

The Alpha in Fund of Hedge Funds

Do Fund of Hedge Funds Managers Add Value?

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Abstract

All hedge funds are not created equal. A poorly chosen portfolio of hedge funds can produce disappointing results. All fund of funds managers are not created equal, either. A poor choice of fund of funds managers can yield disappointing results. This article is designed to outline the value proposition of a fund of hedge funds operation. We conclude that fund of funds add value primarily through manager selection.

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Introduction

This is the second of a series of two articles. The first article¹ covered the characteristics of the fund of hedge funds industry. One of the main conclusions of Ineichen (2001b) was that the hedge funds as well as the fund of hedge funds industry are heterogeneous and opaque, i.e. information does not flow efficiently. Based on this observation we concluded that any market participant selecting hedge funds is operating in an information inefficient market. The presence of an inefficient market is the basis for active management. This article is designed to outline the value proposition of a fund of hedge funds operation. We conclude that fund of funds add value primarily through manager selection.

Portfolio Mandate and Investment Process

Portfolio Mandate

Different fund of funds managers will have different objectives. Different portfolio designs will serve different purposes. Given the breadth of the hedge fund industry it is likely that fund of funds managers might specialize in a certain investment style. Some

fund of funds managers have a bias towards non-directional absolute return strategies, whereas other managers have an implicit or explicit bias towards directional hedge fund managers and strategies. The difference between directional and non-directional is probably the most general classification of the strategies in the hedge fund industry.²

Investment Process

Once the fund of funds manager has set up his business and knows what objectives are to be met, the actual investment process begins. At the most general level there are two variables and two processes. The two variables are the hedge fund managers (portfolio constituents) and the overall portfolio of the fund of funds. The two processes are a selection and a monitoring process. An important aspect is that these two variables and processes are dynamically interrelated.

<<< Figure 1 around here >>>

Manager Selection and Monitoring

Manager Evaluation

Manager identification and evaluation is probably the key to success. Investing in hedge funds is essentially a people and relationship business. By allocating funds to a manager or a group of managers, the investor expects to participate in the skill of the manager or managers and not necessarily in a particular investment strategy or process. Allocating funds to a convertible arbitrage manager, for example, does not necessarily imply participation in the classic trade of buying the bond and managing the equity exposure

(delta) through selling the stock. The expectation is to participate in inefficiencies and opportunities in the convertible bond (CB) market where a skilled and experienced manager has a competitive advantage over the less skilled, i.e. the rest of the market.³

Manager evaluation is not only the most important step but also the most cumbersome. Commercial databases on hedge funds are a starting point but are incomplete. For example, McCarthy (2000) notes that from the TASS+ database, which claims to track over 2,600 funds, only 662 funds met the basic two criteria of US\$10m assets under management and a current audited financial statement in August 2000.⁴ The difficulty and effort of collecting information probably puts in place significant barriers to enter the fund of funds business in a serious entrepreneurial and institutional investor compliant fashion. Put differently, this means that fund of funds managers with an operating history of a couple of years might have a competitive advantage over those fund of funds managers who entered the industry recently.

Due diligence is the single most important aspect of the investment process for an investor investing in a hedge fund directly or a fund of hedge funds. Due diligence includes quantitative excellence as well as qualitative judgement. Quantitative analysis of (imperfect) data is incomplete. Qualitative judgement is at least as important as quantitative analysis. We also believe that this view is the consensus in the asset management industry. Due diligence includes a thorough analysis of the fund as a business and a validation of manager information, and covers operational infrastructure, financial and legal documentation, affiliates, investment terms, investor base, reference checks etc.⁵

The due diligence done by the fund of funds manager is part of their value proposition. Whether a fund of funds manager is able to pick the best manager is, by definition, uncertain. As most bottom-up equity fund managers will claim to have superior stock-picking skill, most fund of funds managers will equally claim to have superior hedge fund picking skill.⁶ However, an investor can assess the due diligence capabilities of the fund of funds manager in advance by assessing the level of experience of the fund of funds managers in the field of absolute return strategies. This is the reason why most fund of funds managers will list the fund managers' number of years in the industry in the marketing prospectus.

There is no definitive guide to manager evaluation. Below we show an incomplete list of some factors we consider important:

- Intangibles: integrity, lifestyle and attitude
- Strategy: identifiable opportunity sets, embedded market risks, definition of investment process, market knowledge in defined strategy
- Experience: portfolio management ability, risk assessment and management ability, strategy implementation, experience of different market conditions, understanding of the impact of market flows, overall trading savvy
- Assets: size (critical mass versus manageable amount), ability to manage growth, quality of investors

- Operation: back office infrastructure and reliability; fee structure; decision and execution process; quality, stability, compensation and turnover of staff

Manager Review

Manager review is a dynamic and iterative process. The due diligence process never ends. As mentioned before, this is probably the consensus view among investors and hedge fund professionals.

What we find amazing is that the value added of a fund of funds manager is often put in doubt (or the extra layer of fees determined as excessive and/or unnecessary). This is, in our opinion, a paradox: On the one hand, investors agree that seeing hundreds of hedge fund managers on a regular basis is important, yet on the other hand they postulate that fund of funds managers do not add value. Who else is in the position of doing the due diligence other than experienced and prudent investment professionals who are in the loop of the information flow? The industry itself is opaque, i.e., information does not flow efficiently, and so scarce resources must be expended to find and analyze the information. We doubt that the information advantage of a top-quartile fund of funds manager over a less informed investor will deteriorate any time soon.⁷

Asset Allocation and Risk Management

Portfolio Construction

Most portfolio construction will probably blend bottom-up (manager selection) and top-down (asset allocation) approaches. Different fund of funds managers will have different

biases. These biases can be in terms of geographical focus, investment style or strategy. Some managers put more weight on their personal network in the industry, while others have a more econometrical approach to portfolio construction. We are quite confident that there are many wrong ways of approaching portfolio construction. There are many potential conflicts of interest which have to be addressed. However, we also believe that there is no single right way of constructing a portfolio of hedge funds. Portfolios constructed in mean-variance space are a starting point but imperfect due to liquidity issues and the higher moment risk characteristics of some absolute return strategies.⁸

As outlined earlier, the mandate and purpose of the portfolio determine the first step. For example, a fund of funds manager who believes that market timing⁹ in efficient capital markets does not work is tempted to ignore Commodity Trading Advisors (CTAs) funds from the start, despite their potential attractive diversification features.¹⁰

In the following pages we examine some aspects of hedge fund portfolio construction. In the absence of perfect foresight, we use historical data. Table 1 shows the historical returns, volatility and correlation of a selection of hedge fund strategies.

<<< Table 1 around here >>>

Fixed income arbitrage has the lowest off-diagonal average correlation of 0.13 from the selection in Table 1. This is intuitive as fixed income arbitrageurs (most often) trade in spreads not related to the equity market.

Equity market-neutral has lower volatility, lower correlation and lower returns than long/short equity (equity hedge). Off-diagonal average correlation with other hedge fund strategies in Table 1 was 0.18.

Equity non-hedge and emerging markets have higher volatility, equal correlation and lower returns than equity hedge. This means these strategies add little value in terms of efficiency improvement in mean-variance space.

In Table 2 we contrast three hedge fund portfolios with four equity indices and one global government bond index. The three hedge fund portfolios were optimized for lowest volatility, 5% volatility and highest return and were rebalanced monthly. Again we used historical data as a proxy for expectations.

<<< Table 2 around here >>>

The minimum risk portfolio¹¹ outperformed the maximum return portfolio in the (difficult) years of 1994 (by 112 basis points), 2000 (435bp) and 2001 to May (263bp).

This is not surprising, as one would expect less volatile portfolios to outperform in falling markets and underperform in rising markets.

The three hedge fund portfolios have, for what it's worth, much higher Sharpe ratios than the market-based strategies. If risk were equal with volatility of returns and, therefore, the Sharpe ratio a measure for risk-adjusted returns, the hedge fund portfolios would be superior by a wide margin.

The worst month in the 11½-year period was August 1998 except for bonds and the MSCI EAFE index. This implies that in a stress-test scenario, correlation moves towards 1 for all portfolios. However, the worst monthly loss for the hedge fund portfolios is a fraction of the equity indices.

The worst 12-month period for the equity indices and the maximum return hedge fund portfolio ended in March 2001. Note that the maximum return hedge fund portfolio has an equity-long bias. The minimum risk hedge fund portfolio had its worst 12-month period in April 1999, i.e. the period including Q4 98.

Excess kurtosis is highest for the minimum risk portfolio, which constitutes only strategies based on a spread (arbitrage strategies). In the rare event of all the spreads blowing up at the same time, these strategies are prone to outliers on the left-hand side of the return distribution. This exposure is similar to continuously being short index put options.

Figure 2 shows the three skill-based portfolios discussed above. We have added the portfolio in between in 1% volatility increments.

