Funds of hedge funds: not the poor cousins of the hedge fund industry

There is a perception that funds of hedge funds are underperformers compared with basic hedge funds but, as **ELAINE HUTSON** points out, this is not necessarily the case.

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The growth in funds of hedge funds (FOHFs) – which are vehicles offering pooled investments in hedge funds – has been phenomenal in recent years. FOHFs represent nearly a third of the estimated $1 trillion now invested in hedge funds, and in Australia, FOHFs comprise almost two-thirds of the hedge fund industry (Reserve Bank of Australia, 2004).

FOHFs are increasingly available to a wider range of potential investors. While most regulation around the world restricts direct investment in hedge funds to institutions and high-net-worth individuals, recent changes to regulations in various countries have opened investment in FOHFs to retail investors.[1] Indeed, one of the claimed benefits of FOHFs is that small and moderately wealthy investors are now able to participate in hedge funds without the risks associated with investing in only one or two.

FOHF managers claim several other benefits for their services vis-à-vis investing directly in hedge funds. As well as diversification, FOHFs provide ongoing monitoring of constituent hedge funds, access to good funds that are closed to new investors, lower minimum investments and more flexible redemption policies.

Recent academic evidence ostensibly demonstrates that these benefits are dearly bought; FOHFs have consistently been found to underperform hedge funds on a risk-adjusted basis. This is usually explained by the additional layer of fees borne by FOHF investors. Are they being hoodwinked, or do FOHF investors happily accept lower returns for the abovementioned benefits?

In this article, I show that neither of these provides a full explanation, for three reasons. First, FOHFs do not perform as poorly relative to hedge funds as the academic evidence suggests. FOHF returns are subject to fewer errors and biases than hedge fund returns, and they reflect actual performance more closely.

Second, FOHF returns have distributional characteristics that offset, at least to some extent, their apparently inferior risk-return tradeoff. It is widely understood that hedge fund returns tend to exhibit negative skewness; that is, there are more return observations to the left of the mean than there would be if returns were normally distributed. Combining hedge funds into a portfolio – as shown by Brands and Gallagher (2004) in a recent issue of JASSA – actually worsens the negative skewness

problem. However, I show that FOHF returns are less affected by negative skewness than a hedge fund index.

Third, FOHFs are valuable additions to diversified portfolios. I show that they have lower correlations with the stock market in bull and bear markets and superior performance in bear markets, relative to a hedge fund index.

BIASES IN HEDGE FUND DATA

Table 1 presents summary risk and return information for the HFR weighted hedge fund index[2] and the S&P 500 over the period January 1990 to May 2003. These figures are typical of the metrics calculated in academic studies (see, for example, Ackermann, McEnally and Ravenscraft, 1999; Asness, Krail and Liew, 2001; and Brown, Goetzmann and Ibbotson, 1999) and by the industry for marketing purposes.

On the face of it, hedge funds earn excellent returns relative to the risk that they bear, with higher returns and lower risk (as measured by the standard deviation of returns) than the S&P 500 over the same period. This is confirmed by a Sharpe ratio for the hedge fund index that is more than three times greater than the Sharpe ratio for the S&P 500.

TABLE 1 **HEDGE FUND PERFORMANCE RELATIVE TO THE S&P 500**			
January 1990 – May 2003			
	Annualised average return	**Annualised standard deviation**	**Monthly Sharpe ratio**
S&P 500	10.88	15.25	0.12
HFR weighted hedge fund index	13.94	7.22	0.38

Notes: The hedge fund index data was obtained from Hedge Fund Research, Inc. (HFR), and the US 3-month T-bill rate is used as proxy for the risk-free rate in calculating the Sharpe ratios. The Sharpe ratio is the "excess return" of the index (return minus the risk-free rate of interest), divided by the standard deviation of returns.

It is, however, becoming increasingly recognised that research on hedge fund performance is hampered by several shortcomings. The main obstacle to gaining reliable insights into hedge fund performance is that the data suffer from several conditioning biases.

