

In Search of the Truth

Hedge Funds & Their Place in the Private Client Portfolio

A TAMRIS PERSPECTIVE

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INTRODUCTION

Most human beings are willing to believe that something for nothing does exist. Over the last 7 years in particular, a belief that hedge funds, as a group, can provide the holy grail of above average performance and little or no risk has taken hold of the world's financial community and is now filtering down rapidly to the retail financial services market place.

Quite why the world's financial community is happy to place so much onus on a largely unregulated investment, exposed to risks of fraud and the whims of ordinary mortals, where the actual underlying risks and returns are obscured and uncertain, is of concern to TAMRIS as an independent consultancy.

The reason why markets, companies and investments in general are regulated is so that we can see what is going on, so that the risks of the capital markets can be measured and managed. Indeed, transparency is a fundamental building block of efficient allocation of capital and, with so much capital now being controlled by hedge funds, *is transparency of risk and return at risk?*

There are some 8,000 hedge funds currently in existence with some \$1.2 – \$1.5 trillion US dollars invested. With the leverage afforded by derivatives trading and easy credit conditions of the last few years (*indeed since the early 1990s recession*) the actual amount of capital controlled by hedge funds is a multiple of their asset base¹. Since these investment funds operate at the margins of valuation extremes and, most markets are moved by demand and supply at the margin, the margin controlling the price of risky investments is indeed a large one.

According to Professor Kat of the City University London, hedge funds account for some 50% of trading on the New York Stock Exchange and about 80% of trading in distressed securities².

Hedge funds do not just account for a substantial component of market activity; they are also integral to the profitability of the world's investment banks and a growing portion of the earnings of retail financial institutions. With the interests of all three intertwined, hedge funds are just as exposed to the bias posed by conflicts of interest as any other product and investment fad.

1.1 The Industry View

According to the marketing spiel, *hedge funds* are the perfect complement to a traditional portfolio of stocks and bonds. They apparently produce high returns at next to little or no risk, they outperform traditional portfolio management, mutual funds and broad stock market indices and, they diversify the risk of the portfolio because the returns on these investments are uncorrelated to returns on other asset classes.

Worryingly, based on the above over simplification, hedge funds are now assuming a greater importance in the retail financial services market place with many advisors now recommending up to a 20% holding or more within client portfolios.

¹ While the average leverage per hedge fund has fallen since the 1990s, the overall leverage of hedge funds has increased.

² Hedge Fund Returns: You Can Make Them Yourself! ALTERNATIVE INVESTMENT RESEARCH CENTRE WORKING PAPER SERIES ; http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=191081.

1.2 Objective of report

The objective of this report is to look at the fundamentals of risk and return in the context of both the hedge fund and the portfolio and to assess the validity and the risks of the claims made.

- Just what are the fundamentals of hedge fund risk and return?
 - Do hedge funds really enhance return while reducing risk and over what time frame is such risk management optimal?
 - Are they really lower risk investments and is their return certain?
- Do hedge funds actually out perform other asset classes and is the performance data reliable?
- Where do hedge funds fit into the portfolio and does their inclusion negatively or positively impact the management of risk and return? This is important because the management of risk and return is more than just the minimisation of standard deviation through diversification.
 - Do they complement the allocation to stocks and bonds and if they do, how do they complement the role of basic asset classes?
- Are hedge funds really an alternative to stocks and bonds and are they a separate asset class as claimed by those that sell them?
- If hedge funds are selected, just what are the prerequisites that determine their selection and management? Should anyone select a fund with a specific objective without being aware of the valuation, liquidity, credit and correlation risks of both the hedge fund and the strategy?
- What are the problems in the financial services industry that make hedge funds so appealing?
- Can we incorporate the benefits of hedge fund investment into portfolios without having to buy unregulated, high cost, and potentially risky investments?

There is in fact a great wealth of academic research into hedge funds that contradicts much of the hedge fund marketing message; **this research states that risk is higher, that performance is lower and that the industry's standard portfolio tools, the mean variance optimisers, are inappropriate for determining hedge fund allocation.** TAMRIS concurs with these views and more so.

2

Hedge funds & Hedge Fund Fundamentals

A hedge fund is an unregulated investment vehicle that uses hedging strategies (leverage, short selling and derivatives) to attempt to either completely take away market risk or to selectively increase or reduce exposure to market risk, depending on the manager's view of the direction of the price movement of the underlying investments comprising their strategies. For many the problem with hedge funds starts with their definition.

Unregulated means there are essentially no rules governing their asset allocation, their reporting of performance or regulation governing the safe management of client funds. While there are supposedly regulations governing who can and who cannot buy hedge funds in most countries, it is doubtful whether these offer any real protection to the individual investor; note Portus where many smaller investors were placed.

If you do not understand how derivatives work, what short selling is and how and why leverage comes into the mix, then you are unlikely to understand the world of the hedge fund and you should probably never invest in one or advise another to do the same.

While all hedge funds use leverage, short selling and derivatives to enhance return, not all hedge funds expose the investor to the same level of “risk” nor provide for the same level of return.

2.1 Fundamentals of hedge fund return

Understanding how hedge funds manage return starts with an understanding of the market neutral strategy. A **market neutral strategy** will aim to “eliminate market risk” by selling short over valued stocks/securities and buying long overvalued stocks/securities. The stocks or securities selected and the amount allocated should be such that the correlation or sensitivity of the portfolio to the movement in the underlying market is zero. The returns on a market neutral portfolio are derived from the net profit on short sales and long positions.

Achieving a 100% market neutral position is next to impossible given that volatilities and correlations change in accordance with relative demand; price movements (volatility) and correlations are determined by relative demand for and supply of a security, a demand which is constantly evolving as investor preferences, market liquidity, valuation and the dynamics of modern economies evolve.

A market neutral strategy, if markets are efficiently priced, should earn no more than the risk free rate of return, equivalent to the type of return that a short term low risk bond investment would earn.

According to modern portfolio theory, the return on a market portfolio is essentially the risk free rate plus the return due to market risk. The return on market risk is the marginal return on equities over and above the return on a lower risk asset³. If markets were efficiently priced and there were no transaction costs or leverage involved, all you could earn by being market neutral would be the risk free rate of return.

If markets are not efficiently pricing risk at all points in time, market neutral investments should theoretically be able to earn more than the risk free rate of return; that is they will be buying excess return (long) and selling excess risk (short selling).

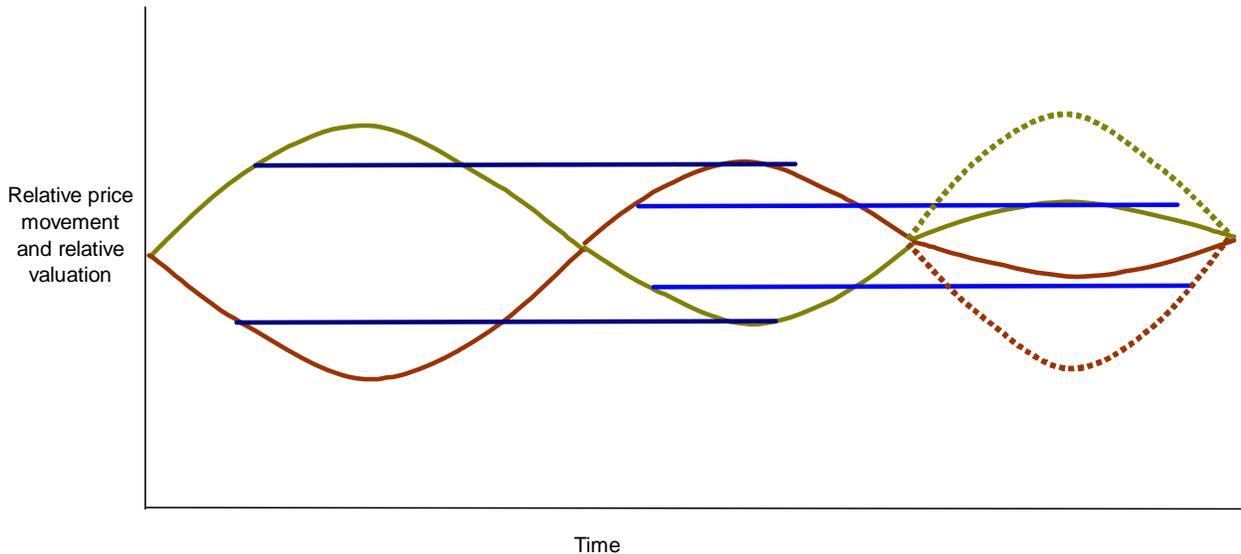
In terms of the hedge fund universe, any given hedge fund’s risk and return is graded by its use and application of short selling, derivatives and leverage and the value inherent in its strategy. Just like the overall market place, the return from hedge fund investment is determined by the ability to find relative value; although hedge funds need relative value with actual direction or momentum, whereas traditional investment styles can afford to wait. The return on a market neutral hedge fund (and hence the framework for all hedge fund returns) is therefore determined by the following;

- a) the relative over and under valuation of investments in the market place relative to an equilibrium price (*a function of the demand for relative valuation*),
- b) the rate at which investments move from over to under valued and the extent of the deviation of the price movement from the equilibrium price (*size and timing of price movement or risk*),
- c) the amount of leverage used (*which impacts demand for relative valuation*) and,
- d) the cost of capital (*which impacts leverage and hence demand for relative valuation*).

³ While the Capital Asset Pricing Model does not fully explain risk and return in the market place it does provide a useful structure for assessing the fundamentals of a market neutral strategy $Return = R_f + B(R_m - R_f)$. If Beta is 0 then return is simply the risk free rate, if markets were efficient.