<<< Figure 2 around here >>>

Depending on the fund of funds manager's objectives, the hedge fund portfolio will be biased towards directional or non-directional, i.e. towards the left-hand or right-hand side of Figure 2. Note that the maximum return portfolio contains a 100% allocation to long/short equity strategies (equity hedge).¹²

If low portfolio volatility, i.e. stable positive returns is the main objective, the hedge fund portfolio will include high Sharpe ratio strategies such as market-neutral, convertible arbitrage, and risk arbitrage. These are all spread-based strategies. Traditionally, these portfolios were designed for wealthy individuals who wanted to grow their wealth steadily with little downside volatility. We believe institutional investors use low-

volatility hedge fund exposure to diversify exposure to equities and bonds, i.e. traditional assets. Schneeweis and Spurgin (2000) call these strategies 'risk reducers'.

The maximum return portfolio consists of 100% in long/short equity (equity hedge). These portfolio have a long bias, i.e. correlation with equities is higher than portfolios constructed with arbitrage strategies.¹³ The assumption is that these portfolios will not yield positive returns in a bear market, i.e. not diversify portfolios of traditional risks as well as hedge funds portfolios with non-directional exposure. In the past these portfolios had more appeal to investors seeking high equity-like returns as opposed to diversification opportunities and stable income.¹⁴ Schneeweis and Spurgin (2000) call these strategies 'return enhancers'. The superiority of long/short equity strategies in the high-return spectrum in mean-variance space is one of the reasons why we believe that absolute-return investment styles are as much a new paradigm as they are a bubble.¹⁵

<<< Figure 3 around here >>>

Figure 3 compares the mean-variance optimized hedge fund portfolios from Figure 2 with traditional asset classes. Figure 3 or a similar looking graph is probably the most often shown graph at any hedge fund conference. Some speakers even go as far as to describe the horizontal axis as 'risk' instead of standard deviation of returns or volatility.

Figure 4 indicates that even when we subtract 300 basis points from the historical returns to account for survivorship or any other bias, little changes when compared with

traditional asset classes. Survivorship bias¹⁶ is a problem with any fund data.¹⁷ However, it is unlikely to be a rational reason for not investing in hedge funds. In Figure 4 we also doubled volatility (to account for non-normality of returns, the ‘unfamiliarity aspect’ and limited liquidity and transparency).

<<< Figure 4 around here >>>

Mean-variance efficiency remained intact, even when subtracting 300bp for any upward bias from returns and doubling the volatility. Note that Fung and Hsieh (1999b) suggest that using a mean-variance criterion to rank hedge funds and mutual funds will produce rankings which are nearly correct. This means that the imperfect assumption of normally distributed returns (which does not hold for some non-directional hedge fund strategies) does not make conclusions from mean-variance optimisations obsolete.

Portfolio/Risk Management

The second monitoring process, next to reviewing the manager, is monitoring the portfolio or managing the risk of the portfolio on an ongoing basis. The analysis above is ex-post. The key to success of any portfolio construction exercise is to estimate return, volatility and correlation, i.e. the three input variables of the mean-variance optimization process, and to combine the variables to construct a mean-variance efficient portfolio. It is therefore obvious that different fund of funds managers will have different portfolios, as their estimates for the future differ. Some might be more reliant on the past and others might try to ‘call the market,’ i.e. try to pick the strategy which will perform best over the next 12-24 month period.

The picking of strategies and the resultant portfolio rebalancing is probably not entirely independent of the fund of funds managers' marketing effort. A fund of funds involved in marketing to retail investors, for example, has an incentive to bias the portfolio constituents towards the current darlings of the industry. This would have meant having large allocations in convertible arbitrage and risk arbitrage in the beginning of 2001.¹⁸ These two strategies performed well in 2000. In other words, there are fund of funds managers who are opportunistic with respect to portfolio construction and rebalancing and those who accept less variance in their strategy allocations. However, there are some reservations with respect to timing strategies. In addition, short-term trading of hedge funds is counterintuitive due to limited liquidity and expensive to execute.

Risk management is not the same as risk measurement. The measurement of portfolio risk is to a large extent a quantitative process. However, risk management is judgmental. Any investor investing in a fund of funds will probably find it easier to assess whether the fund of funds manager can measure risk. This can be achieved by examining the models, the data and the skill and experience of the fund of funds management operation. These input parameters are more objective. The judgement to take action based on the changing risk parameters and investment landscape is more subjective.¹⁹ Whether a fund of funds manager takes action according to its objectives is uncertain. One layer of comfort from the investors' perspective is when the fund of funds manager is also a principal. This is not a guarantee of prudently executed and continuous risk management. However, at least it should align the interests of the investor with those of the manager.

Do Fund of Fund Managers Add Value?

We believe that at the most general level a fund of hedge funds manager should:

- understand all hedge fund strategies,
- understand all instruments used by hedge funds,
- emphasise qualitative aspects relative to quantitative variables,
- be in the ‘information loop’ and have extensive proprietary data,
- be of highest integrity, as there is little regulation or reputational risk of large corporates to assist investors,
- have his interests aligned with those of his investors.

Investment Philosophy of Fund of Funds Manager

The hedge fund industry is heterogeneous when compared with the traditional long-only asset management industry. This heterogeneity allows one to pursue different strategies.

The two extreme choices are to (1) minimize portfolio volatility or (2) maximize expected return. The former aims to capture stable returns in the region of 12%. The latter expects returns in the low twenties. We believe that most funds of funds will opt for a blend of the two extremes with a bias either towards directional or non-directional strategies.

Among important considerations is whether the fund of funds manager believes in market timing or not. We find that many investment professionals in a risk management discipline or professionals with a bias to academia have developed an aversion to market risk, which they perceive as being exposed to chance.²⁰ Those investors will find attraction in strategies where the manager's alpha is isolated from beta, i.e. will have some reservations with respect to market timing.²¹ The other extreme will be biased towards timing the market. These managers will include more opportunistic, i.e. directional strategies. Note that the goal of the first hedge fund (Alfred Jones) was to reduce exposure to chance (market risk) and increase exposure to skill (stock selection). Note also that the hedge fund boom of the early 1970s ended because funds were long and leveraged, i.e. the industry disappeared after departing from its origins.

A fund of funds manager might also elaborate the demand structure of its clientele. Retail investors are probably more likely to be in 'get-rich' mode and high-net-worth private investors in 'stay-rich' mode, while institutional investors might seek diversifiers to their equity stake. Fund of funds managers targeting a specific client type have an incentive to structure a fund of funds that matches what their clients demand.

One of the first decisions a fund of funds manager either implicitly or explicitly will do, therefore, is focus on the left- or right-hand side of Figure 2. Strategies on the right-hand side include market timing; strategies on the left do not, nor do so to a much lesser extent. The more sophisticated fund of funds managers will blend either directional with non-directional or non-directional with directional strategies. The diversification benefits due

to low correlation is, simply put, too great not to be utilized in constructing a portfolio of hedge funds.

Most hedge fund managers will aim for absolute returns and low volatility when compared with the traditional asset classes such as equities and bonds. Capital preservation or the protection of wealth is also the goal of most fund of hedge funds managers. Not only is the return target defined in absolute levels but the long-term risk target is also defined in absolute terms.

Risk Management Experience

The ability to identify and understand risk characteristics is one of the most important issues when investing in hedge funds. A fund of funds manager will have to demonstrate the skill as well as experience in the field of the most complex financial instruments and trading strategies. This expertise will allow the fund of funds manager to assess potential drawdowns for each manager in each strategy irrespective of his historical track record. This assessment will allow the fund of funds manager to get a feel for the risk of the overall fund when 25%, 50% or even 100% of managers experience an extreme drawdown at the same time.

Motivation and Other Intangibles

One of the intangibles of allocating funds to any money manager is motivation. This is probably true for selecting a fund of funds manager in the traditional asset management arena as well in alternative fund management. A highly motivated manager is more likely

to go the extra mile in terms of negotiating fees, capacity, liquidity, and transparency than a less motivated manager. However, how do we measure motivation?²²

Incentives

One question a hedge fund manager is often asked by evaluators is how much of his own money is in his fund. The general perception is that a manager with his 20-year savings in the fund is, everything else held equal, superior to a manager who only puts last year's bonus at risk. The argument is that interests between manager and investor are aligned when both have their funds tied together. The alignment of interest is obviously also relevant between fund of funds manager and investor. Some fund of funds managers might be closer to a principal, i.e. investing alongside its investors. Others might be closer to consultancy, i.e. in the role of an agent with its own challenges regarding conflicts of interest.

However, the net amount invested by the manager is not necessarily a good indication of motivation. It does not account for potential option-like characteristics that are observed in incentive schemes. For example a 28-year old investment professional with three years experience might set up a hedge fund, initially investing his full net wealth of US\$1 million along with his investors. In this case, applying the logic outlined above, this manager would be highly incentivised to do well. However, we would argue that this is not necessarily the case. He has little to lose. If the venture does not work out he will go back to his Wall Street job having lost his savings of three years plus six months of work. He does not have "a lot of skin in the game." Such an incentive is similar to a cheap call option: unlimited upside with limited ex-ante measurable downside.