Most of these biases result from the fact that hedge funds are largely unregulated, and thus (unlike other collective investment schemes such as mutual funds) are not required to report their performance. Hedge funds report voluntarily to several commercial hedge fund data providers such as CSFB/Tremont, Hedge Fund Research (HFR), Managed Account Reports (now Zurich Capital Markets), and Van Hedge Fund Advisors.

While most of these providers claim to control for survivorship bias by retaining the data on defunct and withdrawn funds in their databases and in their various performance indices, there are several related biases that are more difficult to correct.

- **Liquidation bias** occurs when underperforming funds withdraw from reporting in the lead-up to their liquidation. Assuming liquidation follows poor (or possibly catastrophically poor performance à la long-term capital management), the effect of this bias is clearly to overstate hedge fund returns and underestimate their risk.
- **Termination bias** refers to funds that disappear through mergers and reorganisations, and it could lead to the over- or underestimation of hedge fund returns.
- **Self-selection bias** is caused by funds that cease reporting voluntarily because, for example, they have reached capacity and no longer need the exposure associated with reporting performance. This bias typically includes funds that choose not to report at all, and it leads to the underestimation of hedge fund returns.

With the best will in the world on the part of data providers these biases are hard to eliminate, and will remain so until regulation requires hedge funds to report performance publicly. They have been estimated to cause the overstating of hedge fund returns by between 1.4 to 3.4 per cent annually (Amin and Kat, 2002a; Brown, Goetzmann and Ibbotson, 1999; Fung and Hsieh, 2000; and Liang, 2000).

A second shortcoming of reported hedge fund data is stale prices. Many hedge funds hold assets for which regular arm's length market prices are not available, such as securities traded in illiquid markets and over-the-counter products like swaps.

The value of these assets must sometimes be estimated. Kao (2002) argues that "marking to market" and "marking to model" estimates of net asset value are questionable, and are likely to underestimate hedge fund risk. Asness, Krail and Liew (2001) find that when returns are adjusted for stale prices, many of the risk-return benefits of hedge fund investing disappear.

LESS BIAS IN FOHF DATA

Table 2 (overleaf) shows summary return and risk statistics and Sharpe ratios for 332 FOHFs obtained from Hedge Fund Research, Inc., with a minimum of 2½ years of monthly return history during the period January 1990 to May 2003. The table includes summary statistics for the FOHFs divided into 4 sub-strategy categories.

- **Conservative funds** invest in hedge funds with conservative strategies such as "fixed income arbitrage" and "equity market neutral".
- **Strategic funds** invest in hedge funds with opportunistic strategies such as "emerging markets" and are relatively high risk.
- **Diversified funds** invest in hedge funds with a range of strategies.
- **Market defensive funds** invest in short-biased hedge funds and are designed to be negatively correlated with the returns of standard asset classes.

TABLE 2 **SUMMARY PERFORMANCE STATISTICS FOR FOHF**			
Mean values for	**Annualised average return**	**Annualised standard deviation**	**Monthly Sharpe ratio**
Full sample (n = 332)	9.48	7.76	0.27
Sub-strategies			
Conservative (n = 74)	8.47	3.50	0.44
Diversified (n = 153)	10.11	7.15	0.26
Market defensive (n = 34)	12.18	9.06	0.31
Strategic (n = 71)	8.05	12.88	0.09

Compared with the hedge fund index, FOHFs appear to underperform hedge funds and bear greater risk. This is borne out by an average Sharpe ratio for the full FOHF sample (0.27) of nearly a third less than the hedge fund index (0.38). Of the sub-strategies, only the conservative FOHFs outperform the hedge fund index on a risk-adjusted basis, and strategic funds appear to perform very poorly relative to the other FOHF indices and even relative to the S&P 500.