Not all funds will earn the same return from a given strategy; not all managers will buy or sell at the same price or be able to access the same credit arrangements or buy the same stocks.

The marginal excess return over an above the risk free rate that a hedge fund will be able to earn will be impacted by the relative demand for price inefficiencies; **the more hedge funds there are the more capital will be allocated to these types of strategies and the lower the return.** The following chart shows how demand for relative valuation or price movement can effect the supply of relative valuation over time. While the trend, or the market risk and return remain the same, the actionable relative valuation declines to the point that it offers little return unless heavily leveraged.



Also, it is worthwhile noting the potential consequences of the above dynamics. What would have once been a short position is now a long and vice versa; the security whose price would once have kept falling is now moving up at a much earlier phase in its cycle and what would have still been rising is moving down much earlier. If the old trends were to re-establish themselves (dotted lines), which is possible if marginal hedge fund liquidity were to move elsewhere, short and long positions would contradict the actual trends; hedge funds would lose money.

2.2 Fundamentals of hedge fund risk

Ostensibly, risk as measured by standard deviation is much reduced with a hedged position. This is because the relative price movements of short and long positions, to a lesser or greater degree depending on the long/short bias, cancel each other out.

However, while hedge funds do indeed reduce the incidence and depth of normal downside risk, there are a number of reasons why standard deviations should not be taken as the prima facie risk facing investors in hedge funds.

2.2.1 Lack of transparency

It is very difficult to be specifically critical of the risks of hedge fund strategies for the simple reason that they keep their strategies, their allocations and their underlying risk positions hidden. In truth this is the greatest risk of all. The only people who are aware of the risks of a hedge fund are the managers. If you cannot quantify the risks, you cannot make the investment. Surely market efficiency would be better served by transparency.

2.2.2 Extreme event risk

Successful hedging depends on demand reacting as expected to differences in relative valuations, whether it is the valuation differential on stocks or the credit spread of fixed income.

This correlation or price movement is all about the relationship between demand for and supply of an asset, with demand a function of liquidity, market participants' risk/return preferences and the underlying fundamentals determining valuations.

Extreme event risk can be lead by either a significant event which changes the normal convergence of valuation spreads or, an event which re-establishes or changes market dynamics; for example excessive hedge fund activity can constrain normal market dynamics and the deleveraging of hedge fund activity can bring these dynamics back to where they used to be.

Extreme event risks can be localised (*i.e. affecting a specific security or set of securities*) or global (*affecting all markets and asset classes*).

During periods of heightened stock market and economic risk many investors will often look to security as opposed to return and the natural demand for relative price/valuation differentials can dry up. Instead of converging, relative valuations can move further apart and as valuations move further apart those caught with hedged positions may be unable to get out of or offset their positions; indeed pressure to get out often spreads to other securities.

In such circumstances losses on a leveraged position are only limited by the extent of the movement in prices and the ability to close positions or adjust hedging to the new demand paradigm. Hedging in a declining market is difficult if a large number of investors are trying to get out and, especially so if long positions are in less liquid market components or asset classes.

In declining markets a hedge fund's ability to post collateral and to meet higher margin requirements may also fall and so will its ability to re-hedge its positions.

Hedge funds depend on normal market conditions for their risk management characteristics, which is perverse given that they are often relied on to manage risk during periods of significant market and economic risk.

Hedge funds are currently judged by the way they dealt with the 2000/2003 bear market, when in fact the 2000 bear market was not an extreme risk event. In fact relative demand acted as many would expect with overvalued technology stocks falling and under valued "value" stocks rising. This period was also supported by an increase in market liquidity. A 1987 stock market crash scenario would be a much bigger test and a much bigger risk to hedge funds.

Assessing the impact of extreme event risk is difficult, not least because the risks are complicated by the fact hedge fund counterparties are fairly concentrated.

2.2.2.1 Long Term Capital Management

When Long Term Capital Management collapsed it had some 60,000 trades on its books. We know that unravelling OTC derivative trades can be costly and can take months if not years to unravel.

We do not know the true risk positions of hedge funds, but we do know that the risk events that could precipitate a crisis have happened in the past and, will occur in the future.

Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management - Report of The President's Working Group on Financial Markets (1999).

Prior to its collapse, Long Term Capital Management TCM maintained that its trading positions “*embodied risk similar to that of investing in the S&P 500 index on an unleveraged basis but were essentially uncorrelated with equity returns*”

“The LTCM Fund’s size and leverage, as well as the trading strategies that it utilized, made it vulnerable to the extraordinary financial market conditions that emerged following Russia’s devaluation of the ruble and declaration of a debt moratorium on August 17 of last year. Russia’s actions sparked a “flight to quality” in which investors avoided risk and sought out liquidity. As a result, risk spreads and liquidity premiums rose sharply in markets around the world. The size, persistence, and pervasiveness of the widening of risk spreads confounded the risk management models employed by LTCM and other participants. Both LTCM and other market participants suffered losses in individual markets that greatly exceeded what conventional risk models, estimated during more stable periods, suggested were probable. Moreover, the simultaneous shocks to many markets confounded expectations of relatively low correlations between market prices and revealed that global trading portfolios like LTCM’s were less well diversified than assumed. Finally, the “flight to quality” resulted in a substantial reduction in the liquidity of many markets, which, contrary to the assumptions implicit in their models, made it difficult to reduce exposures quickly without incurring further losses.”

2.2.2.2 The shape of extreme event risk

There is a considerable amount of academic research detailing the dangers of low probability extreme risk events for hedge fund strategies. While the probability of negative returns associated with hedged fund investment is much reduced, the probability of outlying extreme risk events are much higher.

Instead of hedging reducing risk in terms of the distribution of risk and return, hedging has only changed the shape of the distribution; *the distribution of returns have been shifted so that more of the negative returns have been transferred to an outlying low probability extreme event.*

Advisors who put their clients into a hedge fund need to understand that they are exposing individual investors to a low probability of absolute loss. This is extremely difficult to do in a well diversified conventionally managed portfolio.

If the aim is to manage risk for conservative investors, or to provide lower risk options for delivering return, the impact of such a risk event needs to be capable of being absorbed by the portfolio. ***As such, the ability to accept an extreme event risk is an important determinant of hedge fund allocation.***

2.2.2.3 Many market neutral strategies are not truly market neutral

Many hedging strategies are not true market neutral strategies. Merger arbitrage strategies where a hedge fund will buy the target company’s shares and short the acquirer’s shares are exposed to deal risk (*the risk to long short positions of a deal falling through*) and many fixed income arbitrage strategies depend on the credit yield spreads remaining within specific ranges. Indeed, *a strategy which depends on the relative price movement of two securities from the same asset or asset class cannot be market neutral in all conditions*; only a fully diversified market⁴ portfolio can be market neutral.

2.2.3 The impact of illiquid assets on standard deviation

The illiquid nature of many hedge fund positions and strategies belies their actual risk. Illiquid assets tend to be traded less frequently and their prices therefore appear more stable. Indeed volatility on easily traded assets is merely a reflection of the ability to equate demand for and supply of an asset at a point in time. According to much of the research into this area there also appears to be sufficient leeway for hedge funds in

⁴ One that incorporates all assets that liquidity can move to or from.

their pricing of less liquid assets; leeway which allows for smoothing of hedge fund pricing and hence lower standard deviations.

2.2.4 Credit risk

Hedge funds are more often than not leveraged entities and their ability to trade and manage risk depends on their ability to obtain credit. Changes in market liquidity or the terms of credit for an individual hedge fund can affect their ability to manage the risks of their trading strategies; hedge fund credit risks are influenced not only by the credit cycle but also the success of the trading strategies.

Credit risk is a significant risk issue according to the New York Federal Reserve Chairman⁵;

“Against the backdrop of an apparently healthy financial system, market participants report a substantial rise in transactions leverage, erosion in the use of loan covenants, more favorable financing terms for hedge fund counterparties, and especially a pressure to reduce initial margin against OTC derivatives exposure to hedge funds. But the concern is that this sustained period of very low credit losses and low volatility works to hold down measures of the underlying economic risk in these exposures. This combined with the range of factors I just discussed, raises the odds that market participants will be faced with negative surprises in the event of a more adverse macroeconomic environment. And this could have more negative implications for market dynamics and liquidity as market participants react to those losses and attempt to reduce their exposure to future losses.”

2.2.5 Hedge fund rates of attrition

Academic research has highlighted the high attrition/failure rate for hedge funds, a rate which is apparently 3 to 4 times higher than it is for mutual funds. Examples of the research into this area can be found in section 3, Academic & Other Studies.

2.2.6 Manager ability

Many of the trading strategies depend heavily on market timing, stock selection and careful management of the risks of a given strategy and, not the intrinsic risk management qualities of hedge fund strategies. Hedging in itself does not produce the supposedly attractive characteristics of hedge fund investment. Strategies that depend on short selling and long positions depend very much on timing; hedge funds do not have the luxury that long only investment styles have. And, market timing is a very difficult art and possibly one of many reasons for the decline in the average performance of hedge funds.

2.2.7 Fraud

One of the risks of investing in lightly regulated investment vehicles is the risk of fraud⁶. Canadian Investors will note in particular the experiences of Portus and Norshield⁷, both domestic Canadian Hedge Fund operations. But the risk of fraud does not just relate to siphoning off of investor funds but also fraudulent activities that hedge funds knowingly engage in; for example the trading of mutual funds units in the market timing scandals. All these ultimately are risks to hedge fund investors.

