

# Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees?

GIRISH REDDY, PETER BRADY, AND KARTIK PATEL

## GIRISH REDDY

is a founder and managing partner of Prisma Capital Partners in Jersey City, NJ. [greddy@prismapartners.com](mailto:greddy@prismapartners.com)

## PETER BRADY

is director of client services at Prisma Capital Partners in Jersey City, NJ. [pbrady@prismapartners.com](mailto:pbrady@prismapartners.com)

## KARTIK PATEL

is an associate in the Risk Management Group at Prisma Capital Partners in Jersey City, NJ. [kpatel@prismapartners.com](mailto:kpatel@prismapartners.com)

In recent years, an increasing number of institutional investors have begun to allocate capital to hedge funds. By 2008, pensions and other large institutions are expected to have over \$300 billion invested in hedge funds compared to only \$5 billion a decade ago (Atlas and Walsh [2005]). The primary reason for this enormous growth is that hedge funds offer attractive risk-adjusted returns, low correlation to traditional asset classes, and a source of alpha. Therefore, an allocation to hedge funds has the potential to increase the risk-adjusted returns of a portfolio. In this article, we compare two approaches to hedge fund investing that many institutions consider: 1) a broadly diversified fund of hedge funds, and 2) a small portfolio of multi-strategy hedge funds. Although funds of funds and multi-strategy hedge funds are not mutually exclusive,<sup>1</sup> each approach has potential advantages and disadvantages.

There is a significant body of literature about the risk and return characteristics of individual hedge funds (see, e.g., Fung and Hsieh [1997]; Schneeweis and Spurgin [1998], and Brown and Goetzmann [2001]). There are also several articles that compare the performance of funds of funds to individual hedge funds (see, for e.g., Brown et al. [1999]; Amin and Kat [2003]; Fung and Hsieh [2004], and Brown, Goetzmann, and Liang [2004]). However, there have been very few articles that directly compare the performance of funds of

hedge funds to multi-strategy hedge funds. Agrawal and Kale [2007] recently published an article comparing the performance of funds of funds and multi-strategy hedge funds. They examined performance reported in the Lipper TASS database for the period 1994–2004, and found that multi-strategy hedge funds significantly outperformed hedge fund of funds on both an absolute and risk-adjusted basis. Agarwal and Kale attribute the superior performance of multi-strategy hedge funds primarily to “managerial self selection,” hypothesizing that “better” managers self select into running multi-strategy hedge funds. While the methodology of this study is sound, there are a number of issues that limit the impact of the authors’ conclusion. First, although the study covers a significant time period (1994–2004), the sample size is quite small. There were only 27 funds classified as multi-strategy funds in 1994, of which 14 were “dead” funds, i.e., funds that were no longer in operation. Despite the significant growth in multi-strategy managers, there were still only 116 multi-strategy funds (representing \$34 billion in assets under management) in the database as of 2004. It is difficult to draw definitive conclusions on the basis of such a small sample of funds. Another issue is the fact that no adjustment is made for funds that may be closed. Some of the top-performing multi-strategy hedge funds no longer accept new investments, so while they may indeed offer superior performance,

investors may not actually be able to access this performance. A final point worth noting is that this study was concluded prior to the implosion of Amaranth Advisors in the summer of 2006. When Amaranth suffered a severe drawdown, it was reportedly managing over \$9 billion in assets. Given the fact that all of the multi-strategy managers included in the Agarwal and Kale study collectively managed \$34 billion in assets as of 2004, it is likely that this event would have had a significant impact on the results. The potential risks associated with investing in a multi-strategy manager like Amaranth are addressed in the risk management section of this article.

In this article, we compare fund of funds to multi-strategy hedge funds along three dimensions: alpha potential, risk management, and business model. Rather than directly comparing the performance of multi-strategy hedge funds and funds of hedge funds, we attempt to quantify the *potential* differences in performance by modeling some of the underlying factors that account for performance differences.

## METHODOLOGY

An obvious way to compare multi-strategy funds to funds of funds is to analyze historical performance of hedge fund indices. Unfortunately, there are a number of issues related to the major hedge fund indices that make it impractical to simply compare historical performance of funds of funds and multi-strategy indices. Several authors have shown that non-investable indices are subject to both survivorship bias and selection bias (Brown, Goetzmann, and Ibbotson [1999]; Fung and Hsieh [2000]; Liang [2000], and Malkiel and Saha [2006]). In addition, even investable indices can be significantly affected by selection bias. More importantly, none of the major index providers publish both a fund of funds index and a multi-strategy index.<sup>2</sup> In addition, each index uses different selection criteria and calculation methodologies (for example, CSFB is asset weighted, whereas HFR I is not). For this reason, rather than simply comparing headline performance of indices, we tried to quantify a number of the differences between funds of funds and multi-strategy funds by analyzing historical data of underlying managers from the TASS database. It contains monthly performance data for over 7,000 hedge funds, including funds that have gone out of business. Using this database, we attempted to measure the potential impact on performance of a number of the key return drivers. In order to keep our methodology consis-

tent, we limited our analysis to funds with at least \$25 million in assets and we focused on the past six years.<sup>3</sup>