The other extreme is the 20-year hedge fund veteran who might have 90% of his US\$1 billion net wealth in his own funds. This structure might also have odd incentive characteristics when combined with hubris. For example the prestige of winning a certain trade might weigh more strongly than the risk of a huge loss. However, a huge loss would not have an effect on the lifestyle of the manager. It may or may not affect self-confidence, but not the manager's personal economics.

A manager fading away is just another example of reversion to the mean. A manager who has compiled an excellent historical record gradually turns into just another manager, with higher risk than before, and lower return. Maybe he has lost his competitive edge, his hunger for success. Maybe his historical record was just a fluke, not really a symptom of genuine investment skill but a result of randomness. Or maybe the inefficiency he is an expert at exploiting has disappeared as others have copied his style. In any case, what looked like an exceptional investment opportunity turns into a disappointment.²³

For many years the hedge fund industry had something like a natural hedge as managers had all their savings at risk. This "hedge" is becoming less prevalent. In Peltz (2001) retired hedge fund manager Michael Steinhardt (Steinhardt Partners) is quoted arguing that times have changed. In the old days things were different.

“Steinhardt says the distinguishing characteristics were the manager investing his assets solely in his own fund, having a long track record, and being successful in a variety of economic climates. The manager was intense, intellectually

superior, and motivated by performance – not growth of assets under management.”²⁴

A point can be made that motivation is probably highest in the middle of the two extremes. This could be true for a single hedge fund as well as a fund of funds manager. A manager with full commitment of tangibles as well as intangibles is probably highly incentivised for the venture to work. This, obviously, is no guarantee of success. However, if tangibles as well as intangibles are at risk, the incentive should not include any option-like features and secure a realistic assessment of opportunities and risks.

Intuitively one would assume that a high watermark, for example, could also create odd option-like incentive features. For example a large loss means that that the fund would have to perform well over the next couple of years without receiving an incentive fee. This could potentially damage a business as key staff leaves to create their own fund. It also creates an option-like incentive to “bet the bank” as survival is at stake. Current research is not conclusive.

Fung and Hsieh (1997) suggest that reputation costs have a mitigating effect on the gambling incentives implied by the manager contract. Results by Brown, Goetzmann and Park (1999) confirm the hypothesis of Fung and Hsieh (1997). Brown, Goetzmann and Park (1999) investigated whether hedge fund and CTA return variance depends on whether the manager is doing well or poorly. Results show that managers whose performance is relatively poor increase the volatility of their funds, whereas managers whose performance is favorable decrease volatility. This is consistent with adverse

incentives created by the existence of performance-based fee arrangements. A corollary of this theory is that managers whose performance contract is out of the money should increase volatility the most. The data does not support this further implication – managers whose return is negative do not substantially increase volatility. In some years of the sample, the authors found that they even decrease the volatility of their fund's return. Thus, while the data fit with certain conjectures derived from theory about investment manager compensation, they appear to contradict others.

Liang (1999) argues that empirical evidence indicates that hedge funds differ substantially from traditional investment vehicles such as mutual funds. Hedge funds' special fee structures align managers' incentives with fund performance. Funds with high watermarks significantly outperform those without. Hedge funds provide higher Sharpe ratios than mutual funds, and their performance in the period January 1992 through December 1996 reflects better manager skills, although hedge fund returns are more volatile.²⁵ Average hedge fund returns are related positively to incentive fees, fund assets, and the lockup period. The author adds that outperformance cannot be explained by survivorship bias.

Conflicts of Interest

The wedge between principal goals and agent actions causes problems at the highest level of governance. The agent is normally in a 'fees-only' relationship with the principal and therefore the set of incentives might not be fully aligned. For example the agent has a conflict of interest in recommending investments where the kickback is low. It lies in

human nature to bias towards the fund where incentives are high. This, however, might not be in the interest of the principal.

Aligning the incentives of the manager with those of the investor reduces the principal/agent conflict and may lead to greater care in the management of funds. One could argue that the principal/agent conflict is to some extent relaxed when the manager himself is a principal.

There are other areas of potential conflict of interest, for example an operator of a fund of funds in parallel with its prime brokerage or capital introduction franchise. The temptation of the fund of funds operator to favor 'clients' would be a conflict of interest relative to the investors. Such a fund of funds operator should not survive the scrutiny of a sound due diligence process.

There are differences between fund of funds managers. Comparing the different fee structures on a like-for-like basis is not straightforward. The main difference is transparency. Some show all fees to the fund of funds investors, others do not. Some fund of funds managers show a relatively low flat-fee but receive kickbacks from the individual hedge fund managers. Others have performance-related fees on top of a flat fee. In any case, caveat emptor. The buyer will have to gain transparency and judge whether there is the potential for conflicts of interest.

On Prudence, Trust and Integrity

Other intangibles important to investing in hedge funds include trust and integrity. An interesting observation, we believe, is that intangibles such as prudence, trust and integrity are not a big issue in most of the classic textbooks of economics and finance. However, many fund of funds managers regard these intangibles elementary in their decision-making process. Some investment professionals (of which a majority probably is employed in the alternative investment industry) are of the view that ‘orthodox economics’ took a wrong turn at some stage in its evolution, i.e. treating economic agents as androids such as ‘Data’ from *Star Trek* instead of more socially adept beings such as ‘Deanna Troi’. In other words, they believe that the so-called ‘Economic Man’ (homo economicus) or the attempt to explain social phenomena with tools from the natural sciences is an extreme deviation from reality.²⁶ The practical implication is that there are far more inefficiencies in capital markets, as the random walk or efficient market hypothesis want us make believe.²⁷

The hedge fund industry is not as regulated as the traditional asset management industry. This means the human risk element is different than when a regulatory body controls business. In other words, fraud is easier to conduct than in a regulatory tight environment.²⁸

Hedge funds are often viewed (primarily by the tabloid end of the writing guild) as a high-risk asset class and investing in hedge funds is associated with speculation and/or imprudence.²⁹ However, one could turn the argument around and ask whether not investing in hedge funds is speculative and therefore not prudent.

Are Prudent Expert Rule and Code of Ethics consistent with hedge fund investing?

Views and definitions of ethics vary across countries and cultures. Any view, therefore, is subjective and has a strong home bias. The following view is based on the Prudent Expert Rule from ERISA (Employee Retirement Income Security Act) and the Code of Ethics from AIMR (Association of Investment Management and Research). Under ERISA, fiduciaries must discharge their duties with respect to the plan:³⁰

- Solely in the interest of plan participants and beneficiaries.
- For the exclusive purpose of providing benefits to participants and their beneficiaries and defraying reasonable plan expenses.
- With the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims (the Prudent Expert Rule).
- By diversifying the investments of the plan so as to minimise the risk of large losses; unless doing so is clearly not prudent under the circumstances.
- In accordance with the governing plan documents, as long as they are consistent with ERISA.

Assuming ERISA's Prudent Expert Rule is some indication of how a fiduciary should act and AIMR's Code of Ethics is a reference for ethical conduct of an individual financial professional, investing in hedge funds cannot be reckless. The fourth of ERISA's points listed above states that a fiduciary should diversify and reduce risk of large losses. In a portfolio context, risk is reduced by increasing the allocation to less risky assets or introducing assets with low or negative correlation to the core of the portfolio. The strategies by relative-value managers exploiting inefficiencies have proven to be sound – conceptually as well as empirically – and achieve high risk-adjusted returns and low correlation to traditional assets. In addition, once risk to individual hedge funds is diversified, large losses hardly occur, especially when compared with traditional investments that are essentially long the asset class outright. Note that for example Jacobs and Levy (1996) find the responsible use of long/short investment strategies is consistent with the prudence and diversification requirements of ERISA.

Manager Selection and Access

Talent Search and Identification

One could argue that the search for talent or 'skill' is the single most important issue in the whole investment process of investing in AIS in general and hedge funds in particular.

One aspect of manager selection is reputation. Reputation is probably the closest thing to brand recognition in the world of intangibles. We even came across the notion that the talent of a manager is negatively correlated with the number of sales staff in a hedge

fund. Although we would not go as far as that,³¹ there is a huge difference in a few of the successful launches and the many me-too products.

A fund of funds manager has to be inside the ‘information loop’ of high-caliber investment management personnel on the sell as well as the buy side of the investment business. This will enable him to spot talent early in the evaluation process. Some fund of funds managers identify and track skilled investment professionals before they announce that they are launching a hedge fund. In other words, a fund of funds manager who has superior information on key staff in the main investment centers will have a competitive advantage.

Due Diligence and Track Record

Most investors are familiar with the phrase ‘past performance is no guide to future performance’. However, many investors seem to focus on track record when evaluating investment in the hedge fund industry. However, quantitative analysis has its limitations when evaluating and selecting hedge fund managers. At best it should be used to support in-depth qualitative research and rigorous due diligence. Quantitative analysis is more relevant for risk monitoring than for manager selection.