⁵ <http://www.ny.frb.org/newsevents/speeches/2006/gei060516.html>

⁶ http://www.pwchk.com/home/eng/hedge_fund_operation_jul2005.html

⁷ http://www.advisor.ca/investments/alternative_investments/article.jsp?content=20060331_122550_3904

2.3 Fundamentals of performance

Hedge funds are perceived as dramatically out performing the major market indices and most asset traditional asset managers that are unable to use hedging strategies.

There is also the perception that they deliver this return at much lower risk. In truth, it is virtually impossible to truly assess the risk/return profiles of hedge funds given that the allocation, leverage and hedging strategies are obscured. As discussed, hedge fund risk is higher than the headline standard deviation and Sharpe ratio and, anyone looking at relative performance of hedge funds must bear this in mind.

There are however other important considerations. When looking at the average performance of hedge funds the following must be borne in mind.

Reporting is voluntary and hedge funds are known to wait until they have achieved a good performance track record before they start reporting performance. This voluntary reporting leads to three main biases

- **End of life bias** – hedge funds often stop reporting before they cease trading if performance deteriorates; Long Term Capital Management's losses in its last year of operation were apparently not reported. If hedge fund indices were to report all performance, academic research in this area suggests that actual performance would be reduced considerably.
- **Back fill bias** – with no requirements to report all performance, or to report performance as and when a fund is set up, managers can choose when to report performance for new funds. Much of the early data used to build the hedge funds indices are comprised of backfilled data. There is a significant amount of research that has been conducted into determining the impact of back fill bias on returns. One study calculated that the difference between backfilled returns and contemporaneous returns to be some 500 basis points or 5%⁸; returns reported as they happen include both good and bad returns, whereas as backfilled returns are more likely to comprise only good returns.
- **Survivorship bias** – an index is meant to provide an actual representation of the risk/return characteristics of either an asset class or investments in asset classes. With the high attrition rates of hedge funds, the risk is that the index does not show the actual risk/return profiles facing investors in their current funds. There has been numerous research into the impact of survivorship bias on hedge fund index performance. Most research shows a bias existing, but recent research shows this bias to be much more significant. Malkiel and Saha also stated that the performance differential over the 1996 – 2003 period, on the TASS database, to be some 442 basis points (4.42%) ; this is the difference between the performance on defunct funds versus the performance on both surviving and defunct funds.

Indexes which show the risk/return profiles of investment styles are important in that they are meant to represent the universe of risk and return of an investment style. This is important when comparing risk/return profiles of competing investment vehicles – mutual fund, exchange traded funds, traditional investment styles and main benchmark indexes. What would the performance of the average mutual fund be if only the good funds were included?

The size of the hedge fund market place may be such that the performance of hedge funds are likely to mirror the performance profile of the investment medium many are fleeing; that is the mutual funds, the passive indexers and mix of portfolio solutions delivered by the mainstream financial services industry.

⁸ Hedge Funds: Risk and Return, Burton G Malkiel and Atanu Saha
http://www.analysisgroup.com/AnalysisGroup/uploadedFiles/Publishing/Articles/HedgeFunds_Risks_and>Returns.pdf

In order to select a good mutual fund you need to do your research and you need to know the asset allocation and risk profile of the funds you are buying. Can you do that with a hedge fund? No, not even the world's central banks have the ability to do this.

2.3.1 Hedge fund performance

There is concern that the large amount of capital invested in hedge funds is crowding out return. Much of the recent performance data suggests that average and relative returns have indeed been falling across the hedge fund spectrum, even amongst hedge fund styles that should be expected to outperform. Note the chart in 2.1 the fundamentals of hedge fund return.

Whether this is because of too much capital chasing too few returns is unclear because of insufficient direct supporting data; you would only be able to work this out by looking at the allocation profiles of hedge funds over the period in question.

Indeed, it is logical that more capital chasing marginal return would cause relative price movements to converge. This reduction of the extremes of over and undervaluation would reduce the marginal return on hedge fund returns. Also, with relative price movements converging, so will the correlation of price movements, meaning return is more dependent on market direction.

According to a July Financial Times report, Merrill Lynch said hedge funds now have a 96% correlation to the S&P 500, up from a 32% correlation in 2000.

If hedge fund performance is governed by the relationships of the capital asset pricing model (CAPM), hedge fund returns should naturally be falling over a period associated with a declining cost of capital (i.e. a falling risk free rate).

The decline of average hedge fund performance is especially important given that the financial services industry is looking to push hedge funds fully into the retail market place. Declining performance may also imply increasing risks to return. Looking at the recent performance of hedge funds it is clear that the decision to include a hedge fund allocation should include an assessment of current market dynamics.

2.3.2 Analysis of historical performance

A brief analysis of historical hedge fund performance bears out the trend towards lower hedge fund returns. This analysis also confirms that the performance of the investment style itself is not as attractive as much of the marketing hype suggests.

By comparing the performance of hedge fund indexes against a number of value indexes, it also confirms the presumption that there is indeed a viable natural investment alternative residing within the traditional investment universe; the performance of hedge funds have their roots in the performance of traditional value/contrarian/global investment disciplines. Data used for this analysis came mainly from the Hedge Fund Research Indexes and the Standard & Poor equity indexes.

2.3.2.1 January 1990 to May 2006

Chart 1 looks at the period January 1990 to May 2006; in this chart, hedge fund performance largely supported current claims of superior long term performance, especially with respect to the macro and the composite weighted indexes.

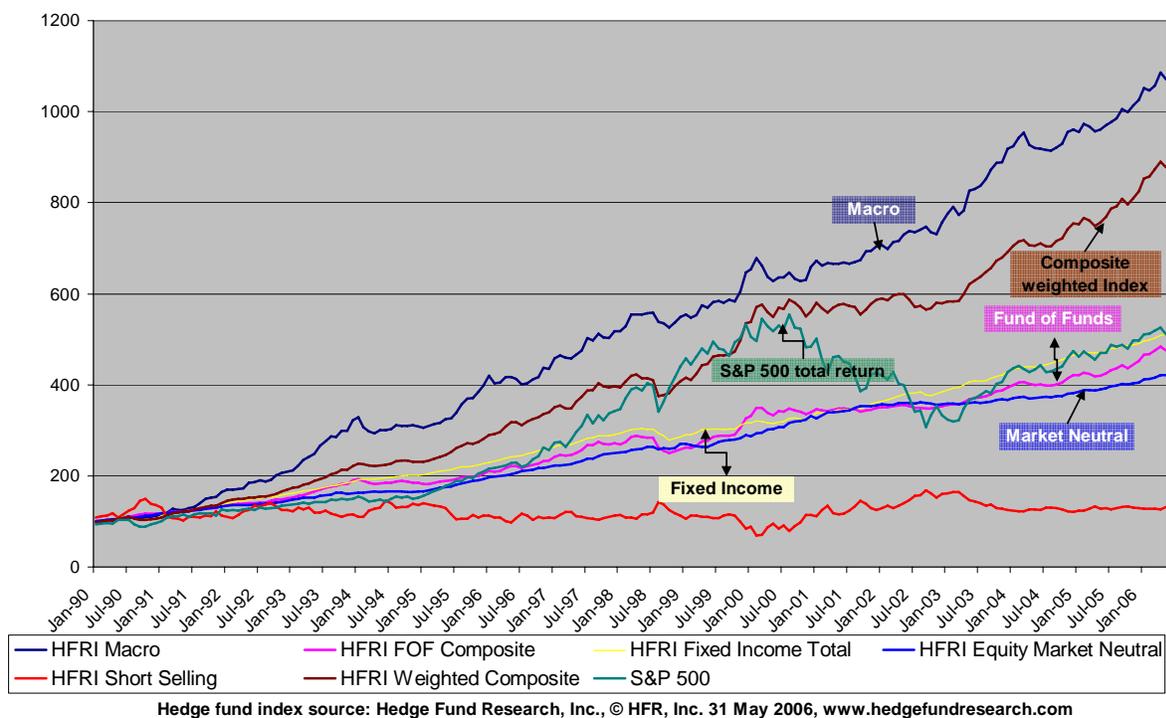
On closer inspection, the performance shown in the chart occurred during the period April 1991 to January 1994. This was a period during which smaller companies, value, emerging markets, recovery and distressed investments all outperformed strongly following the deep recession of the early 1990s; smaller companies had under performed since the stock market crash of 1987.

Indeed the margin of out performance of the composite weighted average index relative to the S&P 500 over the 1991 to early 1994 was more or less similar to the margin of out performance of a number of the global small cap indexes and the performance of emerging market indexes. The conclusion is clear, a global value investment discipline focused on relative valuation would have achieved “hedge fund type performance” within a sizable component of a conventional (non hedged) portfolio without having to resort to investing in a hedge fund.

Contrast the out performance of the hedge fund indexes in the early 1990s to the performance of the hedge fund indexes over the last four to five years when they actually underperformed. This suggests that the nature of hedge fund return and hedge fund strategy may have also changed, especially with regard to the performance of the supposedly more aggressive macro style index; see the performance for 2000 to 2006.

When looking at these figures it is also worthwhile remembering the biases influencing hedge fund index performance. Average hedge fund performance may well have been lower.