The inferior risk-return tradeoff for FOHFs relative to the hedge fund index is usually explained by the "double fee structure" inherent in FOHF, whereby both the FOHF and the underlying hedge funds usually charge management and performance-related fees (Amin and Kat, 2003; Brown, Goetzmann and Ibbotson, 1999; Kat and Lu, 2002).

I offer an alternate explanation. In contrast to hedge funds, FOHFs do not suffer to the same extent from the data conditioning biases outlined above. Because FOHFs are clients of hedge funds, their returns reflect the full range of hedge fund performance, from the poor performers who eventually liquidate to the best outperformers.

Survivorship and liquidation biases should be absent from the track record of an individual FOHF (Fung and Hsieh, 2002). As for the survivorship bias of the FOHFs themselves, because the rate of attrition is much lower than for hedge funds, survivorship bias is also lower. Fung and Hsieh (2000) and Amin and Kat (2002a) estimate survivorship bias for FOHFs at 1.4 and 0.63 per cent respectively.

In addition, FOHFs report more accurately than other categories of hedge funds, so the stale pricing problem is less evident than in hedge funds (Liang, 2003). For these reasons FOHF return data are more reliable than hedge fund data. The apparent underperformance of FOHF relative to hedge funds is not explained solely by the double fee structure; it must also be attributable to the overstatement of hedge fund returns and to the underestimation of their risk.

SKEWNESS
Non-normality is being increasingly recognised as a feature of hedge fund return distributions (Agarwal and Naik, 2001; Amin and Kat, 2003; Fung and Hsieh, 1999; and Lo, 2001). Research using hedge fund indices has found consistent evidence of excess kurtosis and, generally speaking, negative

skewness (Brooks and Kat, 2001; Lamm, 2003). Mean skewness and kurtosis figures for the 332 FOHFs appear in Table 3. Also included in the table are the skewness and kurtosis values for the hedge fund index and the S&P 500.

TABLE 3 **SKEWNESS AND KURTOSIS**		
	Skewness	**Kurtosis**
FOHF: mean values (proportion significant)	-0.12 (53%)	7.03 (100%)
S&P 500	-0.43	3.37
Hedge fund index	-0.62	5.50

The return distributions for both the S&P 500 and the hedge fund index show excess kurtosis and negative skewness (all significant at the 5 per cent level). For the FOHFs, almost all (331/332) show significant excess kurtosis.

The mean skewness statistic for the FOHFs is -0.12; FOHF returns are therefore considerably less negatively skewed than hedge fund index returns (-0.62). A closer look at the distribution of the skewness statistic reveals more interesting information. Skewness is significant in only half of the sample (177 or 53 per cent), and these significantly skewed FOHFs exhibit both positive and negative skewness in almost equal measure; 91 (51 per cent) are negatively skewed and 86 (49 per cent) are positively skewed. FOHFs do not suffer from negative skewness to the extent that hedge funds do.

This is an important finding because randomly combining hedge funds into portfolios does not reduce the problem of negative skewness (Amin and Kat 2002b; Fung and Hsieh, 2002; Brands and Gallagher, 2004).

DIVERSIFICATION BENEFITS
One of the main claims of the hedge fund industry is that their strategies yield returns that have low correlations with standard asset classes. This has been confirmed by academic studies (Brooks and Kat 2001; Brown, Goetzmann and Ibbotson, 1999; Kat and Lu, 2002).

Perhaps surprisingly, this low correlation benefit may disappear when portfolios of hedge funds are formed. Fung and Hsieh (2002) found that there is a much lower correlation between standard asset classes and individual hedge funds than between standard assets and hedge fund indices.

They conclude that diversification among hedge funds – which may be advisable from the point of view of limiting exposure to any one hedge fund or hedge fund strategy – reduces the asset class diversification benefits of hedge fund investing. Are FOHF managers able to construct portfolios that retain the low correlation benefits? Table 4 presents the correlation matrix for HFR's hedge fund and FOHF indices, and the S&P 500.