The advantage of quantitative research is its relatively low cost and easy access. Anyone can buy a database for a couple of thousand US dollars and screen for top quartile performers. However, many top performers in the hedge fund industry do not appear in commercially available databases.

A proprietary database, which includes qualitative information, is important. The qualitative information can be scored and used in a ranking process to compare different managers within a strategy. A ranking process also allows elaborating on the strengths and weaknesses of each manager. The weakness of one manager can then be balanced through the strength of another manager in the portfolio construction process. This option is not available to the fund of funds manager who does not have qualitative information.

Given the importance of qualitative research and due diligence, an investor evaluating a fund of funds manager will want to assess whether the manager is equipped to manage the laborious task of due diligence on an increasing number of funds. One could argue that the job of the fund of funds manager used to be to pick one outstanding manager per quarter from ten new managers. Today this task is probably more picking one or two managers out of c100 new funds per quarter. Manager selection has become more difficult as well as labour-intensive over time.

Risk and Performance Monitoring

Transparency

Transparency is among the hottest topics discussed at fund of funds conferences and in the minds of institutional involvement in hedge funds. A hedge fund manager has an incentive not to reveal the fund's positions for two main reasons. First, the market can trade against the manager if the position is in an illiquid security or spread and the position is revealed to the market. Inefficiencies are found in illiquid markets, not liquid

markets. The period of autumn 1998 was a showcase example of the market trading against LTCM once the company was in distress and positions were revealed to the market.³² Second, most managers believe they have an edge relative to the market. In other words, they are making money by doing something the market does not know or by doing it better than the market does. This competitive advantage or ‘edge’ is their whole value proposition and justification for being in business. It is only rational that they protect what they believe is most valuable.³³

There are additional reasons why a hedge fund manager might not want to reveal positions to a prospective or existing investor. A rude cynic might argue that most investors would not understand the real-time or daily positions of an arbitrage fund in any case. The information given to the investor would give transparency but would, in the cynic’s view, cause more harm than good. We obviously do not share this view. However, as mentioned before, a fund of funds manager having full access to a manager’s positions but not understanding the underlying strategies and instruments has a competitive disadvantage relative to the fund of funds manager who does.

In *Sound Practices for Hedge Fund Managers* (2000) the authors³⁴ recommend that investors should receive periodic performance and other information about their hedge fund investments. According to the report, hedge fund managers should also consider whether investors should receive interim updates on other matters in response to significant events. Hedge fund managers should negotiate with counterparts to determine the extent of financial and risk information that should be provided to them based on the

nature of their relationship in order to increase the stability of financing and trading relationships. They should also work with regulators and counterparts to develop a consensus approach to public disclosure. Agreements and other safeguards should be established to protect against the unauthorized use of proprietary information furnished to outside parties.

Manager Risk Factors

One of the most important factors in terms of risk is that risk is not synonymous with volatility.³⁵ This is especially true when investing in non-marketable securities or ventures. When managing the risk of a manager, Jaeger (2000) distinguishes between portfolio market and non-market related factors as well as operational factors. These factors also apply for someone investing with a fund of funds manager.

(1) Portfolio factors: non-market related.

- Leverage

- Concentration

- Illiquidity

- Trading behaviour

(2) Portfolio factors: market-related.

- Directional factors: long bias, short bias, neutral, etc.

- Technical factors: volatility

- Spread-related factors: sector tilts, style tilts, credit spreads

(3) Organisational factors:

- Length of record
- Assets under management (rate of growth, nature of client base)
- Ownership/compensation structure
- Risk monitoring/control systems

A fund of funds manager needs the sophistication and the operational setup to assess and weigh all of these factors. We do not believe that policies such as ‘no-leverage-only’ or ‘five-year-track-record-required’ make a lot of sense.

In *Sound Practices for Hedge Fund Managers* (2000) the authors distinguish between three categories of risk that are quantifiable – ‘market risk’, ‘credit risk’, and ‘liquidity risk’ – and on the less quantifiable ‘operational risk’. Market risk relates to losses that could be incurred due to changes in market factors, i.e. prices, volatilities, and correlations. Credit risk relates to losses that could be incurred due to declines in the creditworthiness of entities in which the fund invests or with which the fund deals as a counterpart. Liquidity risk relates to losses that could be incurred when declines in liquidity in the market reduce the value of the investments or reduce the ability of the fund to fund its investments.

The authors of the report recommend that while current market practice is to treat the risks separately, it is crucial for hedge fund managers to recognize and evaluate the overlap that exists between and among market, credit and liquidity risks. This overlap is

illustrated in the following diagram (recognizing that the relative sizes of the circles will be different for different strategies):³⁶

<<< Figure 5 around here >>>

Consequently, any risk-monitoring activity should monitor three interrelated variants of market, liquidity and credit risks in combination:

- Market risk – including asset liquidity and the credit risk associated with investments
- Funding liquidity risk
- Counterpart credit risk

In this framework, the risk sometimes referred to as ‘sovereign risk’ would be included as ‘credit risk’, if the potential loss is related to the financial solvency of the sovereign, or as ‘market risk’, if the potential loss is related to policy decisions made by the sovereign that change the market value of positions (e.g. currency controls). The term ‘event risk’ is broader and could incorporate aspects of ‘credit risk’ and ‘operational risk’, as well as some elements of ‘market risk’.

As mentioned earlier, funding liquidity is critical to a hedge fund manager’s ability to continue trading in times of stress. Funding liquidity analysis should take into account the investment strategies employed, the terms governing the rights of investors to redeem their interests and the liquidity of assets, e.g. all things being equal, the longer the

expected period necessary to liquidate assets, the greater the potential funding requirements. Adequate funding liquidity gives a hedge fund manager the ability to continue a trading strategy without being forced to liquidate assets when losses arise.

The reason why we are highlighting this is to show the complexity of the task. If we are in a hedge fund bubble, as some are suggesting, it is because shortcuts are being taken.³⁷

Only a team of dedicated and experienced full-time financial professionals are equipped to implement and monitor these risk variables. The use of leverage adds a further layer of complexity.

Leverage

One of the consistently hot topics in the hedge funds arena is the use and misuse of leverage. However, leverage is not a concept that can be uniquely defined, nor is it an independently useful measure of risk. Nevertheless, leverage is important to investors, counterparts and fund managers because of the impact it can have on the three major quantifiable sources of risk: market risk, credit risk and liquidity risk. A fund of funds manager, must therefore, have the ability to monitor accounting-based and risk-based leverage.

The variety of 'leverage' measures used in banking and finance is evidence that leverage is not a uniquely defined concept.³⁸ These measures may be accounting-based (also referred to as 'asset-based') or risk-based. The accounting-based measures attempt to capture the traditional notion of leverage as 'investing borrowed funds'. Using borrowed money (or its equivalent) enables an investor to increase the assets controlled for a given

level of equity capital. Accounting-based measures of leverage relate some measure of asset value to equity. Both returns and risk, relative to equity, are magnified through the use of traditional, accounting-based leverage. The risk-based measures of leverage capture another aspect associated with leverage, namely, the risk of insolvency due to changes in the value of the portfolio. The risk-based measures relate a measure of a fund's market risk to its equity (or liquidity). Although useful in this capacity, risk-based leverage measures do not convey any information about the role that borrowed money plays in the risk of insolvency.

No single measure captures all of the elements that market participants, regulators, or market observers attribute to the concept of leverage. Indeed, the authors of *Sound Practices for Hedge Fund Managers* 2000 show examples in which a risk-reducing transaction increases some leverage measures while decreasing others. This leads to the observation that leverage is not an independently useful concept, but must be evaluated in the context of the quantifiable exposures of market, credit and liquidity.

While continuing to track and use accounting-based measures of leverage, the authors of *Sound Practices for Hedge Fund Managers* (2000) recommend that hedge fund managers focus their attention on measures of leverage that relate the riskiness of the portfolio to the capacity of the fund to absorb that risk. These measures must include elements of market risk (including the credit risk associated with the assets in the portfolio) and funding liquidity risk. Hedge fund managers should focus on such measures because traditional accounting-based leverage by itself does not necessarily convey risk of insolvency. To say that one fund is levered 2-to-1 while another is unlevered does not

necessarily mean that the levered fund is more risky or more likely to encounter liquidity problems. If the levered fund were invested in government securities while the unlevered fund is invested in equities, accounting-based leverage would lead to erroneous conclusions about the riskiness of the two funds. In this sense, accounting-based measures of leverage are arguably deficient since they convey the least information about the nature and risk of the assets in a portfolio.