## ALPHA POTENTIAL

### Strategy Allocation and Manager Selection

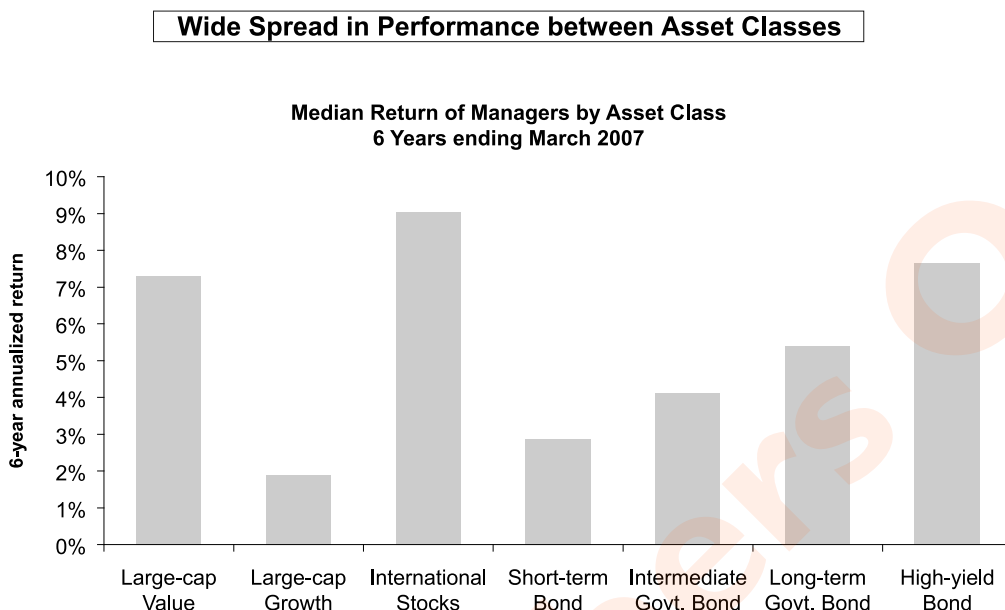
The two key elements of building a hedge fund portfolio are determining the mix of strategies in which to invest (strategy allocation) and choosing managers within these strategies (manager selection). Before comparing multi-strategy funds to funds of funds in these two areas, it is worthwhile to understand the potential impact each can have on performance. A number of studies have shown that for traditional asset classes, the vast majority of investment performance is driven by asset allocation decisions, and that manager selection is far less important (Brinson, Hood, and Beebower [1986]; Ibbotson and Kaplan [2000]). For example, the decision of how much capital to allocate to domestic equity, fixed income, emerging markets, commodities, etc. is likely to have a much greater impact on the performance of a portfolio than the decision about which international equity or fixed income managers are chosen. This insight is true because the difference in performance between strategies tends to be much greater than the difference between managers within a particular strategy. For example, the performance of most domestic large-cap equity managers will not stray very far from their benchmark, so the decision to invest with Fidelity or Merrill Lynch is far less important than the decision of how much to invest in domestic large-cap equity versus other asset classes.

An analysis of the recent performance of a number of traditional asset classes shows that asset allocation has indeed been more important than manager selection. Exhibit 1 shows the annualized return of the median manager in a number of traditional asset classes over the six years ending in March 2006. Over this period, returns ranged from +1.9% for large-cap growth stocks to +9.0% for international stocks, a spread of 7.1% per annum.

By contrast, the dispersion of returns between managers in these asset classes is quite low. Exhibit 2 shows the inter-quartile range<sup>4</sup> of manager performance in these same asset classes, also over the past six years. It shows that the difference in performance between top and bottom quartile managers has averaged only 2% per annum over the past six years.

## EXHIBIT 1

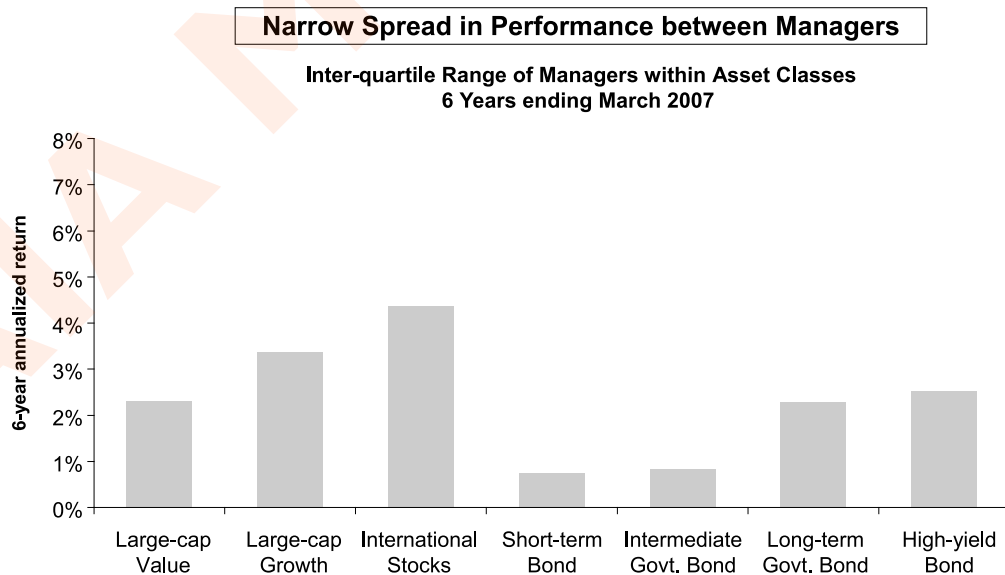
### Asset Allocation—Traditional Assets



Source: morningstar.com.

## EXHIBIT 2

### Manager Selection—Traditional Assets



Source: morningstar.com, June.

## Hedge Funds are Unique

A key finding of our research is that the relative importance of strategy allocation and manager selection is the opposite of traditional investments. With hedge fund strategies, *manager selection has a greater potential impact on performance than strategy allocation*. This is primarily due to the high dispersion of returns between hedge fund managers pursuing the same strategy, combined with the relatively low dispersion of returns between different hedge fund strategies. Exhibit 3 shows the dispersion of returns between different hedge fund strategies over the six years ending in March 2007. The six-year annualized returns of median managers across common hedge fund strategies are tightly bunched, with a spread of only 3.8% between the best and worst performing strategy (Event Driven and Convertible Arbitrage, respectively<sup>5</sup>). By contrast, as we saw above, the spread between the average large-cap growth manager and the average high-yield manager is 8.6%, more than twice as large.