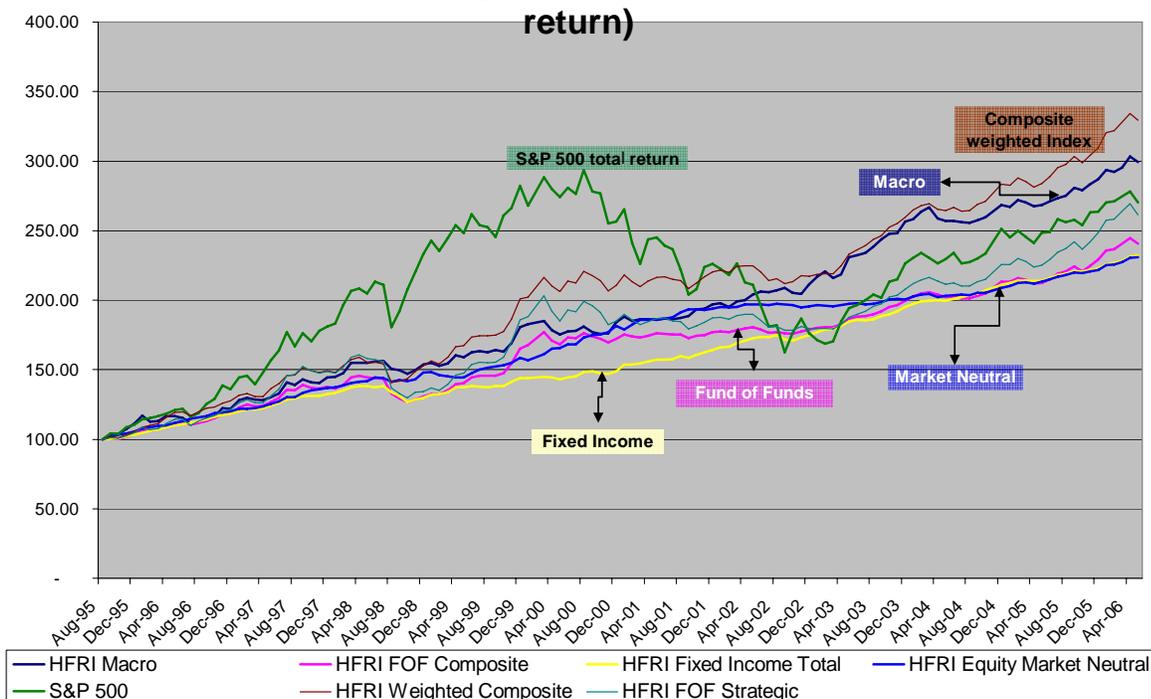
Long term ; hedge funds versus S&P 500 (total return)



2.3.2.2 1995 to 2006 – relative to the S&P 500

The next graph presents a different picture of hedge fund performance from July 1995 to May 31 2006. We can see the broader S&P 500 clearly outperforming all hedge fund indexes during the bull market and the more retail friendly Fund of Funds and the market neutral strategies over the entire period.

1995 to 2006 ; hedge funds versus S&P 500 (total return)



Hedge fund index source: Hedge Fund Research, Inc. © HFR, Inc. 31 May 2006. www.hedgefundresearch.com

There are three things worth considering in the chart.

- One is that a normal market exposure provided the investor with the opportunity to sell high and to buy low or to sell high for consumption; this would have further increased the total return available to investors in the S&P 500.
 - Over the seven and a bit years from January 1995 to April 2002, an investor in the S&P 500 index would have been able to sell their assets at a price above that which they would have been able to sell the average hedge fund. Investors in hedge funds also failed to benefit from being able to buy low during the 2000 to 2003 bear market. The ability to sell high and buy low is critical to effective portfolio management and is something which an allocation to a hedge fund would take away.
- If investors in market neutral and fund of funds could on average expect to do no better than the market while taking unknown, unquantifiable and uncertain risks, would the individual investor still make the investment decision?
 - Indeed, the performance of the average fund of fund investment is worrying given that they should be selecting the best of the hedge fund universe for inclusion. *With fund of funds an important part of the hedge fund market place and a key component of the hedge fund retail strategy one must seriously question their validity as an asset allocation vehicle.*
- The major market index is not a risk management index and, from 1997 onwards most major market indices were not operating in what value investors would call long term buying territory. Indexes over weight overvalued components and under weight under valued components; this is the opposite of both a hedge fund strategy and the opposite of a value/contrarian/global strategy. Comparing hedge funds against the market or the average mutual fund that perhaps over emphasised over valued aspects of the market is not a valid comparison.

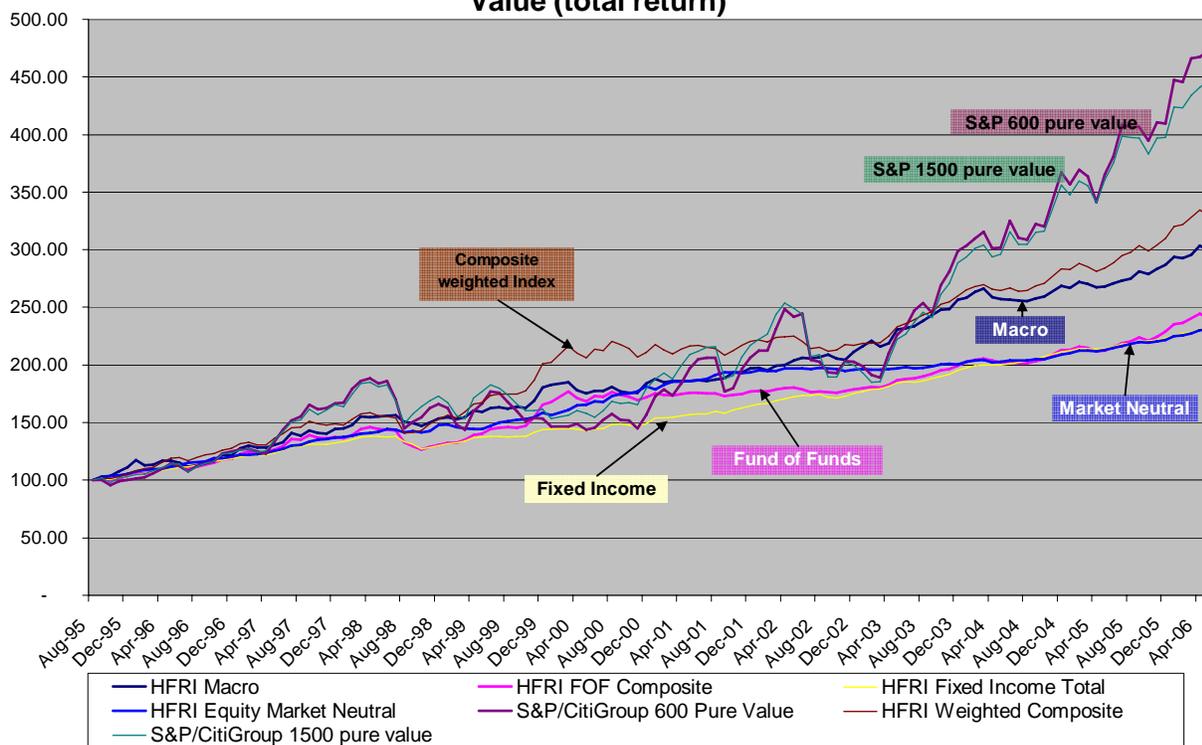
2.3.2.3 1995 to 2006 – relative to S&P/CitiGroup Pure Value Indexes

The next graph looks at the S&P 600 and S&P1500 total return pure value indexes, instead of the S&P 500 from the same period (1995 to 2006). As you will note, looking at a pure value index shows a totally different risk/return profile. Value stocks outperformed the major hedge fund style indices over this time period.

Indeed, a value investment approach is a more conservative and more risk averse approach that favours selling high and buying low, but without the extreme event risk of hedge fund derivative and leverage positions.

If you look closely at the chart you will find that the fund of funds and the composite market hedge moved strongly upwards from late 1998 (meaning there is directional bias) and as the technology bubble started to deflate in March 2000, barely moved for 2 years, while the value indexes actually performed better during the down market. If these funds were correctly identifying the short and the long positions in the market during the latter period, their performance should have been much better. It was not.

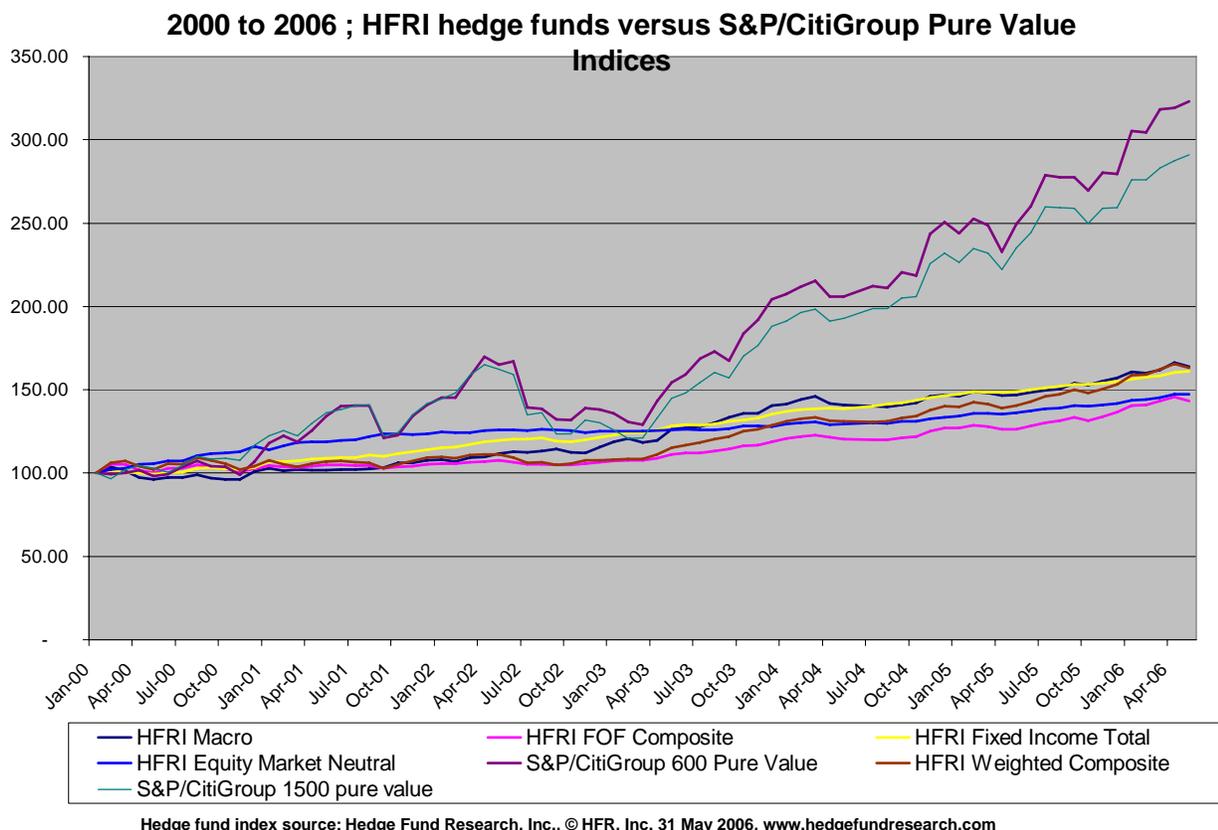
1995 to 2006 ; hedge funds versus S&P/CitiGroup 1500 & 600 Pure Value (total return)