Risk-based measures present a measure of market risk (usually VAR) relative to a measure of the resources available to absorb risk (cash or equity).³⁹ However, in doing so, risk based measures effectively condense several dimensions of risk into a single number. The result of this compression is that some of the detail is lost; the specific effect of leverage is intertwined with dimensions of market, credit and liquidity risk. To illustrate, consider two funds with identical risk-based leverage. One fund employs 2-to-1 accounting leverage while investing in ‘low-risk’ strategies (e.g. long/short strategies) using borrowed funds, while the other fund uses no accounting leverage but employs ‘high-risk’ strategies (e.g. macro directional) and large cash reserves. One is ‘high risk’ and ‘high cash’ and the other is ‘low risk’ and ‘low cash/high borrowing’, yet each achieves the same risk-based leverage. This comparison highlights the second reason why leverage measures are not independently useful: more comprehensive measures that blend the effect of multiple risk dimensions are required. To assess the contribution of leverage requires additional information.⁴⁰

The authors of the report argue that managers and investors alike must recognize that leverage is important, not in and of itself, but because of the impact it can have on

market, credit and liquidity risk. In other words, leverage influences the rapidity of changes in the value of the portfolio due to changes in market, credit, or liquidity risk factors. Consequently, the most relevant measures of leverage are 'risk-based' measures that relate the riskiness of a portfolio to the ability of the fund to absorb that risk.

Recognizing the impact that leverage can have on a portfolio's exposure to market, credit, and liquidity risk, the fund of funds manager or investor should assess the degree to which a hedge fund is able to modify its risk-based leverage in periods of stress or increased market risk. Traditional, accounting-based measures of leverage should also be examined. This can provide insights into the source of risk-based leverage and how that leverage could be adjusted.

The Risk of Style Drift

A further ongoing risk factor to be monitored by the fund of funds manager is style drift. Style drift is the risk to the investor that the hedge fund manager drifts away from his area of expertise where he has an edge into a field where he has a competitive disadvantage. Historical examples have been fixed income arbitrageurs investing in non-domestic equity markets or equity managers investing in Russian debt.

There are probably two types of style drift: a short-term opportunistic style drift as well as a continuous departure of a manager's area of expertise. A permanent shift will force reassessment of the investment. One could argue that a short-term opportunistic drift into a related area is probably not as negative for the investor as a permanent shift. The short-term shift is both a risk to the investor as well as entrepreneurial expansion through exploiting economies of scale, i.e. an opportunity. A convertible arbitrage manager, for

example, has a competitive advantage in areas of analyzing changes in credit and volatilities. There are, potentially, related trading opportunities by exploiting inefficiencies left behind by less informed investors.

Over the years, there has been an increasing tendency for hedge fund managers to employ multiple strategies.⁴¹ The value of creating a more stable stream of returns over different market cycles has attracted hedge funds to adopt a multi-strategy approach. By investing in a manager attempting to achieve absolute returns, one automatically invests in the skill of the manager, i.e. not in an asset class or mechanical execution of an investment technique, strategy or process. This implies a higher degree of flexibility for the manager. In other words, the hedge fund manager is not restricted to replicate a benchmark but has a mandate to exploit investment opportunities or market inefficiencies. The basic question is how far a hedge fund manager should be allowed to drift away from his initial area of expertise.

Restrictions work in both ways. On one hand restrictions reduce risk; on the other they limit the set of opportunities to add value. Every market changes over time. Change, and its derivative, uncertainty, are the most certain variables in any social science. Market inefficiencies, for example, have a tendency to disappear as they become known to the market and attract capital. If manager restrictions were too tight, the manager would not be able to exploit inefficiencies in a neighboring or related market as they appear, thereby missing out on *first-mover* advantage.

Handcuffs and Opportunism – a Trade-off

The belief that a high degree of freedom is good is based on the assumption that a large portion of the value added in the hedge fund industry is attributable to flexibility and not purely to skill. If ex-ante value added is defined as manager skill times the square root of breadth, then handcuffing an active manager has its limitations.⁴²

A high degree of freedom causes many challenges in terms of monitoring risk on an ongoing basis. In addition, investors construct portfolios of hedge fund strategies according to their own risk tolerances and return preferences. A high degree of flexibility means that the investor's portfolio of different hedge fund managers could occasionally experience a higher degree of overlap. This would result in higher volatility and higher correlation of the hedge fund portfolio.

One important aspect that aligns the interests of the investor with those of the manager is the fact that many hedge fund managers have large portions of their net wealth tied to their fund. Often hedge fund managers view their fund as the safest place for their wealth to compound. An aversion to market risk exposure was the main reason why hedge funds started back in 1949 in the first place. To some extent, this alignment of interest is a hedge against the manager leaving his area of competence by risking his and his investors equity. However, human nature does not always work that way. There are no guarantees for a prudent assessment of new opportunities. Judgement is omnipresent in pure active management, i.e. hedge fund investing. The degree of tolerable style drift will remain in the eye of the beholder.

Legal and Compliance

A fund of funds manager's legal/compliance personnel must have the authority and resources to operate independently and effectively. This function should seek to actively manage the legal risks presented by the hedge fund manager's trading, focusing on the documentation governing trading relationships and individual transactions. A fund of funds manager will have to ensure that the hedge fund managers pursue a consistent and methodical approach to documenting transactions so that the legal consequences of periods of market stress or performance declines may be more clearly anticipated and managed. The legal aspect should allow risk monitoring with useful input in the evaluation of a hedge fund's projected liquidity in stressed environments, including inputs derived from the fund's transaction documentation (e.g. terms regarding termination, collateral and margining).

Data and Information

Generally speaking, data on hedge fund performance in general is bad and information is difficult and costly to obtain. Hedge fund data suffers from various biases, of which survivorship bias is the most often quoted deficiency.⁴³ The hedge fund industry is still opaque. This means information flow is not efficient and transparent.

The lack of transparency, the poor quality of available data and the high cost of information are a risk to some investors. This imperfection is a risk to investors who are not in the information loop. However, information and high-quality data are among the competitive advantages of the fund of hedge funds manager.

Conclusion

An active long-only strategy stems from a time when markets were less efficient than today and there were few or no alternative ways of getting exposure to a market by diversifying systematic risk. It also stems from a time when there were fewer investment style opportunities and the degree of complexity and flexibility in financial instruments was lower. We believe that the market is migrating to the view that it does not make much sense to attempt to get an informational advantage in an informationally efficient market. If this is the case, flows to specialists adopting an active approach in markets where there is no passive alternative might continue to grow. Given that a fund of hedge funds manager operates in a market as inefficient and opaque as the hedge fund industry, we believe they have a strong value proposition. However, economic logic suggests that over time the costs of active management (fees) are correlated with the set of exploitable opportunities and, therefore, inversely related to efficiency improvements of the market place. In the long-term, that is.

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Tables

Table 1: Return, Volatility and Correlation for a Selection of Hedge Fund Strategies

	Return	Volatility										
	(%)	(%)	1	2	3	4	5	6	7	8	9	
1 Equity Market Neutral	11.6	3.5	1									
2 Convertible Arbitrage	12.1	3.5	0.12	1								
3 Fixed Income Arbitrage	8.9	4.9	0.05	0.12	1							
4 Merger Arbitrage	12.8	4.5	0.13	0.46	-0.06	1						
5 Distressed Securities	15.4	6.6	0.17	0.60	0.37	0.52	1					
6 Macro	18.1	9.0	0.24	0.40	0.11	0.28	0.47	1				
7 Equity Hedge*	21.7	9.3	0.38	0.47	0.05	0.41	0.59	0.60	1			
8 Equity Non-Hedge**	18.4	14.8	0.23	0.48	0.09	0.47	0.64	0.59	0.89	1		
9 Emerging Markets	14.6	16.4	0.13	0.46	0.28	0.42	0.66	0.61	0.64	0.70	1	
Off-diagonal correlation			0.18	0.39	0.13	0.33	0.50	0.41	0.50	0.51	0.49	
Off-diagonal correlation***			0.28	0.48	0.33	0.43	0.55	0.46	0.57	0.57	0.54	

Source: UBS Warburg (based on data from HFR)

Calculations based on monthly US\$ total returns: January 1990 - May 2001.

Correlation coefficients in bold are statistically significant at the 99% confidence level.

The off-diagonal correlation measures the average correlation of one subject with all subjects in the correlation matrix except itself (correlation of 1).

* Equity Hedge investing consists of a core holding of long equities hedged at all times with short sales of stocks and/or stock index options. Some managers maintain a substantial portion of assets within a hedged structure and commonly employ leverage. Where short sales are used, hedged assets may comprise of an equal dollar value of long and short stock positions. Other variations use short sales unrelated to long holdings and/or puts on the S&P 500 index and put spreads. Conservative funds mitigate market risk by maintaining market exposure from 0% to 100%. Aggressive funds may magnify market risk by exceeding 100% exposure and, in some instances, maintain a short exposure. In addition to equities, some funds may have limited assets invested in other types of securities.