Exhibit 4 shows the wide spread between top and bottom quartile hedge fund managers. Clearly, picking managers with strong performance is much more important with hedge fund managers than with traditional managers. This is primarily due to the fact that hedge fund managers have much greater flexibility in how they invest

compared to traditional managers. Hedge funds generally do not focus on a specific benchmark. Rather, they adapt their strategies to the market environment they face and seek to generate returns in excess of the risk-free rate. As a result, the dispersion of returns among hedge fund managers within a particular strategy is quite significant.

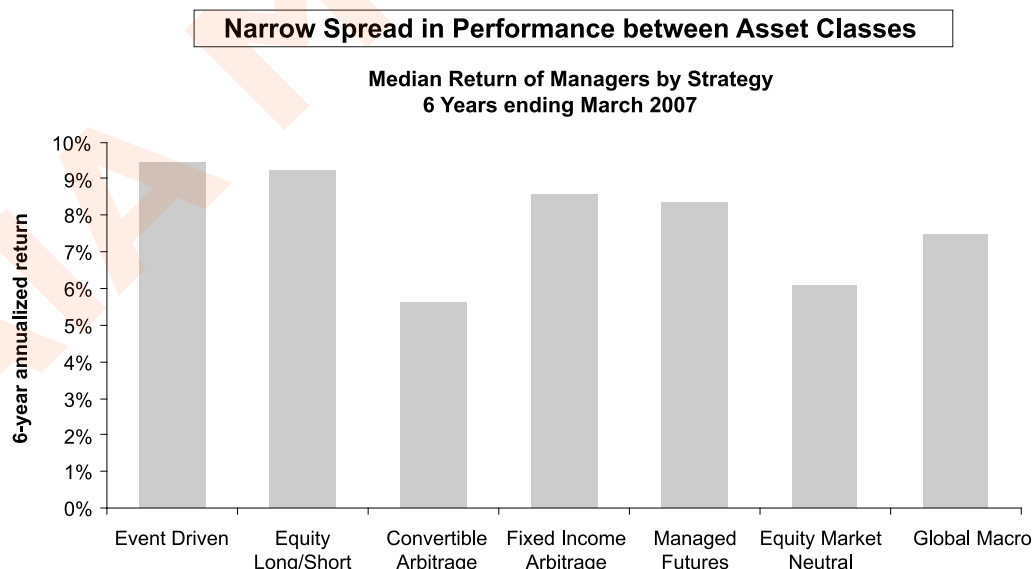
These exhibits demonstrate that manager selection is critical when building hedge fund portfolios. Though still important, strategy allocation is less crucial. In other words, the decision about which equity long/short manager to invest in is likely to have a greater impact on portfolio performance than the decision about how much to allocate to equity long/short managers versus event driven managers. Given these findings, our next goal was to quantify the differences between multi-strategy managers and funds of hedge funds in terms of strategy allocation and manager selection.

## Measuring the Impact of Strategy Allocation

While both multi-strategy managers and funds of funds have the ability to reallocate capital between strategies, multi-strategy managers have the potential to be more nimble. The reason is that funds of funds are subject to the liquidity restraints of the hedge fund managers

## EXHIBIT 3

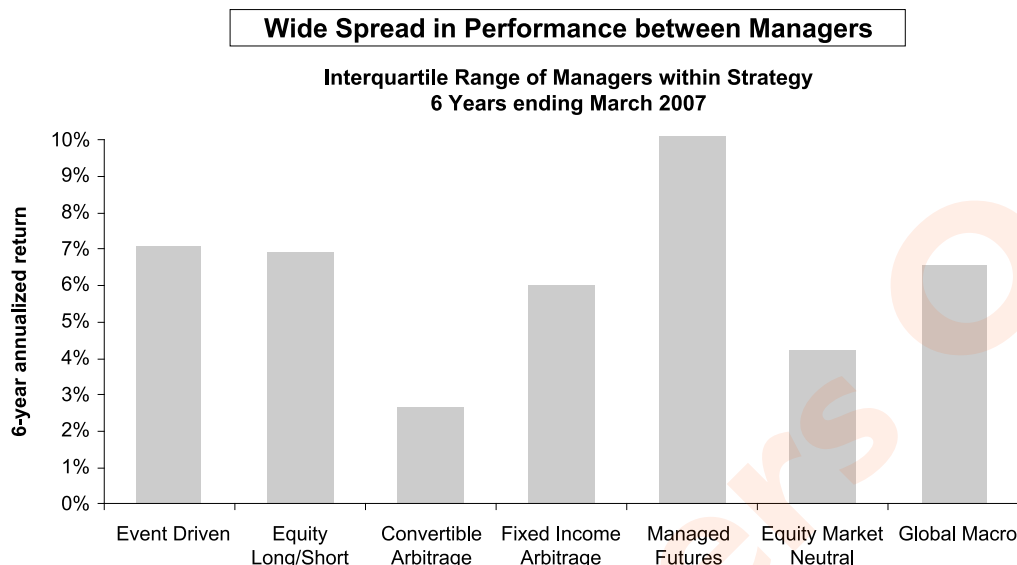
### Asset Allocation—Hedge Funds



Source: CSFB/Tremont Hedge Fund Database; Excludes funds with assets below \$25 MM.

## EXHIBIT 4

### Manager Selection—Hedge Funds



Source: CSFB/Tremont Hedge Fund Database; Excludes funds with assets below \$25 MM.

in which they invest. A fund of funds may recognize that the current environment for fixed income arbitrage is unfavorable, but if the fixed income managers in the portfolio have multi-year lockups and semi-annual liquidity, their ability to quickly reallocate capital away from this strategy is limited. By contrast, a multi-strategy manager faces no such restrictions. If he decides that a particular strategy is facing an unfavorable environment, he can immediately reduce the capital allocated to that strategy and redeploy it elsewhere.