Hedge fund index source: Hedge Fund Research, Inc., © HFR, Inc. 31 May 2006, www.hedgefundresearch.com

The performance of fund of funds and the market neutral funds should be of concern to those who believe that these generic vehicles are a viable long term equity alternative.

2.3.2.4 2000 to 2006



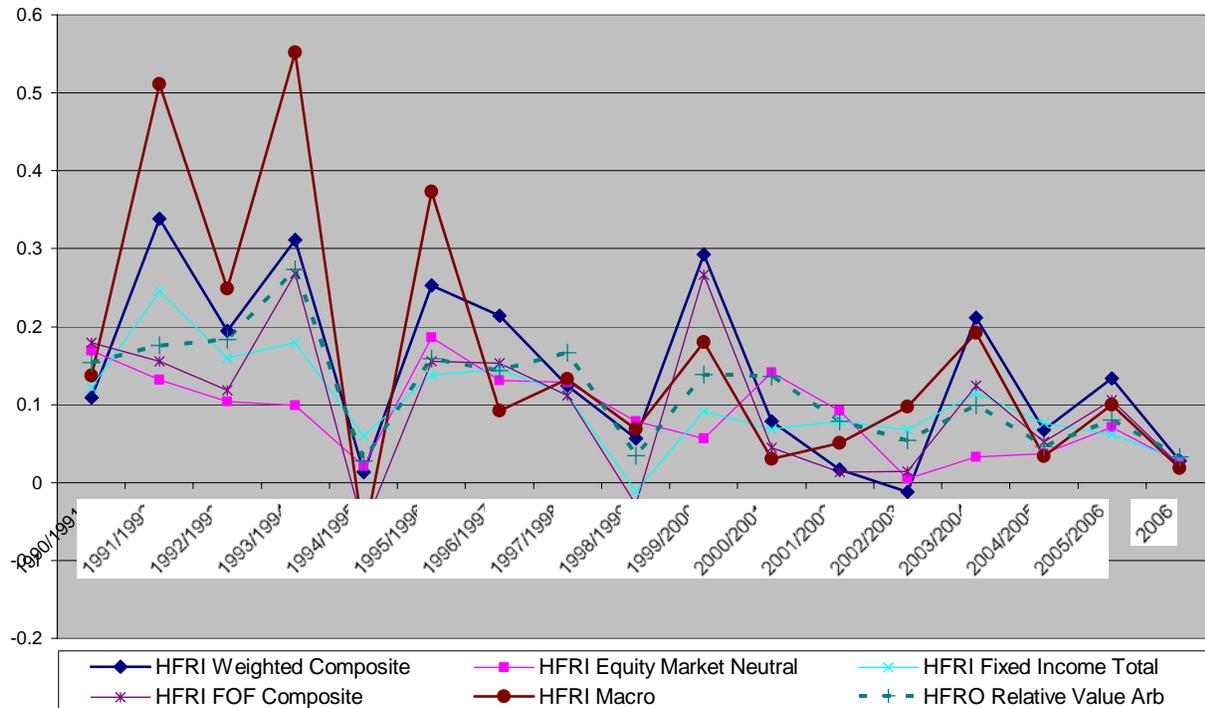
Focussing on the 2000 to 2006 chart, the value indexes (in this instance) provided downside protection against the deterioration in the main market indices. They also provided greater performance than the more aggressive macro hedge styles. Interestingly, the hedge fund indices shown all provided performance within a fairly narrow band.

As discussed, there is a definite difference between the return profile of hedge funds in the early 1990s and the return profile of hedge funds post 2000 that should be of concern to proponents of hedge fund investment. In particular the macro funds that benefited so much from the value/small cap/emerging market returns of the early 1990s are clearly not participating as a group in the 2000s. No doubt there will be individual funds that are, just as there will be in the mutual fund and pooled fund universe, but these are clearly only marginal.

2.3.2.5 Annual performance trends 1990 to 2006

The following chart shows annual hedge fund performance for key hedge fund indexes over the 1990 – 2006 period. It shows a clear downward trend of returns.

Annual hedge fund performance: 1990 to 2006



Hedge fund index source: Hedge Fund Research, Inc., © HFR, Inc. 31 May 2006, www.hedgefundresearch.com

Whether this is due to better reporting, declining quality as poorer managers enter the industry, or a reflection of a lower return/lower interest environment (declines in the risk free rate) or less volatile markets due to crowding of demand for relative price movements is food for thought. **One thing is clear, anyone recommending a hedge fund on performance alone has a lot explaining to do and much to understand before they can justify further recommendations**

2.3.2.6 Performance relative to bonds

Over the six years from January 2000 to January 2006 the HFRI Market Neutral Index provided a geometric annual return of 5.7%, the HFRI Market Neutral Statistical Arbitrage index an annual return of 3.2%, the HFRI Fund of Funds Index an annual return of 5.6%, the HFRI Weighted Composite a return of 7.4%.

In January 2000 the redemption yield on a 6 year US bond was around 6.5%, for a UK 6 year bond it was 6.2%. Canadian Bonds stood at similar yield levels; 6.5% for the 7 seven year government of Canada benchmark bond⁹. The more conservative and retail friendly hedge funds have on average under performed a straightforward bond yield. In 2000 the average Moody's Aaa bond yield stood at 7.3%¹⁰ while the Scotia Capital All Corporates mid term yield was 7.26%.

The relationship between bond yields and hedge fund returns goes back even longer; the yield on 10 year US Treasury Bonds in 1990 stood at 8.5% and the annual geometric return on the HFRI Market Neutral

⁹ <http://www.bankofcanada.ca/en/rates/bonds.html>

¹⁰ http://www.federalreserve.gov/releases/h15/data/Annual/H15_AAA_NA.txt

index stood at 9.1% over the 1990/2006 time period. The Moody's corporate bond (Aaa) index yielded 9.32% in 1990.

One wonders what the actual average return on the hedge fund indexes would be if we were to adjust for all the return biases. The conclusion to be drawn from the above analysis is that on average, you might as well have a properly constructed portfolio whose low risk allocation would consist of direct bonds and whose equity allocation would be global and relative value biased; allocation to market cap, to sectors, to markets to reflect relative price movements and relative economic and business cycles.

2.3.3 Recent performance; other sources

By most measures of performance (value index, major market indexes, bond indexes, global equity indexes) the average hedge fund has under performed over the last few years. The performance of the MSCI Hedge Invest index¹¹ has returned 17.02% from July 2003 to May 2006, comparable with the return on the MSCI World Sovereign Debt Index.

Other indexes show similar stories with the FTSE Hedge Index producing a three year return of 16.8% to the end of May 2006 while the FTSE All World Index returned 59.2%¹². Over five years the performance was 28.9% for the hedge index and 22.9% for the All World Index; the majority of the performance came from the directional trades, in particular commodity/managed futures funds. Non directional funds returned 17.7% over the five year period.

2.3.4 Active Hedge Fund Performance

The returns from the active hedge funds in the early 1990s look to be correlated with the types of returns available from small cap value/contrarian investment strategies, while their under performance relative to the main market indices in the late 1990s more or less appeared to reflect the under performance of value biased investment disciplines.

Indeed, many of the stories of return that we hear about active directional hedge fund strategies are pretty close to those of non hedged managers that have tended to follow successful contrarian, value biased strategies with little or no restrictions on their global asset allocation.