** Equity Non-Hedge funds are predominately long equities although they have the ability to hedge with short sales of stocks and/or stock index options. These funds are commonly known as 'stock-pickers.' Some funds employ leverage to enhance returns. When market conditions warrant, managers may implement a hedge in the portfolio. Funds may also opportunistically short individual stocks. The important distinction between equity non-hedge funds and equity hedge funds is that equity non-hedge funds do not always have a hedge in place. In addition to equities, some funds may have limited assets invested in other types of securities.

*** Off-diagonal correlation of coefficients with 99% confidence

Table 2: Mean-variance Optimal Hedge Fund Portfolios Versus Selected Traditional Indices

	Hedge funds			Traditional long-only indices				
	Minimum risk portfolio	5% volatility portfolio	Maximum return portfolio	MSCI World	S&P 500	MSCI EAFE	MSCI Europe	JPM Gbl Gvnt Bnds
Return	11.38	16.26	21.74	8.33	14.36	3.96	10.31	6.67
Volatility	2.32	5.00	9.31	14.51	14.32	17.07	15.14	5.82
Sharpe ratio (5%)	2.75	2.25	1.80	0.23	0.65	-0.06	0.35	0.29
Worst month (%)	-2.65	-6.06	-7.96	-14.30	-15.64	-14.97	-13.42	-3.35
Worst month (date)	Aug-98	Aug-98	Aug-98	Aug-98	Aug-98	Sep-90	Aug-98	Feb-99
Worst 12-months (%)	1.64	0.71	-5.02	-28.59	-24.42	-29.67	-25.49	-6.37
Worst 12-months (date, 12m to)	Apr-99	Jan-95	Mar-01	Mar-01	Mar-01	Mar-01	Mar-01	Jan-00
Skew	-1.37	-0.21	-0.02	-0.58	-0.69	-0.26	-0.60	0.16
Excess kurtosis	5.89	2.65	1.36	0.78	1.43	0.49	0.70	0.10
Correlation MSCI World (all)	0.32	0.61	0.59	1	0.83	0.94	0.86	0.34
Correlation MSCI World (down)*	0.44	0.49	0.40	1	0.73	0.88	0.81	0.04
Correlation MSCI World (up)*	0.06	0.30	0.33	1	0.58	0.85	0.69	0.23
Correlation JPM Global Gov't Bonds	-0.06	0.07	0.07	0.34	0.20	0.38	0.37	1.00
Negative months (%)	6.60	21.20	25.50	38.70	34.30	42.30	37.20	40.90
Average monthly return (%)	0.90	1.32	1.64	0.67	1.12	0.32	0.82	0.54
Average positive monthly return (%)	1.02	1.95	2.79	3.29	3.32	3.15	3.04	0.98
Average negative monthly return (%)	-0.68	-1.03	-1.70	-3.49	-2.37	-4.15	-2.71	-0.16

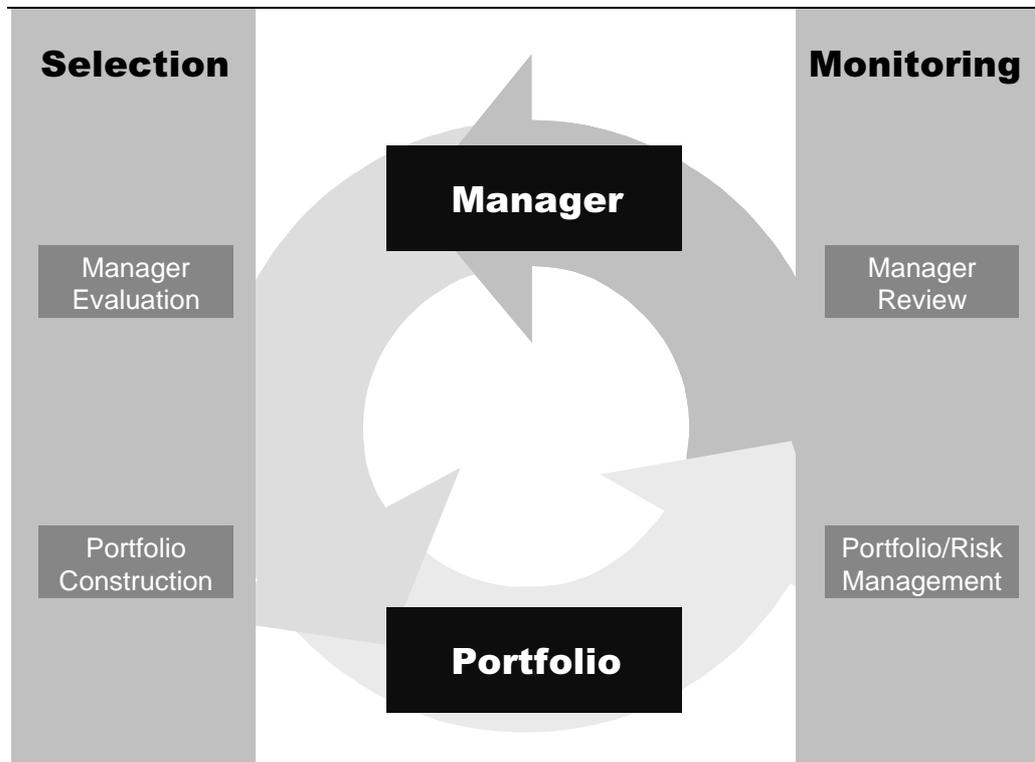
Source: HFR, Datastream, UBS Warburg

Calculations are based on monthly US\$ total returns between January 1990 and May 2001.

*Measures correlation in months when MSCI World is down or up respectively.

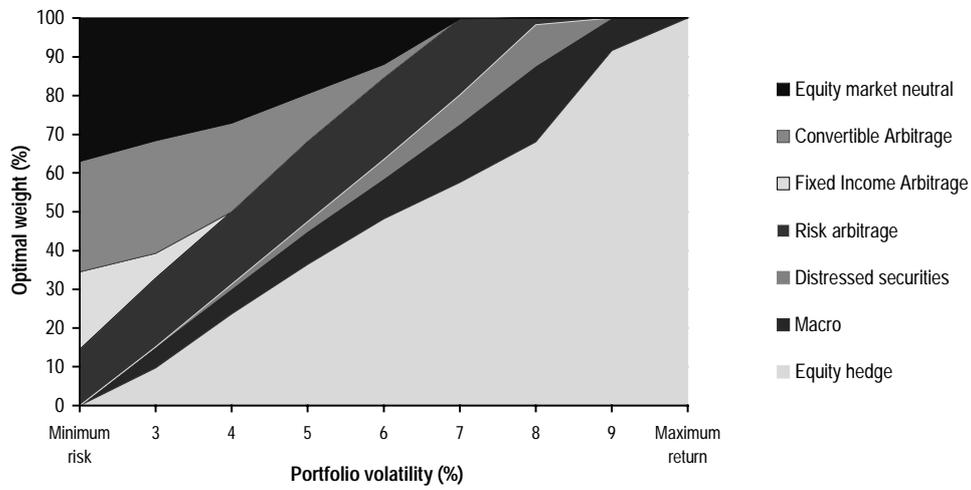
Figures

Figure 1: Dynamic Investment Process of Fund of Funds Manager



Source: UBS Warburg

Figure 2: Mean-variance Optimal Hedge Fund Portfolios



Source: HFR, Datastream, UBS Warburg calculations

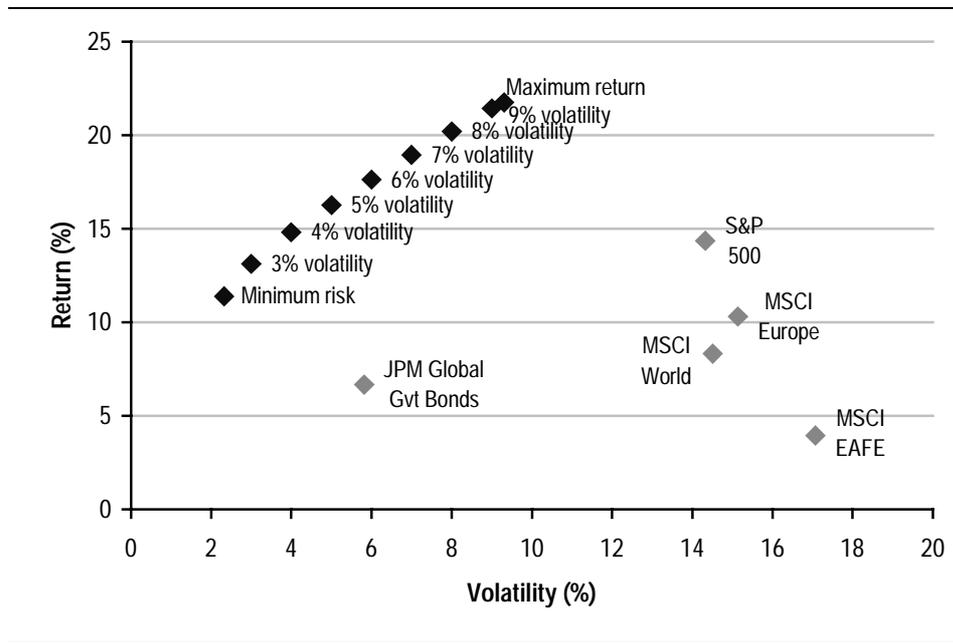
All efficient allocations have zero weight in Equity non-hedge (long/short with long bias) and Emerging markets.