In order to quantify this added flexibility in strategy allocation, we attempted to model the impact of shifting some portion of a portfolio out of poorly performing strategies into strong performers. In an ideal world, a multi-strategy hedge fund manager would be able to predict which strategies will perform well and poorly in future periods and will shift capital away from strategies with poor performance expectations towards strategies with strong performance expectations. In reality, managers may not be able to accurately predict the future performance of strategies and they may not be willing or able to make dramatic shifts in capital allocations on a frequent basis. Based on our experience, most multi-strategy managers typically focus on two to four primary strategies and they generally do not make dramatic shifts in capital allocation over short periods of time. For purposes of quanti-

fyng the potential impact from shifting strategy allocation, we created a hypothetical multi-strategy manager who is invested in all of the strategies in the CSFB Hedge Fund Index. For modeling purposes, we assumed that the hypothetical manager allocated capital across strategies in the same proportions as the index. Since the CSFB index is weighted to reflect market allocations of capital in various hedge fund strategies, this is not an unreasonable assumption. Next, we assumed that the manager had the benefit of *perfect foresight*: we assumed that at the beginning of the year, he could identify which strategies would perform best and worst in the coming year. In order to model this, we assumed that at the beginning of the year, the multi-strategy manager was able to reallocate a portion of his capital from the worst performing strategies to the best performing strategies in the index. Exhibit 5 shows an example of how the reallocation of capital worked in 2006. We then measured the impact on performance of 5%, 10% and 15% reallocations (assuming there was no cost attached to these reallocations). Exhibit 6 shows the impact on performance of a 10% reallocation with perfect foresight over the past five years.

On average over the past six years, the ability to move 10% of total capital with perfect foresight from the worst performing sector to the best performing sector would have added 183 basis points per annum to per-

## EXHIBIT 5

### Reallocating 10% of Capital from Worst Strategy to Best

Original Allocation of CSFB Index in 2007

Strategy	Allocation	Return	Contribution (bps)
<b>Emerging Markets</b>	<b>6.8%</b>	<b>20.5%</b>	<b>1.4%</b>
Event Driven	26.9%	15.7%	4.2%
Equity Long/Short	31.6%	14.4%	4.5%
Convertible Arbitrage	2.4%	14.3%	0.3%
Global Macro	12.4%	13.5%	1.7%
Equity Market Neutral	4.6%	11.2%	0.5%
Fixed Income	<b>8.6%</b>	<b>8.7%</b>	<b>0.7%</b>
Managed Futures	<b>6.1%</b>	<b>8.1%</b>	<b>0.5%</b>
<b>Short Bias</b>	<b>0.6%</b>	<b>(6.6)%</b>	<b>(0.1)%</b>
	<b>100.0%</b>		<b>13.9%</b>

Revised Allocation—Move 10% from Worst Performance Strategies to Best

Strategy	Allocation	Return	Contribution (bps)
<b>Emerging Markets</b>	<b>16.8%</b>	<b>20.5%</b>	<b>3.4%</b>
Event Driven	26.9%	15.7%	0.1%
Equity Long/Short	31.6%	14.4%	2.9%
Convertible Arbitrage	2.4%	14.3%	1.3%
Global Macro	12.4%	13.5%	2.2%
Equity Market Neutral	4.6%	11.2%	0.3%
<b>Fixed Income</b>	<b>5.3%</b>	<b>8.7%</b>	<b>0.1%</b>
<b>Managed Futures</b>	<b>0.0%</b>	<b>8.1%</b>	<b>0.0%</b>
<b>Short Bias</b>	<b>0.0%</b>	<b>(6.6)%</b>	<b>0.0%</b>
	<b>100.0%</b>		<b>15.2%</b>

formance.<sup>6</sup> This increase was relatively consistent over each of the past six years. A 2% increase in performance is significant, but it is not quite as large as we would have anticipated. However, this is consistent with our earlier observation that strategy allocation is less important than manager selection for hedge funds.

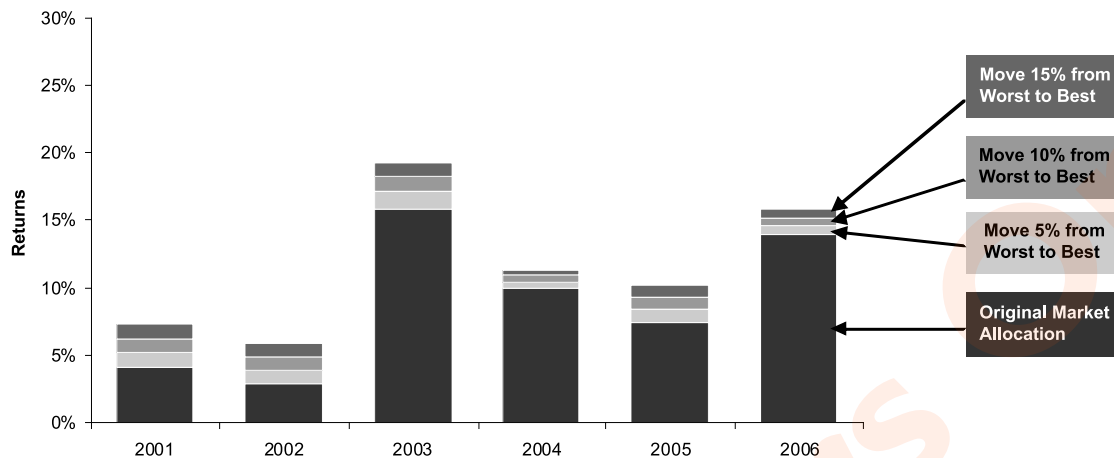
### Manager Selection

While multi-strategy managers have an advantage with respect to strategy allocation, manager selection is an area of potential advantage for funds of funds. A fund of funds can select managers from a large, global universe

of hedge funds, whereas a multi-strategy manager is limited by its ability to hire outstanding teams within each strategy in which it participates. Theoretically, a fund of funds can select best-of-breed managers across a wide range of strategies. Of course, it is highly unlikely that all funds of funds would select above average managers. If, however, a good fund of funds manager is able to build a portfolio whose managers, on average, outperform the median manager in their strategy, this can have a significant positive impact on performance.