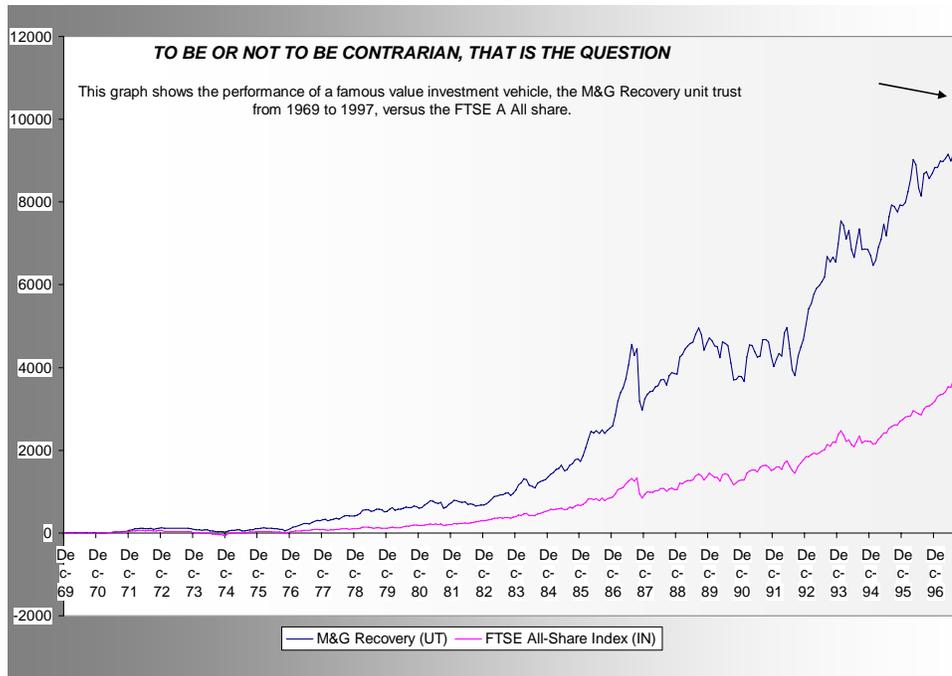
These types of strategies require a strong valuation discipline to implement but have reaped very strong long term investment returns. Hedge funds in this context are really investment vehicles that were not constrained by either a stodgy, conservative, unimaginative asset allocation or the follow the herd mentality of the retail financial services solution.

The trouble is that it was precisely these types of strategies that were eschewed in the late 1990s by investors who felt they were missing out, without good reason, on the boom in technology, telecommunications and media stocks.

The next chart shows the performance of a once famous UK value mutual fund (the M&G Recovery fund) that blazed a trail from 1969 to the mid 1990s. As you can see the fund significantly outperformed the major UK market index, the FTSE A All Share over the period. Its strategy lost support in the late 1990s as value biased strategies fell strongly out of favour. But the lesson is clear, you do not need to be a hedge fund to perform, just disciplined and focused.

¹¹ http://www.msci.com/pressreleases/archive/20060606_pr.pdf

¹² http://www.ftse.com/Research_and_Publications/2006Downloads/0506Hedge.pdf



2.3.5 Hedge fund performance conclusion

Hedge fund performance is declining and there appears to be a direct relationship with this and the decline in the risk free rate of return and the much larger hedge fund universe.

While there are no doubt managers that can deliver the returns hedge funds are renowned for, it is possible that a reason for the decline in performance is the arrival of the herd and the herd like decisions of those managers that service the herd.

There also appear to be a strong historical correlation between the performance of areas of relative value (smaller companies, value/recovery stocks, emerging markets in the early 1990s) and the stronger performance profiles of the more aggressive hedge funds that supports the presumption that an investment style that focuses on globally diversification and relative value is just as capable of producing "hedge fund type performance."

Investors should not be looking to hedge funds for performance, but managers that are able to be flexible in their allocation to domestic and global markets, small as well as large caps, value as well as growth. These extremely disciplined managers have existed on the margin for a long period of time. This is not to say that all investors should be taking these allocations; just that if you want hedge fund type return you might as well select a transparent and proven investment discipline.

Has the hedge fund industry become the market as opposed to the exception that proved the rule? Without cleaner historical performance (excluding the backfill, end of life and survivorship biases) it is difficult to pinpoint exactly, if at all, where superior hedge fund performance started and stopped.

And a few words regarding the out performance of the pure value indexes; all market components can become relatively under and over valued and this applies to value indexes as well. Relative valuation should have no long term friends.

2.4 Hedge funds; an investment style, a portfolio but not an asset class

Hedge funds are often referred to as a separate asset class, presumably because of their low correlation to traditional asset classes. Low correlation is normally a positive portfolio attribute largely because it signifies that relative demand in the market place is likely to favour that asset class when demand for other asset classes falls.

The main weakness with a hedge fund is that the low correlation attributes are dependent on normal market demand within an asset class since most of the hedging is within an asset class; otherwise the short and long of the hedges would be out of synchronisation. Therefore, in the majority of instances hedge funds remain exposed to the vicissitudes of relative demand during extreme global or local events; note Long Term Capital Management and more recently General Motors.

While the normal risk of such asset classes can be reduced, they remain exposed to extreme event risk. Correlation is most important when needed most; *demand for equities falls, demand for bonds rises; demand for equities and bonds fall, demand for property rises; demand for equities, bonds and property falls, demand for gold and precious metals rises etc.*

If you are looking for point in time risk management you are far better off with another asset class that really does have a fundamental low correlation. If you are looking for a return management platform that also manages risk you would be better off purchasing the long and avoiding the short. In the long run, standard deviation is not the most important risk; valuation and economic risks are far more important.

Hedge funds are really a style of investment that seeks to isolate the relative value from the directional movement of the underlying asset. The fact that many hedge funds are also portfolios in their own right makes it problematic when including them within a core portfolio. .

2.4.1 Mean variance optimisation

The paradigm in which hedge funds exist is different from the paradigm in which modern portfolio theory portfolios are constructed and managed. *Most of the academic studies that look at hedge fund risk and return caution against the use of mean variance optimisation to determine hedge fund allocation.*

Mean variance optimisation combines historical standard deviation, return and correlations to form an optimum allocation of assets within a portfolio. Hedge funds use current pricing and demand relationships to determine allocation.

In the context of determining hedge fund allocation, the use of mean variance optimisers to determine hedge fund allocation is flawed for the following reasons.

- The inappropriateness of standard deviation as a measure of hedge fund risk and the additional risks that hedge funds are exposed to, given their leverage, their credit risks and the risk of fraud.
- The various biases in the calculation of historical hedge fund return.
- The fact that the historical correlation of a hedge fund may not represent the actual relative price movement of the underlying assets.

If you were to use a mean variance optimiser to determine the hedge fund allocation, you would at least need to know the actual allocation structure of the hedge fund in order to get at the underlying correlation, standard deviations and returns¹³.

¹³ In TAMRIS's opinion mean variance optimisers are flawed because of their reliance on historical data inputs. It is current price relationships that determine the asset allocation of the portfolio.

Using mean variance optimisers might actually weaken portfolio structure by excluding assets that would normally be included to provide the balance in favour of an investment that may not be able to deliver the promised management of risk and return. In the end, only one allocation paradigm can be correct, not both and those that use both should be aware of the conflict of logic.

2.5 Summary, Hedge Fund Fundamentals

The risk profiles of hedge funds depend on a much wider body of risks than simple standard deviation. Many of the risks are not easily observable or predictable while others are seemingly accumulating all the time.

The performance profiles of hedge funds as an investment style are also no more attractive than other marginal investment styles; for example value, contrarian, or global relative value.

Hedge fund risk and return profiles are changing all the time and their inclusion within a portfolio requires an understanding of not just the hedge fund strategy but general market dynamics.

3

Academic & other studies; Excerpts

The objective of the following excerpts is to provide a selection of comments from the research documents available in this area.

3.1 Extreme event risk

3.1.1 Measurement of Investments in the Satellite Ring of a Core-Satellite Portfolio: Traditional versus Alternative Approaches, HILARY TILL; Premia Risk Consultancy, Inc., Chicago

A historical analysis of *merger arbitrage* deals conducted in Mitchell and Pulvino (2001) shows that this strategy's *return is correlated to the overall market during severe market downturns*, giving a return profile similar to short index put options.

Agarwal and Naik (2004) take into consideration the *option-like features inherent in a number of arbitrage strategies*. The authors find that the following risk factors are significant in explaining the returns of the Hedge Fund Research (HFR) Event Arbitrage strategy: a short out-of-the money put on the S&P 500 along with two equity style factors: size and value. These researchers find that in addition to Event Arbitrage, the payoffs of the Restructuring, Event Driven, Relative Value Arbitrage, and Convertible Arbitrage hedge fund strategies resemble those from selling a put option on the market index.

The authors find that fixed-income hedge funds primarily have exposure to fixed-income related spreads, including the convertible/Treasury spread, the high yield/Treasury spread, the mortgage/Treasury spread, and the emerging market bond/Treasury spread. The authors also construct a one-factor model with a corporate credit spread as the factor. Their goal is to examine how sensitive a particular fixed-income hedge fund strategy is to changes in credit spreads. They find a strong correlation using recent data. They show that if one extrapolates this relationship using a longer price history, one would find losses that are double the worst loss experienced in the brief history of this category of hedge fund. *The researchers conclude that the returns for bearing the added sources of risk identified in their study need to be balanced against the additional tools needed to manage the attendant tail risk of the strategies*¹⁴

The experience of the Art Institute of Chicago's endowment supports the Yale professors' concern. One of the endowment's hedge fund managers noted in their marketing material that their fund had "the highest Sharpe ratio in the industry," according to Dugan et al. (2002). The hedge fund noted it would combine "cash holdings with stocks and riskier index options" in such a way that they: "could guarantee profits of 1% to 2% a month in flat or rising markets. The fund ... could lose money only if the stocks to which the options were tied dropped more than 30%." This fund reportedly had large losses in late 2001.

3.1.2 Hedge Funds: Risk & Return: Burton G Malkiel & Atanu Saha¹⁵

Although the hedge fund universe does exhibit lower standard deviation than equities, as represented by the S&P 500 Index, and some categories have somewhat better Sharpe ratios than the S&P 500,.....hedge fund returns are characterized by undesirably high kurtosis and that many hedge fund categories have considerable negative skewness.