The weights floated between 0% and 100% (short positions constrained).

Calculations are based on monthly US\$ total returns: January 1990 - May 2001.

Returns, volatility and correlation matrix from Table on page 42.

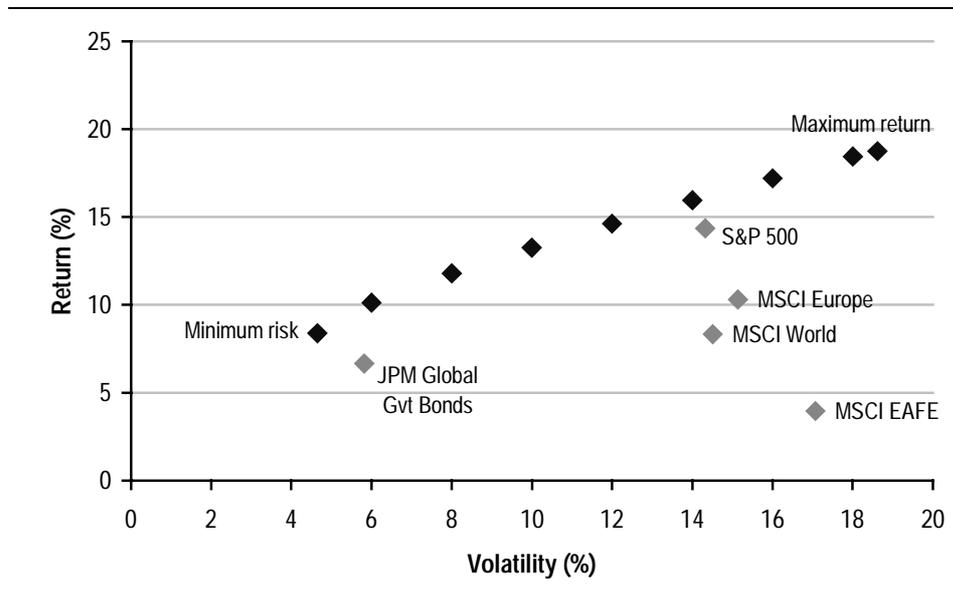
Figure 3: Mean-variance Optimised Hedge Fund Portfolios versus Traditional Indices



Source: HFR, Datastream, UBS Warburg calculations

Calculations are based on monthly US\$ total returns: January 1990 - May 2001.

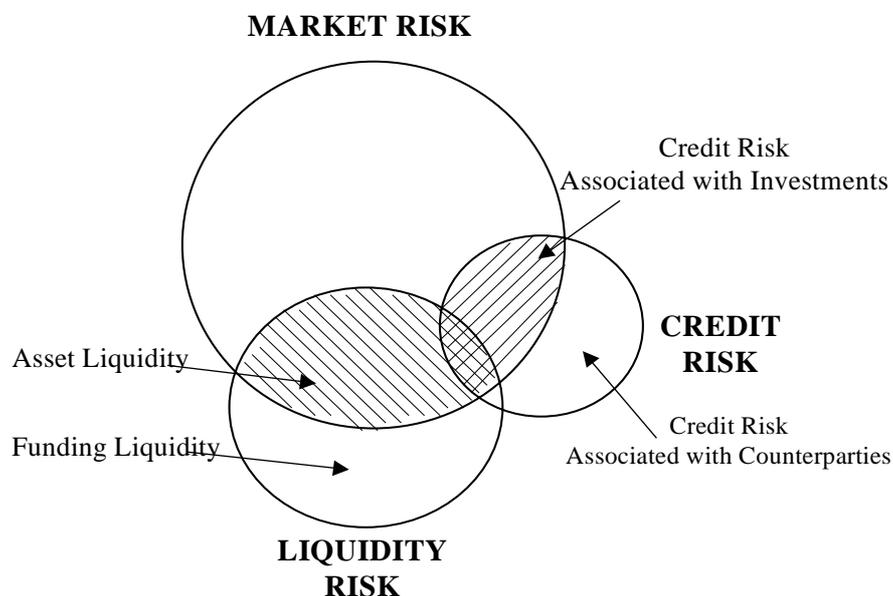
Figure 4: Return versus Volatility (Hedge Fund Return -300bp and Volatility Doubled)



Source: HFR, Datastream, UBS Warburg calculations

Calculations are based on monthly US\$ total returns: January 1990 - May 2001. 300bp was subtracted from historical returns to account for any imperfection in the data and volatility was doubled, potentially to account for imperfection in calculating standard deviations of non-marketable financial instruments.

Figure 5: Risk Monitoring Function



Source: *Sound Practices for Hedge Fund Managers* (2000)

¹ See Ineichen (2001b)

² Schneeweis and Spurgin (2000) for example distinguish between “risk reducers”, “return enhancers”, “total diversifiers”, and “pure diversifiers.” Low volatility strategies such as convertible arbitrage and equity market neutral are risk reducers while strategies with a long-bias are return enhancers. Total diversifiers are strategies with medium volatility and low correlation while pure diversifiers have negative correlation to equities.

³ With respect to capacity of a strategy, the consensus view is that inefficiencies disappear if more capital chases the same inefficiency. However, what is often overlooked is that a flood of new capital creates new inefficiencies itself. A good example is risk arbitrage. A lot of capital went into risk arbitrage after the stunning M&A year of 2000. The fresh capital was to some extent coming from less experienced risk arbitrage managers or long/short equity managers feeling lucky (after making money on the Mannesmann/Vodafone deal). This caused spreads of announced deals to narrow much more quickly. For experienced risk arbitrage managers this opened up opportunities to “Chinese” a deal (buy acquirer and sell acquire) as opposed putting the trade on the other way round. This is one of the reasons why manager selection is key and passively putting on risk arbitrage trades is a questionable proposition.

⁴ Estimates of number of hedge funds available range from 2,000 to 6,000. However, most of these “hedge funds” do not meet basic criteria for institutional investors and fiduciaries.

⁵ Martino (1999) and many others argues that “the due diligence process is an art, not a science” and also stresses the point of prudence and integrity in an unregulated market where the hedge fund structure provides a manager with a great deal of freedom.

⁶ This is slightly unfair, because the hedge fund picker is operating in an opaque and inefficient market whereas a stock picker in, say, US large caps is operating in a transparent and price-efficient market. The opportunity to add value is, by definition, larger in an inefficient market than in an efficient market. The value propositions of the two, therefore, are diametrically opposed.

⁷ In addition, there are some doubts whether professionals with hedge fund experience will find employment in a large private or public institution competitively challenging and financially rewarding. This will continue to give fund of funds managers a competitive advantage over those market (less experienced) participants who pick hedge funds themselves.

⁸ See for example Ineichen (2000) on the abnormal return characteristics of hedge fund strategies.

⁹ Until a couple of decades ago, scientists viewed the world as an orderly place governed by immutable laws of nature. Once uncovered, it was believed, these laws would enable scientists to determine the future by extrapolating from historical patterns and cycles. This approach worked well

for Sir Isaac Newton. Once he discovered the mathematics of gravity, he was able to predict the motions of our planets. This line of thinking, called determinism, is based on the belief that future events unfold following rules and patterns that determine their course. Current science is proving this deterministic view of the world to be naive. The theories of chaos and complexity are revealing the future as fundamentally unpredictable. This applies to our economy, the stock market, commodity prices, the weather, animal populations, and many other phenomena. Sherden (1998) analysed sixteen different types of forecasting. He found that from the sixteen, only two – one-day-ahead weather forecasts and the ageing of the population – can be counted on; the rest are about as reliable as the fifty-fifty odds of flipping a coin. An interesting view is that only one of the sixteen – short-term weather forecasts – has any scientific foundation. The rest are typically based on conjecture, unproved theory, and the mere extrapolation of past trends. "...something no more sophisticated than what a child could do with a ruler (or perhaps a protractor)."

¹⁰ Caglayan and Edwards (2001) examined the returns of CTAs and hedge funds in bull and bear markets. They found that CTAs have higher returns in bear markets than hedge funds, and generally have an inverse correlation with stock returns in bear markets. Hedge funds typically exhibit a higher positive correlation with stock returns in bear markets than in bull markets. The authors also found that three hedge fund styles – market-neutral, event-driven, and global macro – provide fairly good downside protection, with more attractive returns over all markets than commodity funds.

¹¹ We use the terms minimum risk portfolio, minimum volatility portfolio and minimum variance portfolio interchangeably to describe the portfolio with the lowest possible expected volatility in mean-variance space. The terms could be misleading as, in the real world, risk is not equal to volatility and variance. Fund and Hsieh (1999a), for example, argue that an investment in fixed income arbitrage is similar to selling economic disaster insurance. The investment yields a small positive return in calm market conditions but experiences a large-sigma outlier in a disaster scenario.