In order to measure how much impact manager selection can have, we started by assuming a fund of funds invested in median managers in each of the seven major

## EXHIBIT 6 The Potential Impact of Strategy Allocation



CSFB strategy groupings.<sup>7</sup> We then measured the impact of moving from 50th percentile managers to 40th percentile managers to 30th percentile managers.

Exhibit 7 shows that by picking 40th percentile managers, rather than median managers, a fund of funds will improve performance by an average of 290 basis points. Picking 30th percentile managers in a given year will improve performance by nearly 630 basis points. Obviously, it is not easy to pick above average managers in every strategy,<sup>8</sup> but this shows that a fund of funds can

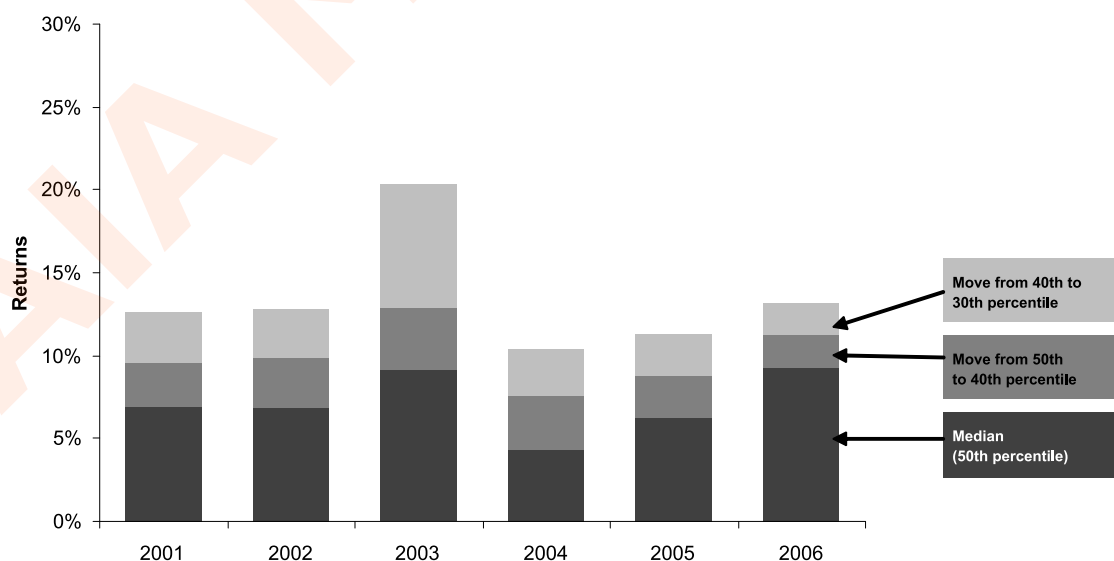
have a very significant impact on performance by picking managers with strong performance.

## RISK MANAGEMENT

### Market Risk

Another way in which funds of funds differ from multi-strategy managers is that they typically provide greater diversification. While multi-strategy managers pro-

## EXHIBIT 7 The Impact of Manager Selection



## EXHIBIT 8

### Median Manager Correlation by Strategy

(6 years ending March 2007)

Strategy	Correlation
Event Driven	0.28
Equity Long/Short	0.21
Convertible Arbitrage	0.38
Fixed Income Arbitrage	0.05
Managed Futures	0.03
Equity Market Neutral	0.04
Global Macro	0.18

vide some level of strategy diversification, funds of funds typically offer greater strategy diversification, as well as manager diversification. Indeed, a fund of funds will typically invest in several managers within a particular strategy in order to provide diversification.

In order to assess the potential benefits of diversification, we first looked at the correlation between managers within various hedge fund strategies. Exhibit 8 shows the median rolling two-year correlation between managers in the TASS database by strategy.

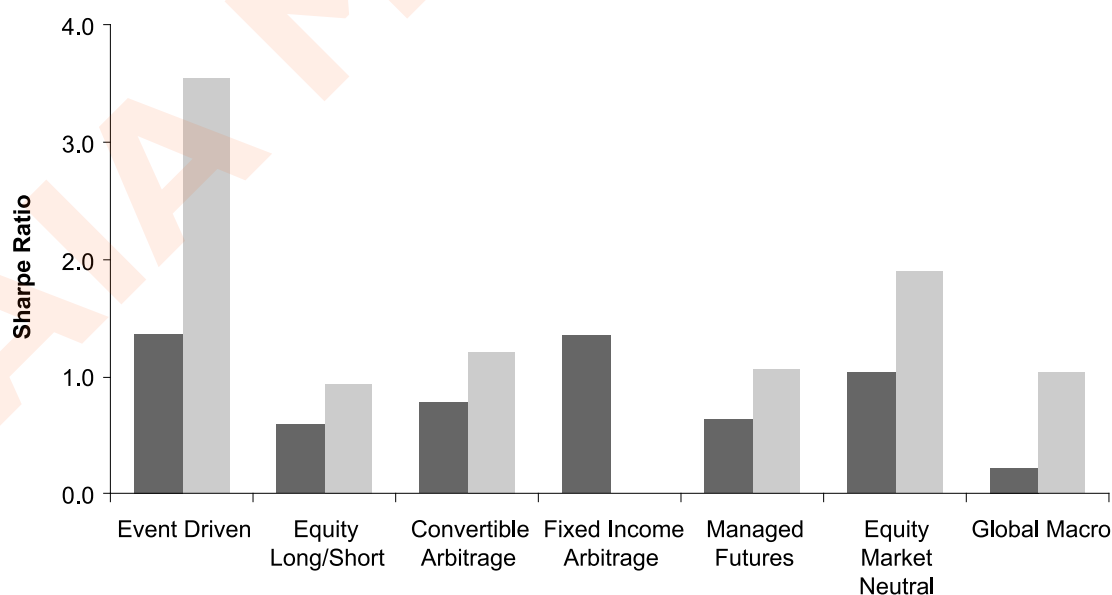
Exhibit 8 shows that the correlation between managers is remarkably low.<sup>9</sup> This means that the benefits of