¹⁴ <http://www.intelligent hedgefund investing.com/pubs/rb-ht.pdf>

¹⁵ http://www.analysisgroup.com/AnalysisGroup/uploadedFiles/Publishing/Articles/HedgeFunds_Risks_and_Returns.pdf

3.1.3 Lessons from a decade of hedge fund performance: Is the party over or the beginning of a new paradigm? By William Fung, David A. Hsieh, Narayan Y. Naik, and Tarun Ramadorai*¹⁶

While academic research in hedge funds is still at its infancy, accumulated evidence point to the presence of systematic risk factors inherent in hedge fund returns (see, for example, Fung and Hsieh (2001, 2002a, 2002b, 2004a, 2004b) and Agarwal and Naik (2004)). Based on the evidence, hedge fund returns can be said to be a mixture of alpha and beta bets. *It would be naïve to think that investors that contributed to the explosive growth of the hedge fund industry are oblivious to the attendant systematic risk they bore.*

3.2 Liquidity risks

3.2.1 A New Approach to Risk-Adjusted Asset Allocation For Hedge Fund Investing By Leslie Rahl and Lisa Polsky Partners, Capital Market Risk Advisors and L2 Alternative Asset Management 17

"The process of liquidating trades could take days, weeks, or even many months, and the cost is likely to be significantly different from the mid-market valuation price. *The bid-offer spread on some instruments can be close to a typical month's NAV change.*.....An article by Hari Krishnan and Izzy Nelken, "A Liquidity Haircut for Hedge Funds," published in the April 2003 issue of Risk, suggests that *to compare an asset with daily liquidity to one with quarterly liquidity you would have to increase the volatility of the less liquid asset by ten volatility points.*.....Fund managers know that investors look at the number of losing months when evaluating performance. Unfortunately, *when there is room in the valuation methodology for judgment, managers who trade illiquid securities may tend to have many more small winning months than small losing months.*.....Since valuation issues have been behind many hedge fund failures, we suggest that these issues be looked at very closely when assessing relative risks across funds.

3.2.2 Risk Measurement of Investments in the Satellite Ring of a Core-Satellite Portfolio: Traditional versus Alternative Approaches¹⁸

A portfolio's investments may contain illiquid securities for which one may have trouble obtaining current prices, so there may be a lag in investments being revalued. *This would give the false impression of stable returns and, therefore, would result in an artificially low standard deviation.*.....This factor would then tend to inflate the investment's Sharpe ratio.....The principals of AQR Capital Management, LLC address a related issue in Asness et al. (2001). They question the reported lack of relationship between hedge fund indices and the S&P 500. When they regress a hedge fund index's returns versus lagged returns of the equity market, they find a strong relationship between the hedge fund index and the S&P using data from January 1994 to September 2000. Because there is such a strong relationship once they compare the hedge fund index's returns to dated returns in the stock market, *they infer that hedge funds making up the index have been using stale pricing in evaluating their holdings.*

Brooks and Kat (2002) report that the monthly returns of hedge fund indices show significant serial correlation. Serial correlation is the correlation of something with itself over time and indicates a trend in the underlying data. Specifically, these researchers find that: "All of the Convertible Arbitrage [hedge fund] indices have a first order serial correlation of at least 0.4, which are also statistically significant at the 1% level. A similar feature is observed for Distressed Securities and some of the Risk Arbitrage, Emerging Markets and Equity Market Neutral [hedge fund] series. It is also reflected in the Fund of Funds results"

Similarly, when Lo (2002) examines twelve hedge funds, he finds that most of the funds exhibit meaningful serial correlation. *Lo shows that: "the annual Sharpe ratio can be overstated by as much as 65% due to the*

¹⁶ http://www.ch.bsibank.com/index.cfm?includepage=050400000e.cfm/conference/Paper_Hsieh.pdf

¹⁷ <http://www.cmra.com/cgi-bin/dload.cgi?newaa.pdf>

¹⁸ <http://www.intelligentthegedfundinvesting.com/pubs/rb-ht.pdf>

presence of serial correlation in monthly returns, and once this serial correlation is properly taken into account, the rankings of hedge funds based on Sharpe ratios change dramatically.”

Not all hedge fund strategies can be characterized as exhibiting negative skewness. It is mainly the event driven and fixed-income arbitrage strategies that have been characterized as having disadvantageous skewness and kurtosis properties (for given levels of average returns and variance). ”

3.2.3 An Econometric Model of Serial Correlation and Illiquidity in Hedge Fund Returns; National Bureau of Economic Research¹⁹

The returns to hedge funds and other alternative investments are often highly serially correlated in sharp contrast to the returns of more traditional investment vehicles such as long-only equity portfolios and mutual funds.....the most likely explanation is illiquidity exposure, i.e., investments in securities that are not actively traded and for which market prices are not always readily available. *For portfolios of illiquid securities, reported returns will tend to be smoother than true economic returns, which will understate volatility and increase risk-adjusted performance measures such as the Sharpe ratio*

3.2.4 An Econometric Model of Serial Correlation and Illiquidity In Hedge Fund Returns²⁰

Our empirical findings are quite intuitive: funds with the highest serial correlation tend to be the more illiquid funds, e.g., emerging market debt, fixed income, etc., and *after correcting for the effects of smoothed returns, some of the most successful types of funds tend to have considerably less attractive performance characteristics.*

With respect to the deliberate smoothing of performance by managers, a recent study of closed-end funds by Chandar and Bricker (2002) concludes that *managers seem to use accounting discretion in valuing restricted securities so as to optimize fund returns with respect to a passive benchmark.....*Even if a hedge-fund manager does not make use of any form of linear extrapolation to mark the securities in his portfolio, he may still be subject to smoothed returns if he obtains marks from broker-dealers that engage in such extrapolation.

3.2.5 Speech by Dan Waters, Sector Leader Asset Management, FSA National Association of Pension Funds Investment Funds Conference, Edinburgh 16 March 2006²¹

All of this may seem to stating the obvious, but how are hedge funds doing in respect of valuing complex and illiquid assets? The answer is mixed, with some particularly poor experiences in the United States. In 2005, valuation related losses in hedge funds were estimated to total \$1.6 billion. *Poor valuation procedures in combination with weak internal controls were in some cases exploited to misrepresent hedge fund valuations and commit fraud.*

Weak internal controls may be exploited in this way within any industry. However, financial regulators and many within the hedge fund industry itself, have been concerned to ensure that the rapid growth in hedge funds occurs with due regard to implementing appropriate systems and controls around the valuation process. This provides the routine protection afforded to investors and counterparties under traditional asset management structures.

Hedge funds operate with economic and financial leverage. Much of that financial leverage is provided via the repo market to hedge funds, from a bank's prime brokerage desk. Performance figures influence the decisions of potential and current investors on whether to increase, decrease or leave their exposure to a

¹⁹ <http://www.nber.org/papers/W9571>

²⁰ <http://www.sec.gov/spotlight/hedgefunds/hedgeloetal2.pdf>

²¹ http://www.fsa.gov.uk/pages/Library/Communication/Speeches/2006/0316_dw.shtml

Hedge Fund at its current level. Robust, impartial and transparent valuation policies and processes are the key to delivering equitable treatment amongst generations of investors.

3.2.6 AIMA Global Survey of Hedge Fund Asset Pricing and Valuation Practice - PricewaterhouseCoopers as lead sponsor - ASSET PRICING AND FUND VALUATION PRACTICES IN THE HEDGE FUND INDUSTRY²²

Understanding the limitations of NAV information

Expectations with regards to NAV information should be appropriately managed. In particular, the survey reveals a perception that NAV information is not appropriately qualified. Investors should ensure that they understand the nature of NAV information. It is submitted that for certain strategies, where the underlying assets are so illiquid or speculative, NAV should perhaps be viewed in much the same way as investments in private equity / venture capital strategies. The involvement of a third party service provider (such as an administrator) in the NAV calculation process should not be equated with a guarantee as to realisable value. The following findings emerged from the survey with regard to the value of NAV information:

- Some strategies result in hedge funds holding illiquid instruments for which a transparent, objective price does not exist, and “fair value” pricing requires an element of commercial subjectivity;
- Pricing and valuation techniques are limited and may not have universal application to all portfolio and investment strategy types.

3.3 Credit risks

3.3.1 Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management - Report of The President’s Working Group on Financial Markets (1999)²³.

“Active trading strategies rely on market liquidity and access to credit to meet funding needs. However, an entity’s ability to trade actively can diminish either because creditworthiness concerns cause counterparties to cut trading and credit limits or because of a broader disappearance of market liquidity. The inability to execute active trading strategies can lead to unexpectedly large mark-to-market losses as positions that had been thought of as modifiable exposures become longer-term positions”.

In addition to the credit exposures stemming from trading relationships, further credit exposure may be realized by counterparties when they extend credit to hedge funds through credit lines. Hedge funds can face considerable liquidity risk through mismatched cash flows of assets and liabilities. Revolving lines of credit and broker loans are sometimes used to bridge these mismatches. However, these credit lines often entail high costs, and thus are not typically used for establishing leverage.

