results for our statistical tests are consistent with our first two hypothesis, we have further evidence (beyond our portfolio approach) that hedge funds perform well. Thus, we cannot support claims that hedge fund have been performing poorly in recent years.

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Table 1: Descriptive Statistics (Click here to return to Insert Table 1)

This table reports statistics for key variables to describe our hedge fund and SEO data. Panel A and Panel B respectively provide statistics for hedge fund variables (*HFVs*) and non-hedge fund variables (*NFVs*). *HFVs* are gathered as follows. Data is taken from the HFR data base that supplies monthly data at the end of each month. Thus, we are able to get monthly hedge fund data that corresponds to each SEO's offer month (called month 0). Because we have 648 SEOs, we get 648 "month 0" values for each *HFV*. For example, consider the variable *AUM* that stands for "Average Assets Under Management for all Firms." From all hedge fund firms in HFR's data base, we can compute an "average" for *AUM* for each month 0. Thus, we get 648 "month 0" average values for *AUM*. From these 648 values, we compute the mean, median and standard deviation of $2,340, $2,178 and $426, respectively, that are reported in Panel A for *AUM*. Sources for *NFVs* include prospectuses, *Investment Dealers' Digest* (*IDD*), Compustat, Capital IQ and CRSP. Values for all *NFVs* are taken from the final registration prospectus or financial statements available at that time. Insiders include (1) directors and officers, D&O, as a group and (2) any beneficial owner who controls 5% or more of the outstanding shares but who is not in the D&O group. The values for *SIZ* are in millions of dollars. Due to the way the dummy variables are designed their numbers represent proportions. For example, the mean of 0.457 for *EXC* represents the proportion of SEOs listed on NYSE/AMEX and the mean of 0.412 for *SEC* represents the proportion of the total SEO offering that involves significant secondary shares being offered (1/3 or more of shares issued are secondary or less than 2/3 are primary). StDev refers to standard deviation.

Panel A: Hedge Fund Variables (HFVs)	**Mean**	**Median**	**StDev**
AUM: Average Assets Under Management for all Hedge Fund Firms (in millions)	$2,340	$2,176	$426
MUM: Median Assets Under Management for all Hedge Fund Firms (in millions)	$243	$262	$53.4
AHF: Average Hedge Fund Size (in millions)	$312	$273	$71.7
MHF: Median Hedge Fund Size (in millions)	$68.3	$64.1	$14.4
NUM: Number of Hedge Funds	3,788	3,591	1,191
PFF: Proportion of Hedge Funds that are Fund of Funds	0.256	0.259	0.018
AHZ: Average Hedge Fund Return (Net of Fees) for Month 0 (annualized is 0.136)	0.011	0.012	0.018
Panel B: Non-Hedge Fund Variables (NFVs)			
CIL: Change in Insider Ownership: (Insider Shares After – Insider Shares Before) / Shares Outstanding	-0.110	-0.089	0.093
ISO: Institutional Ownership: Institutional Shares Owned / Shares Outstanding	0.241	0.199	0.188
UND: Underpricing: (Offer Price – Estimated Offer Price) / Estimated Offer Price	-0.038	-0.031	0.059
EXC: Listing Variable: *EXC* = 1 if NYSE/AMEX; else 0	0.457	0.000	0.499
SIZ: Common Value: Estimated Offer Price × Shares Outstanding (in millions)	$2,137	$642	$10,816
RSO: Relative Size of Offering = Total Shares Offered / Shares Outstanding	0.202	0.161	0.234
SEC: Secondary Selling: *SEC* = 1 if 1/3 or more of shares issued are secondary; else 0	0.412	0.000	0.493
TBQ: Tobin's Q Ratio: (Common Market Value + Total Liabilities) / Total Assets	3.789	2.203	5.338
PFT: Profitability Ratio: Operating Income before Depreciation / Total Assets	-0.003	0.085	0.294
FLQ: Financial Liquidity Ratio: Cash and Short-Term Investments / Total Assets	0.265	0.127	0.291
LEV: Leverage Ratio: Total Liabilities / (Common Value + Total Liabilities)	0.292	0.234	0.240
SYZ: SEO Raw Return Month 0 (annualized is 0.014)	0.001	-0.006	0.222

Table 2: Hedge Fund and SEO Returns around Month 0 (Click here to return to Insert Table 2)

This table reports compounded monthly returns for hedge funds and seasoned equity offerings (SEOs) for pre-SEO periods in Panel A and post-SEO periods in Panel B. Panel A also give statistics for the returns for month 0. All short-run compounded returns in Panel A include the announcement month (month 0) in their computations. Hedge fund returns are retrieved from Hedge Fund Research (HFR) as described in Section 4.3 and adjusted for fees and SEO returns are raw returns gathered from CRSP. All monthly returns are computed from the ending price of the prior month ($t-1$) to the ending price of the current month (t) as: monthly return = $(P_t - P_{t-1})/P_{t-1}$ where "t" is the month of concern.