manager diversification are likely to be high. In order to quantify the benefit of additional manager diversification provided by funds of funds, we again analyzed historical performance of funds in the TASS database. We assumed that a typical fund of funds would allocate to each of the seven primary strategies in the database and select four managers per strategy.<sup>10</sup> We then used a simulation to randomly create 100 four-manager portfolios from the TASS database, and compared both the Sharpe ratio and Sortino ratio of these portfolios to the average Sharpe and Sortino ratios of a single manager. Exhibits 9 and 10 show the results of this simulation.

The results demonstrate that diversification has significant benefits in terms of both the Sharpe and Sortino ratios. In most strategies, by increasing from a single manager to a portfolio of four managers, the Sharpe and Sortino ratios increased by roughly 90%. It is possible that a multi-strategy fund can create some diversification within a strategy to the extent that it employs either multiple models,<sup>11</sup> or more than one team of traders per strategy. However, it is unlikely it will offer the same level of diversification provided by a fund of funds. For hedge fund investors seeking consistency of returns (such as those implementing portable alpha strategies), additional diversification can be very beneficial. The advantage that funds of funds provide in terms of manager diversification was highlighted by the recent implosion of the large multi-

## EXHIBIT 9

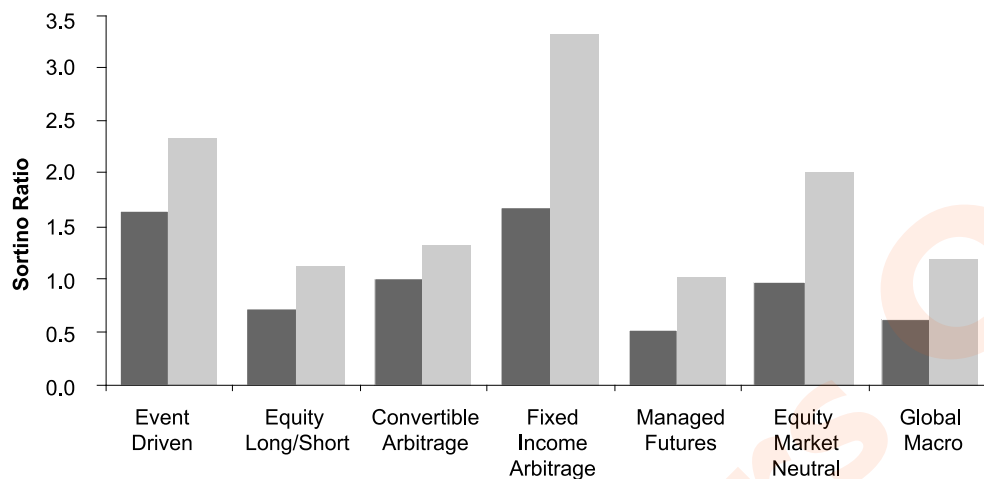
### Sharpe Ratio of Median Manager versus Random 4-Manager Portfolios





## EXHIBIT 10

### Sortino Ratio of Median Manager versus Random 4-Manager Portfolios



strategy manager Amaranth Advisors. A recent analysis of funds of funds that invested in Amaranth (Martin [2007]) found that funds of funds invested in Amaranth had an average allocation of approximately 6% and recognized losses of approximately 4%. While a 4% loss is significant, institutions that invested directly in Amaranth faced much higher losses. Clearly, an institution that invests in a single (or small number of) multi-strategy hedge fund faces more significant market risk than an institution that invests in a diversified portfolio of hedge funds, either via a fund of funds or directly.

#### Operational Risk

As discussed above, the additional diversification provided by funds of funds can potentially reduce the market risk associated with hedge fund investing. However, there are other risks associated with hedge fund investing beyond pure market risk. A recent study (Giraud [2003]) showed that more than half of all hedge fund collapses were directly related to a failure of one or more operational processes, as opposed to losses caused by market risk. Therefore, even though a multi-strategy manager reduces investment risk by investing in several strategies, investors are subject to the business and operational risks of the manager. By contrast, a fund of funds invests in a number of separate managers, each with its own risk management platform and back-office infrastructure. In this respect, investing with a multi-strategy manager is similar to investing in a conglomerate, whereas investing in a fund

of funds is like investing in a mutual fund. One of the risks of investing in a conglomerate is that if one business unit has problems, it can impact the entire business. Similarly, if one part of a multi-strategy hedge fund experiences operational issues, or experiences liquidity problems, this can adversely impact the entire firm.

#### Fraud and Headline Risk

A final issue that merits attention for institutional investors is headline risk. Because hedge funds represent a relatively new style of investing for many institutions (particularly public funds), there is often heightened concern about the potential for adverse publicity. While the number of actual frauds among hedge funds has been relatively modest, most institutions simply do not want to risk any association with a hedge fund that faces public scrutiny. For this reason alone, the fact that a fund of funds provides an additional level of due diligence and monitoring can be beneficial.

### BUSINESS MODEL

#### Management Fees

The most obvious advantage of multi-strategy hedge funds over funds of funds is the potential for lower fees. While an investor in a fund of funds must pay fees to both the underlying hedge fund managers in the portfolio and the fund of funds manager, there is only a single layer of

fees with multi-strategy funds. According to fee data from the TASS database, multi-strategy managers charge somewhat higher management fees than the average hedge fund manager. In our own experience, the weighted average management fees paid to single strategy managers are usually between 1.5% and 1.7%, whereas many multi-strategy managers charge management fees of 2% or more.