¹² Fung and Hsieh (2001) point out that the 'spread risk' inherent in a long/short portfolio, for example, often overwhelms the market directional component of the portfolio's exposure. The authors make reference to the former Tiger Fund favouring value stocks on the long side and being negative on growth stocks which led to the dissolution of the fund in February 2000. The authors also note the destiny of George Soros' Quantum Group of funds which experienced substantial losses in a period where the Wilshire 5000 index showed positive returns. In other words, volatility of returns can substantially underestimate the risk of a dynamic trading strategy.

¹³ The term 'arbitrage' has lost its original meaning of a riskless profit. Today the term is used, it seems, for any investment style involving a spread.

¹⁴ If we optimize using historical returns, volatility and correlation from the past five years ending May 2001 instead of 11.5 years, the maximum return portfolio remains 100% equity hedge. The minimum risk portfolio only changes slightly. The weight in convertible arbitrage increases at the expense primarily of fixed income arbitrage. Fixed income arbitrage was able to use much lower leverage to amplify returns in the post-LTCM era.

¹⁵ See Ineichen (2001a)

¹⁶ Survivorship bias occurs when data samples exclude markets or investment funds or individual securities that disappeared. The data sample of survivors describes an environment that overstates the real-world return and understates the real-world risk.

¹⁷ Park, Brown and Goetzmann (1999), Brown, Goetzmann and Ibbotson (1999) and Fung and Hsieh (2000) estimated survivorship bias in hedge fund data to be 2.6% and 3% respectively. Survivorship bias is not a phenomenon exclusively in hedge funds performance data. Grinblatt and Titman (1989); Brown, Goetzmann, Ibbotson, and Ross (1992); Malkiel (1995), and Elton, Gruber, and Blake (1996) found that survivorship biased mutual fund returns upward by 0.5-1.4% a year.

¹⁸ This would also have meant no allocation to hedge funds operating in emerging markets and global macro.

¹⁹ There is a growing amount of research suggesting that hedge fund strategies are simply a function of some asset class factors, traded dynamically and resulting in non-linear causality. The conclusion is often that hedge fund strategies are passively replicable once one has figured out what these factors are. We believe this to be a misunderstanding. A convertible arbitrage manager, for example, is not hired to systematically pull a lever, i.e., buy bond and sell stock short on every new CB issue. A convertible manager is hired to find and exploit market inefficiencies and investment opportunities within the CB market. Pricing the CB is objective (risk measurement); trading the bond over its life is subjective (risk management). The observation that in the past a large part of the performance can be attributed to cheap issuance might or might not be a good indication for the future. We believe the misconception is derived from ignoring the fact that the risk management of the hedge fund manager is active (as opposed to passive) as well as to a large extent subjective (as opposed to objective).

²⁰ Behaviourists argue that we have a hard time discerning probabilities of events and cannot distinguish a long-shot prediction from something that is likely to occur by pure chance. See for example Kahneman and Riepe (1998). Or as Warren Waver, author of the book *Lady Luck*, observed, "The best way to lose your shirt is to think that you have discovered a pattern in a game of chance." From Sherden (1998), p. 121.

²¹ Peter Lynch was quoted as saying, "I don't believe in predicting markets," and that market timers "can't predict markets with any useful consistency, any more than the gizzard squeezers could tell the Roman emperors when the Huns would attack." From Sherden (1998), p. 106.

²² One approach to deal with factors difficult to model, such as intangibles, is to ignore them. We believe this might be an option in the controlled laboratory environment of the econometrician but could have disastrous consequences to the investor.

²³ From Jaeger (2000), p. 75.

²⁴ From Peltz (2001), p. 30.

²⁵ Some investors criticize the short time period on which some of the academic hedge fund research is based on, especially taking into account that the data is low frequency. Not all conclusions, therefore, enjoy a high degree of statistical significance.

²⁶ Just having witnessed the bursting of the internet bubble, they are probably not entirely without a point.

²⁷ Lo and MacKinlay (1999) argue that the EMH is an idealization of the real world that is a useful benchmark for measuring relative efficiency. In an efficient market, they argue, the only way to consistently earn a profit is by developing a competitive advantage. Under this regime, "an occasional free lunch is permitted, but free lunch plans are ruled out."

²⁸ Hedge funds are not free from all regulation. Hedge funds are not exempt from regulations designed to monitor and safeguard the integrity of markets. The US Treasury, for example, requires traders to report large positions in selected foreign currencies and treasury securities. The SEC requires traders to report positions that exceed 5% of the shares of a publicly traded firm. The Federal Reserve has margin requirements for stock purchases that apply to all market participants. The CFTC requires traders with large futures positions to file daily reports. In addition, the CFTC and the futures exchanges set futures margins and position limits on futures contracts. These regulations apply to all market participants, including hedge funds.

²⁹ For example, Barrons from 7 January 2002, page 3: "... out of the goodness of their hearts (it's the first concrete indication they possessed that organ), [hedge] fund managers..."

³⁰ From AIMR (1999)

³¹ It would be politically incorrect to do so.

³² To a disciplined absolute return manager a period of distress is full of opportunities as a period of distress is characterised by excess volatility and market inefficiencies. A hedge fund manager will want his funding intact in such a period. Ken Griffin of Citadel put it to the point by saying: "If you're Avis, and the lights suddenly go off at Hertz, you had better be in a position to make a lot of money." Institutional Investor Magazine, September 2001.

³³ This point is open to debate. We took the view that someone investing in a hedge fund invests in the skill of the manager and not in a mechanical investment process. There have been cases of zero transparency, i.e. black-box investment strategies where nothing is revealed to the investor or the prospect. These funds normally do not – one would expect – survive the first screen of an institutional set-up of a fund of funds manager.

³⁴ Caxton Corporation, Kingdon Capital Management, Moore Capital Management, Soros Fund Management, and Tudor Investment Corporation.

³⁵ Rahl (2000) uses the term 'iceberg risk' in connection with the lessons learnt from LTCM. The visible tip of the iceberg (for example the volatility of returns) is not necessarily a clear indication of the full risk. A long/short equity manager, for example, normally has lower beta risk. This means volatility of returns is lower. However, the manager is also exposed to 'spread risk'. Spread risk is not necessarily captured by measuring the standard deviation of returns. Returns from beta are fairly normally distributed. Returns from taking spread risk are not normally distributed. The returns from spread risk are leptokurtic, i.e. narrowly distributed around the mean with (usually) negative outliers (when spreads blow up). Favouring one form of distribution over the other is subjective depending on personal preference or tolerance of risk. However, what is not subjective is the fact that the combination of different return distributions driven by different factors reduces portfolio volatility.

³⁶ Sound Practices for Hedge Fund Managers (2000), p. 16.

³⁷ Ineichen (2001a) makes the point, that investing in hedge funds has elements of both, a bubble as well as new paradigm in asset management.

³⁸ See Sound Practices for Hedge Fund Managers (2000) for detail differentiation of the term 'leverage'.

³⁹ From Sound Practices for Hedge Fund Managers (2000)

⁴⁰ See Sound Practices for Hedge Fund Managers (2000), p. 50-55.

⁴¹ From Fung and Hsieh (2001)

⁴² More formally: Information ratio = information coefficient (skill or correlation between forecast and realised active returns) times the square root of the breadth or scope (number of independent forecasts of exceptional return a manager can make a year). Grinold and Kahn (2000), p. 148. The formula is often regarded as the law or sine qua non of active money management. If one of the two variables (skill or breadth) is zero, the product of the equation is also zero. In other words, a skilled manager stripped of all opportunities to add value has an expected information ratio of zero and cannot add value.

⁴³ Probably the most extreme example of survivorship bias in capital markets today is the notion that equities outperform bonds in the long term, i.e. the widely touted equity risk premium puzzle. The term 'equity risk premium puzzle' refers to the puzzling high historical average returns of US stocks relative to bonds. Mehra and Prescott (1985) show that standard general equilibrium models cannot explain the size of the risk premium on US equities, which averaged 6% over the period 1889-1978. The view that stocks outperform bonds could be because most analysis is based on a surviving stock market, i.e. the US stock market. However, the standard error of such an analysis is high. Unfortunately, one cannot test the equity premium by re-running US market history to see what would have happened along other sample paths. However, one can look at other stock markets. Jorion and Goetzmann (1999) did exactly that. They examined the 20th century returns of 39 stock markets around the world, including several with experiences vastly different from the US stock market, such as Russia (disappeared in 1917) and Germany and Japan (experienced discontinuities). The authors reported that the US market (in 1900 an 'emerging market') was the best performing market of all 39 markets. Imperial Russia and Argentina did not do as well. The belief that equities outperform bonds in the long run, therefore, is founded on some debatable assumptions.