	Hedge Funds				SEOs			
	n	Mean	Median	StDev	n	Mean	Median	StDev
Panel A: Short-Run Returns								
Months –3 to 0	648	0.044	0.047	0.042	647	0.201	0.106	0.810
Months –2 to 0	648	0.034	0.039	0.035	648	0.132	-0.075	0.432
Months –1 to 0	648	0.022	0.023	0.028	648	0.062	0.033	0.334
Month 0	648	0.011	0.012	0.018	648	0.001	-0.006	0.222
Months 0 to +1	648	0.020	0.027	0.028	648	0.017	0.003	0.305
Months 0 to +2	648	0.026	0.033	0.038	648	0.025	0.007	0.338
Months 0 to +3	648	0.034	0.044	0.047	648	0.022	0.001	0.361
Months –1 to +1	648	0.031	0.036	0.036	648	0.077	0.051	0.394
Months –2 to +2	648	0.050	0.062	0.052	648	0.163	0.079	0.549
Months –3 to +3	648	0.069	0.071	0.064	647	0.228	0.110	1.044
Panel B: Long-Run Returns								
Months –36 to –1	648	0.332	0.405	0.154	359	1.093	0.503	2.546
Months –24 to –1	648	0.213	0.280	0.131	448	0.842	0.392	1.909
Months –12 to –1	648	0.126	0.122	0.092	528	0.728	0.402	1.703
Months +1 to +12	648	0.079	0.105	0.091	634	0.058	0.000	0.559
Months +1 to +24	648	0.146	0.101	0.124	603	0.134	0.002	0.865
Months +1 to +36	648	0.236	0.190	0.126	566	0.287	0.075	1.266
Months –12 to +12	648	0.226	0.269	0.134	515	0.865	0.403	2.781
Months –24 to +24	648	0.402	0.358	0.207	415	1.101	0.438	2.767
Months –36 to +36	648	0.665	0.686	0.265	316	1.356	0.527	3.160

Table 3: Comparison Tests: Hedge Fund Versus SEO Returns (Click here to return to Insert Table 3)

This table reports results for *H–1* and *H–2* using standard parametric and nonparametric comparison tests for hedge fund returns versus seasoned equity offerings (SEOs) returns for a variety of short-run and long-run periods. The "No Adjustment" column reports results when comparing raw SEO returns and portfolio hedge fund returns. The "Expected Returns Adjustment" column provides results when adjusting returns for expected returns given by the Fama and French approach as presented in Section 4.2. The expected SEO returns are compounded for each period and then subtracted out from the compounded SEO returns. This procedure is also followed for hedge funds. Because *H–1* and *H–2* have definite predictions, this table reports one-tailed parametric *t* and nonparametric *z* tests A significant negative statistic for tests using pre-SEO returns is consistent with *H–1* as a negative statistic indicates SEOs performs better. A significant positive *t* or *z* statistic for tests confined strictly to post-SEO returns is consistent with *H–2* as a positive statistic indicates hedge funds performs better. To help overcome outliers, we winsorize all returns at the 1% on each side. Statistics greater than 1.28, 1.64 and 2.33 are significant at the 10%, 5% and 1% levels, respectively.

		H_0: Mean (Hedge Funds Return - SEOs Return) = 0							
		No Adjustment				Expected Returns Adjustment			
		Parametric	Nonparametric			Parametric	Nonparametric		
	n	*t*	+	–	*z*	*t*	+	–	*z*
Panel A: Short-Run Returns									
Months –3 to 0	647	-7.92	258	389	-7.05	-7.88	259	388	-7.01
Months –2 to 0	648	-6.99	270	378	-5.51	-6.97	271	377	-5.48
Months –1 to 0	648	-3.25	304	344	-1.61	-3.24	305	343	-1.59
Month 0	648	2.49	376	272	3.39	2.49	372	276	3.41
Months 0 to +1	648	1.62	357	291	2.40	1.63	358	290	2.41
Months 0 to +2	648	1.24	337	311	2.07	1.25	338	310	2.10
Months 0 to +3	648	2.09	360	288	3.04	2.08	362	286	3.05
Months –1 to +1	648	-3.41	296	352	-2.05	-3.40	297	351	-2.02
Months –2 to +2	648	-6.15	292	356	-4.48	-6.12	294	354	-4.43
Months –3 to +3	647	-6.21	287	360	-4.54	-6.16	286	361	-4.47
Panel B: Long-Run Returns									
Months –36 to –1	359	-7.41	158	201	-4.74	-7.20	160	199	-4.46
Months –24 to –1	448	-9.10	172	276	-7.31	-8.96	175	273	-7.11
Months –12 to –1	528	-11.45	153	375	-12.00	-11.37	154	374	-11.88
Months +1 to +12	634	1.31	361	273	3.23	1.31	360	274	3.22
Months +1 to +24	603	0.88	354	249	3.86	0.90	356	247	3.85
Months +1 to +36	566	-0.33	330	236	3.08	-0.30	330	236	3.07
Months –12 to +12	515	-8.19	215	300	-6.68	-8.10	218	297	-6.53
Months –24 to +24	415	-5.68	206	209	-2.03	-5.56	212	203	-1.83
Months –36 to +36	316	-3.52	180	136	0.07	-3.34	180	136	0.75