Multi-strategy managers charge higher management fees for a good reason: they tend to have larger infrastructure, both in terms of number of employees and technology support. When analyzing charges, investors should also consider fund expenses in addition to management fees. For example, some managers charge various administrative costs to their fund, which can be quite significant (Williamson [2006]). The bottom line is that the higher fee structure of multi-strategy managers may offset some of the fee differential with funds of funds portfolios.

### **Incentive Fees**

A less obvious fee advantage of multi-strategy managers is the fact that unprofitable strategies are automatically “netted” against profitable ones before any incentive fees are paid. We created a model (see Appendix A) that uses the historical performance of hedge funds in the TASS database to measure the impact of netting on fees. According to our model, the ability of multi-strategy managers to net the performance of strategies with negative performance against those with positive performance results in a fee savings of approximately 16 basis points per annum. However, our model overstates the impact because it ignores the fact that managers with negative performance are typically subject to a high watermark. In that case, managers who have negative performance will not charge additional performance fees until they exceed the high watermark. Therefore, we estimate that, on average, the inability to net the performance of managers with negative returns against that of other managers will cost funds of funds roughly 10 basis points per annum in additional fees.

### **Talent Retention**

Another business issue that investors should consider when analyzing a successful multi-strategy hedge fund is the ability of the fund to retain talent. This can be a difficult task for a number of reasons. First, the temptation for top performing traders to leave and form their

own fund is often a major concern. Not only can there be a strong economic incentive to “go it alone”, but many successful traders want to prove they can be successful on their own. The best multi-strategy managers employ a number of tactics to prevent their best talent from leaving, but some amount of turnover is inevitable. In some cases, other traders can fill the shoes of departed stars without a noticeable decline in performance. In other cases, though, the loss of a star trader (or as is often the case, an entire team that performed well) can cause a fund to simply exit a particular strategy.<sup>12</sup> In that case, both the performance and the level of diversification offered by the fund can be negatively impacted.

Talent retention can also be an issue with respect to underperforming strategies. As mentioned above, there are times when the market environment is simply unfavorable for a particular strategy. For example, 2005 presented a very difficult environment for convertible bond arbitrage. In theory, multi-strategy managers are ideally suited for this situation because they can quickly redeploy capital from convertible arbitrage to a more favorable strategy. However, this begs the question of how to deal with the convertible arbitrage traders. It is difficult for firms to continue to carry underperforming strategies, so, in many situations, they will simply reduce headcount, which can be costly and time-consuming.

A related issue is the ability to quickly add talent in order to capitalize on new strategies. As markets evolve and new strategies emerge, funds of funds can quickly allocate capital to managers with expertise in these strategies. By contrast, a multi-strategy manager may have to hire a whole new team and incorporate it into the existing platform, which can be very time-consuming.

### **CONCLUSION**

We looked at two potential alpha sources that are considered by many institutional investors: multi-strategy hedge funds and funds of funds. Our research led to three main conclusions:

1. Funds of funds are not merely multi-strategy funds with an extra layer of fees. A fund of funds can potentially offer a number of benefits that are not provided by multi-strategy managers. In addition, the differential in fees between funds of funds and multi-strategy managers is smaller than most investors realize, even when we consider the impact of fee netting.

- The potential impact of manager selection is much greater than strategy allocation. Therefore, funds of funds that are able to pick better than median managers have the potential to more than offset any fee advantage offered by multi-strategy managers.
- Due to the low level of correlation between managers within most hedge fund strategies, the diversification benefits provided by funds of funds can lead to a significant improvement in Sharpe and Sortino ratio.

Each of these approaches has certain strengths and weaknesses. Ultimately, investors should recognize that funds of funds and multi-strategy funds simply reflect different approaches. The approach that makes the most sense will always depend upon the risk and return objectives of an institution. In many cases, institutions may elect to invest with both a fund of funds and some multi-strategy managers.

## APPENDIX A

### Simulating Fee Netting

To illustrate the advantage that multi-strategy managers offer by being able to net the performance of strategies, assume that a multi-strategy manager employs four strategies: convert-

ible arbitrage, equity long/short, statistical arbitrage, and fixed income arbitrage. Assume that a fund of funds invests in four separate managers in order to get exposure to the same strategies as the multi-strategy manager. Further, assume that the convertible arbitrage strategy has negative performance in a given year. In order to keep the example simple, we will assume that both the multi-strategy manager and the fund of funds allocate exactly 25% of their capital to each of the four strategies, and that the gross performance of the strategies is identical. In the case of the multi-strategy manager, the negative performance of the convertible arbitrage strategy is netted against the performance of the other three strategies *before* fees are applied. By contrast, the fund of funds pays performance fees separately to each of the managers, so there is no netting of fees. The Exhibit A1 below demonstrates the impact of fee netting in this simplified example.

In this highly simplified example above, the netting of performance fees saves the multi-strategy investor roughly 18 basis points over the fund of funds investor – before the additional fees of the fund of funds are applied. Of course, the savings in fees due to performance netting only occurs when one or more of the managers in a fund of funds portfolio have negative performance for the year. Because many hedge fund strategies are designed to generate positive returns in most environments with low volatility, the likelihood of managers having negative returns in a given year is not as high as traditional managers.