TABLE 4 **CORRELATION MATRIX**			
	S&P 500	**hedge fund index**	**FOHF composite**
S&P 500	1.00	0.70	0.43
Hedge fund index		1.00	0.81
FOHF composite index			1.00

The correlation between the S&P 500 and the hedge fund index, at 0.70, is much higher than the correlation between the FOHF index and the S&P 500 of 0.43. FOHFs do appear to offer better diversification benefits than a diversified hedge fund portfolio as represented by the HFR hedge fund weighted index.

FOHFs AND ASYMMETRIC CORRELATION

It is also increasingly recognised that hedge funds exhibit asymmetric correlations with standard asset classes. In other words, correlations differ in up- versus down-markets. I follow Edwards and Caglayan (2001), who define a bull (bear) market as one in which the S&P 500 rises (falls) by 1 per cent or more in a month. Table 5 presents the bull and bear returns along with the correlations for the hedge fund and FOHF index.

TABLE 5 **RETURNS AND CORRELATIONS – BULL AND BEAR MARKETS**				
	Bull markets		**Bear markets**	
	Average annual return (%)	Correlation with S&P 500	Average annual return (%)	Correlation with S&P 500
Hedge fund index	27.30	0.18	-7.80	0.67
FOHF composite index	16.47	0.01	-1.24	0.46

For the sample period there are 85 bull months and 50 bear months. In bull markets the hedge fund index (27.30 per cent return) considerably outperforms the FOHF index (16.47 per cent), but this is tempered by a lesser loss for FOHFs (-1.24 per cent) in bear markets relative to the loss in the hedge fund index (-7.80 per cent). FOHFs seem to be structured such that they are closer to market neutrality than the average hedge fund.

The correlation between the FOHF index and the S&P 500 is close to zero during bull markets, which is much lower than the correlation for the hedge fund index of 0.18. The correlations clearly increase during bear markets, but again the FOHF correlation at 0.46 is considerably lower than the correlation for the hedge fund index of 0.67. These findings offer support to the claims by the industry that FOHFs offer superior diversification benefits vis-à-vis a randomly selected portfolio of hedge funds or hedge fund indexing.

SUMMARY AND CONCLUSIONS

The apparent underperformance of FOHFs relative to hedge funds is exaggerated. This is because FOHF returns more closely reflect reality than the reported returns of hedge funds. Using return data for 332 FOHFs for the period January 1990 to May 2003 sourced from HFR, I show that FOHFs have other benefits vis à vis hedge funds. They do not suffer from negative skewness to the extent that hedge funds do, and they have lower correlations with the equity market.

One of the apparent disadvantages of hedge funds as a portfolio tool is that correlations with other asset classes tend to increase during market declines and crashes. FOHFs seem to ameliorate this problem. Funds of hedge funds are not the poor cousins of the hedge fund industry as recent academic research would have us believe.

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Notes

[1] In the US, registered FOHFs are permitted to offer minimum investments as small as $25,000. In the UK, FOHFs are listed on the London Stock Exchange, and many specifically target the retail market. FOHFs are available to the retail public in Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Sweden and Switzerland; and in most of these countries there is no stipulated minimum investment amount (Pricewaterhouse-Coopers, 2003). In Australia, regulations allow the participation of retail investors, and many FOHFs have low minimum investment requirements. For a discussion of the Australian regulatory scene, see Ali and Gold (2004) and Reserve Bank of Australia (2004).

[2] It must be noted that this index is the HFR's standard hedge fund index, rather than an investable index. In response to increasing interest in hedge fund indexing, in the early 2000s the hedge fund data providers introduced investable indexes, which include hedge funds with minimal barriers to rebalancing such as redemption restrictions. CSFB/Tremont was one of the first, introducing an investable hedge fund index in July 2003. Given the data set used in this paper, the investable indexes had too short a return history to be useful.