Table 4: Risk-Adjusted Comparison Tests: Hedge Fund Versus SEO Returns

(Click here to return to Insert Table 4)

This table repeats the tests presented in Table 3 but uses risk-adjusted returns as described in Section 4.2. So as to better compare this table's results those in Table 3 results, we also repeat the "No Adjustment" column in Table 3. The "Risk Adjustment" column provides statistics when adjustments are made for "Total," "Idiosyncratic" and "Systematic" volatilities referred to respectively as *TVOL*, *IVOL* and *SVOL*. These volatilities are described in Section 4.2. For the first risk-adjustment or *TVOL* test, we use the Sharpe Ratio with the total volatility given by equation (3) replacing the standard deviation. For the second or *IVOL* test, we use the Sharpe Ratio with the idiosyncratic volatility given by equation (4) replacing the standard deviation. For the third or *SVOL* test, we use the Sharpe Ratio with the systematic volatility given by equation (6) replacing the standard deviation. *H–1* now predicts that hedge funds will perform better than SEOs for pre-SEO tests and those tests that include pre-SEO periods. *H–2* predicts that hedge funds will now perform even better for post-SEO tests. Once again, a positive *t* or *z* statistic indicates hedge funds perform better than SEOs. To help overcome outliers, we winsorize all returns at the 1% on each side. Statistics greater than 1.28, 1.64 and 2.33 are significant at the 10%, 5% and 1% levels, respectively.

	H_0: Mean (Hedge Funds Return - SEOs Return) = 0								
	No Adjustment			Risk Adjustment					
				TVOL		*IVOL*		*SVOL*	
	n	*t*	*z*	*t*	*z*	*t*	*z*	*t*	*z*
Panel A: Short-Run									
Months –3 to 0	647	-7.92	-7.05	28.15	19.50	23.85	18.45	-5.55	-3.34
Months –2 to 0	648	-6.99	-5.51	23.40	17.78	16.34	15.33	-5.50	-2.37
Months –1 to 0	648	-3.25	-1.61	-1.48	5.52	-2.15	2.73	-2.92	0.22
Months 0 to +1	648	1.62	2.40	2.45	9.15	1.12	5.38	-1.38	3.40
Months 0 to +2	648	1.24	2.07	8.36	10.49	2.78	6.70	1.32	4.13
Months 0 to +3	648	2.09	3.04	11.99	11.92	6.03	8.05	2.35	5.34
Months –1 to +1	648	-3.41	-2.05	6.59	8.74	-0.24	3.52	-2.17	0.59
Months –2 to +2	648	-6.15	-4.48	6.54	8.55	0.28	2.64	-3.53	-0.53
Months –3 to +3	647	-6.21	-4.54	8.77	9.98	1.77	3.63	-2.79	-0.39
Panel B: Long-Run									
Months –36 to –1	359	-7.41	-4.74	18.48	13.56	-3.37	-0.37	-5.28	-2.48
Months –24 to –1	448	-9.10	-7.31	10.65	10.83	-3.27	0.18	-3.19	-3.41
Months –12 to –1	528	-11.45	-12.00	2.01	4.25	-9.71	-8.94	-10.57	-10.22
Months +1 to +12	634	1.31	3.23	11.93	12.16	2.14	4.33	-0.03	3.05
Months +1 to +24	603	0.88	3.86	11.72	12.88	5.78	8.35	2.55	6.03
Months +1 to +36	566	-0.33	3.08	12.06	13.30	1.99	6.43	0.10	5.17
Months –12 to +12	515	-8.19	-6.68	8.67	10.31	-7.70	-5.10	-8.78	-6.50
Months –24 to +24	415	-5.68	-2.03	17.56	14.12	-0.81	3.38	-3.96	1.12
Months –36 to +36	316	-3.52	0.07	21.29	13.82	-0.21	3.43	-1.69	2.39

(Click here to return to Insert Figure 1)

Figure 1. Portfolio Comparisons: SEO versus Hedge Funds
(Prices Normalized at $1 at end of Month -37)