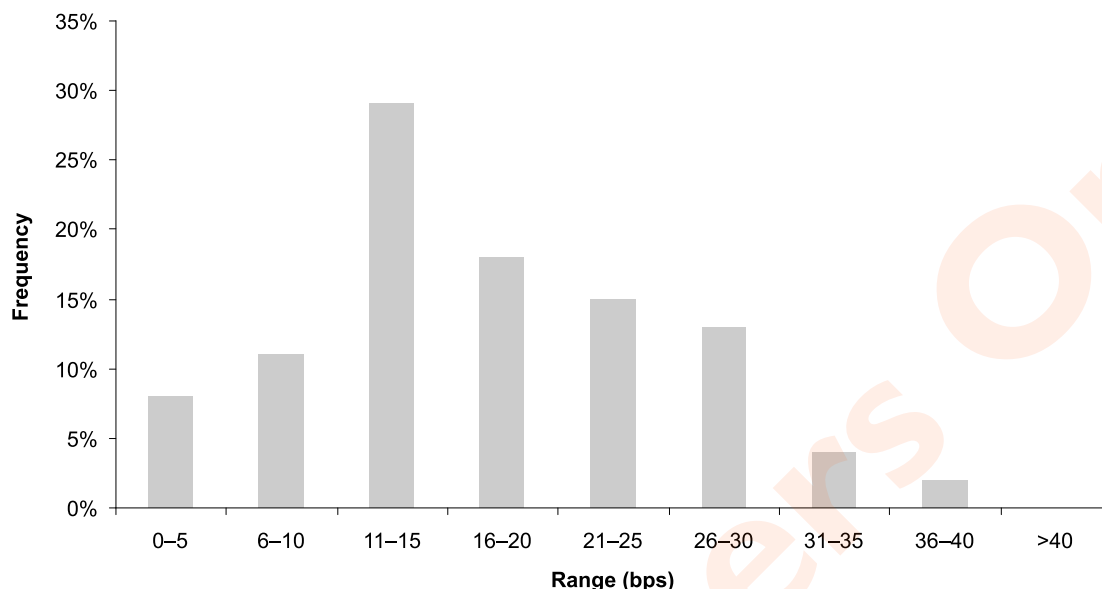
## EXHIBIT A1

### Effect of Performance “Netting” on Fees

Multi-strategy fees							
	Gross Return	Allocation	Contribution				
Convertible Arb.	-2%	25%	-0.50%				
Equity L/S	10%	25%	2.50%				
Fixed Income Arb.	8%	25%	2.00%				
Statistical Arb.	20%	25%	5.00%				
	<b>Gross return</b>		<b>9.00%</b>				
	Mgmt fee		1.50%				
	Return net of mgmt fee		7.50%				
	Performance fee		20%				
	Net performance		6.00%				
Fund of Funds fees							
	Gross return	Management fee	Return net of management fee	Performance fee	Net return	Allocation	Contribution
Convertible Arb.	-2%	1.50%	-3.50%	20%	-3.50%	25%	-0.88%
Equity L/S	10%	1.50%	8.50%	20%	6.80%	25%	1.70%
Fixed Income Arb.	8%	1.50%	6.50%	20%	5.20%	25%	1.30%
Statistical Arb.	20%	1.50%	18.50%	20%	14.80%	25%	3.70%
					<b>Net performance</b>		<b>5.83%</b>
					<b>Differential</b>		<b>0.18%</b>

## EXHIBIT A 2

### Simulating the Impact of Fee Netting



To simulate the overall impact of fee netting, we randomly created 100 manager portfolios selected from the TASS database, with equal allocations to each manager. We selected four managers from each of the seven primary CSFB Hedge Fund Index strategies in order to approximate the makeup of a typical diversified fund of hedge funds portfolio. We used the actual gross performance of the managers in these randomly created portfolios and applied management fees of 1.5% and performance fees of 20% to each manager, in order to simulate the performance of a fund of funds. We then assumed that a multi-strategy manager had the identical strategy allocations and gross performance by strategy. Therefore, the only difference in net performance between the hypothetical fund of funds portfolio and the multi-strategy portfolio is due to the effect of fee netting. The histogram (see Exhibit A2) shows the results of this simulation. On average, the ability to net fees reduced incentive fees for multi-strategy managers by 16 basis points. In most cases, the impact was between 10-25 basis points, and never exceeded 40 basis points in our simulation.

### ENDNOTES

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<sup>1</sup>Indeed, many large institutions allocate to both multi-strategy hedge funds and funds of funds. Moreover, many fund of funds managers allocate at least some portion of their capital to multi-strategy managers.

<sup>2</sup>This is most likely because the universe of multi-strategy managers that report their performance to database providers is relatively small. Although the number of multi-strategy hedge fund managers has increased dramatically in the past few years, it is still a relatively recent phenomenon.

<sup>3</sup>The rationale is that the past five years is more reflective of the current hedge fund environment. In addition, the number of funds in the database decreases significantly if you go back more than five years.

<sup>4</sup>Inter-quartile range is a common measure of performance dispersion. It measures the difference in performance between the 25th percentile manager and the 75th percentile manager within a strategy.

<sup>5</sup>The limited dispersion of returns between hedge fund strategies is relatively consistent over most time periods of five years or longer.

<sup>6</sup>Based on our experience, 10% is a reasonable estimate of how much a multi-strategy manager will reallocate between strategies in an average year.

<sup>7</sup>Equity Long/Short, Global Macro, Managed Futures, Equity Market Neutral, Event Driven, Convertible Arbitrage, and Fixed Income Arbitrage.

<sup>8</sup>In addition to the difficulty of predicting which managers are likely to have strong performance, funds of funds may also be limited by the fact that a number of strong performing funds are closed. However, given the overall size of the hedge fund universe and the relatively small percentage of closed managers, this is not likely to significantly impede funds of funds from identifying managers with above average performance.

<sup>9</sup>It should be noted that there were only four managed futures managers who reported returns to the TASS database for the past six years. Therefore, the correlation figure for this strategy is not representative. In fact, managed futures managers had a correlation of more than 0.50 over the last two years.

<sup>10</sup>This assumption is based on feedback we received from clients and other institutional investors in multiple funds of funds. Most of these institutions reported that the typical diversified fund of hedge fund portfolios had some exposure to most or all of the major hedge fund categories and typically had three to six managers per strategy.

<sup>11</sup>For example, many quantitative managers will run “trend-following” and “mean reverting” models or “value” and “momentum” models.

<sup>12</sup>There have been countless news articles about traders leaving established hedge funds to start their own fund over the past few years.

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