3.4 Fixed income arbitrage risks

3.4.1 Risk And Return In Fixed Income Arbitrage: Nickels In Front Of A Steamroller?²⁴

The five fixed income arbitrage strategies we study are often described in hedge fund marketing materials as “market-neutral” strategies. For example, since the swap spread strategy consists of a long position in a swap and an offsetting short position in a Treasury bond with the same maturity (or vice versa), **this trade is often viewed as having no directional market risk. In actuality, however, this strategy is subject to the risk of a major widening in the Treasury-repo spread. Similar arguments can be directed at each of the other arbitrage strategies we consider.** If the residual risks of these strategies are correlated with

²² <http://www.pwc.com/extweb/pwcpublishations.nsf/docid/76A9FB7EC537CA7485257000003124CD>

²³ <http://www.treasury.gov/press/releases/reports/hedgfund.pdf>

²⁴ <http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1254&context=anderson/fin>

market factors, then the excess returns reported in previous tables may in fact represent compensation for the underlying market risk of these strategies...*swap spread arbitrage is sensitive to a crisis in the banking sector, and mortgage arbitrage is sensitive to a large drop in interest rates triggering prepayments.*

Swap spread arbitrage, of course, is not actually an arbitrage in the textbook sense since the arbitrageur is exposed to indirect default risk...swap spread arbitrage strategy actually has a significant amount of market risk, and the excess returns generated by the strategy are simply compensation for that risk. Thus, there is very little “arbitrage” in this fixed income arbitrage strategy.....*a substantial portion of the variation in the excess returns for the swapspread strategies is explained by the excess returns on the equity and bond portfolios.*

Previous research by Campbell (1987), Fama and French (1993), Campbell and Taksler (2002) and others, however, documents that there are common factors driving returns in both bond and stock markets. Our results show that the same is also true for these fixed income arbitrage strategies. *In particular, the swap spread strategy has direct exposure to the risk of a financial sector event or crisis.*

Swap spread arbitrage has traditionally been one of the most-popular types of fixed income arbitrage strategies. The importance of this strategy is evidenced by the fact that **swap spread positions represented the single-largest source of losses for LTCM.**² Furthermore, the hedge fund crisis of 1998 revealed that many other major investors had similar exposure to swap spreads

(Yield curve arbitrage)...involves taking long and short positions at different points along the yield curve. These yield curve arbitrage strategies often take the form of a “butterfly” trade, where, for example, an investor may go long five year bonds, and short two- and ten-year bonds in a way that zeros out the exposure to the level and slope of the term structure in the portfolio.....this strategy involves a high degree of “intellectual capital” to implement since both the process of identifying arbitrage opportunities and the associated hedging strategies require the application of a multi-factor term structure model...almost all of the yield curve arbitrage strategies result in significant alphas. the only significant source of market risk in this strategy comes from a negative relation with the excess returns on general industrial corporate bonds.

The **mortgage-backed security (MBS)** strategy consists of buying MBS passthroughs and hedging their interest rate exposure with swaps. A passthrough is a MBS that passes all of the interest and principal cash flows of a pool of mortgages (after servicing and guarantee fees) to the passthrough investors. The main risk of a MBS passthrough is prepayment risk. This figure reveals that abrupt changes in interest rates will cause losses in this portfolio To compensate for these possible losses, investors require higher yields to hold these securities. Long positions in passthroughs are usually financed with a form of repurchase agreement called a dollar roll. The relatively poor performance of the premium passthrough strategy is partially caused by the strong negative convexity of the premium passthroughs. *mortgage strategies also have a substantial amount of market risk.*

Volatility arbitrage has a long tradition as a popular and widely used strategy among Wall Street firms and other major financial market participants. Volatility arbitrage also plays a major role among fixed income hedge funds.....often implemented by selling options and then delta-hedging the exposure to the underlying asset. In doing this, investors hope to profit from the well-known tendency of implied volatilities to exceed subsequent realized volatilities. If the implied volatility is higher than the realized volatility, then selling options produces an excess return proportional to the gamma of the option times the difference between the implied variance and the realized variance of the underlying asset; *volatility arbitrage provides returns that are highly negatively skewed – “consistent with picking up nickels in front of a steam roller”*

Capital structure arbitrage (or alternatively, credit arbitrage) refers to a class of fixed income trading strategies that exploit mispricing between a company’s debt and its other securities (such as equity). With the exponential growth in the credit default swap (CDS) market in the last decade, this strategy has become increasingly popular with proprietary trading desks at investment banks.....the Financial Times reports that “hedge funds, faced with weak returns or losses on some of their strategies, have been flocking to a new one called capital structure arbitrage, which exploits mispricings between a company’s equity and debt” (Skorecki (2004)).

Using the information on the equity price and the capital structure of an obligor, we compute its theoretical CDS spread and the size of an equity position needed to hedge changes in the value of the CDS. We then compare the theoretical CDS spread with the level quoted in the market. If the market spread is higher (lower) than the theoretical spread, we short (long) the CDS contract, while simultaneously maintaining the equity hedge. The strategy would be profitable if, subsequent to initiating a trade, the market spread and the theoretical spread converge to each other. Many hedge funds shorted CDS on GM and hedged their exposure by shorting GM equity. GM's debt was indeed downgraded shortly afterwards, but not before Kirk Kerkorian announced a \$31-per-share offer to increase his stake in GM, causing the share price to soar. According to The Wall Street Journal, this "dealt the hedge funds a painful one-two punch: their debt bets lost money, and the loss was compounded when their hedge lost out as the stock price rose" (Zuckerman (2005)). Overall, *the GM experience suggests that the risk for individual trades is typically a combination of rapidly rising market spreads and imperfect hedging from the offsetting equity positions.*

Despite the large positive alphas for these capital structure arbitrage strategies, the R2 values show that the strategies also have a large amount of market risk.

Specifically, the strategies that result in significant alphas are those that require relatively complex models to identify arbitrage opportunities and/or hedge out systematic market risks. *We find that several of these "market-neutral" arbitrage strategies actually expose the investor to substantial levels of market risk.* We repeat the analysis using actual fixed income arbitrage hedge fund index return data from industry sources and find similar results."

3.4.2 Wikipedia on Convertible arbitrage²⁵

Convertible arbitrage is a market neutral investment strategy often associated with hedge funds. It involves the simultaneous purchase of convertible securities and the short sale of the same issuer's common stock.

The premise of the strategy is that the convertible is sometimes priced inefficiently relative to the underlying stock, for reasons that range from illiquidity to market psychology. The number of shares sold short usually reflects a delta neutral or market neutral ratio. As a result, under normal market conditions, the arbitrageur expects the combined position to be insensitive to fluctuations in the price of the underlying stock. However, maintaining a market neutral position may require rebalancing transactions, a process called dynamic delta hedging.

As with most successful arbitrage strategies, *convertible arbitrage has attracted a large number of market participants, creating intense competition and reducing the effectiveness of the strategy.* For example, many convertible arbitrageurs suffered losses in early 2005 when the credit of General Motors was downgraded at the same time Kirk Kerkorian was making an offer for GM's stock. *Since most arbitrageurs were long GM debt and short the equity, they were hurt on both sides. Going back a lot further, many such "arbs" sustained big losses in the so-called "crash of '87".* In theory, when a stock declines, the associated convertible bond will decline less, because it is protected by its value as a fixed-income instrument: it pays interest periodically (while the stock may only pay a dividend, which can be suspended in bad times). *In the 1987 stock market crash, however, many convertible bonds declined more than the stocks into which they were convertible, apparently for liquidity reasons* (the market for the stocks being much more liquid than the relatively small market for the bonds). *Arbitrageurs who relied on the traditional relationship between stock and bond gained less from their short stock positions than they lost on their long bond positions.*

²⁵ http://en.wikipedia.org/wiki/Convertible_arbitrage

3.5 Hedge fund performance & failure rates

3.5.1 Hedge Funds: Risk & Return: Burton G Malkiel & Atanu Saha²⁶

Backfill Bias. Unlike mutual funds, which must report their periodic audited returns to regulators and investors, hedge funds provide information to the database publishers only if they desire to do so. Managers often establish a hedge fund with seed capital and begin reporting their results at some later date and only if the initial results are favorable..... the most favorable of the early results are then “filled back” into the database together with reports of contemporaneous results. This first source of backfill bias is often called “incubation bias.”

.....backfilled returns tended to be substantially higher than contemporaneously reported returns, particularly in the early years.⁶ On average, the backfilled returns were more than 500 bps higher than the contemporaneously reported returns. Using tests of the difference between the means and between the medians, we found the differences between backfilled and not backfilled returns to be highly significant. Thus, we conclude that the use of backfilled returns to judge the effectiveness of hedge fund management significantly biases the returns upwards.

Survivorship Bias. Another important bias in the published hedge fund return indices is survivorship bias. Databases available at any point in time tend to reflect the returns earned by currently existing hedge funds. They do not include the returns from hedge funds that existed at some time in the past but are presently not in existence (i.e., the truly “dead” funds) or exist but no longer report their results (the defunct funds).

The mean return for the live funds substantially exceeds the return from the defunct funds. For the entire 1996–2003 period, the average difference between the two groups of hedge funds is more than 830 bps. In each year, the differences in the two means are highly significant. Moreover, the data show a substantial attrition rate for hedge funds. For example, 331 hedge funds were reporting contemporaneous data in 1996. Of those funds, fewer than 25 percent (58 funds) were still in existence in 2004. A reasonable assumption is that the performance of all hedge funds (both the live and the defunct) is the best reflection of the performance of the hedge fund industry as a whole.

The (arithmetic) average return of the surviving funds was 13.74 percent for the 1996–2003 period, whereas the average return for all funds was only 9.32 percent—a 442 bp difference..... A comparison of our estimates of survivorship bias with data obtained from an analysis of mutual funds is interesting..The difference in returns when all funds (live and defunct) were compared with only live funds (Panel B of each table) is 123 bps for the equity mutual funds but 442 bps for the hedge funds.

Interestingly, we also found substantial survivorship bias in the fund-of-funds category. This finding contradicts the claim of Lamm (2003) that survivorship bias in the fund-of-funds category is relatively small.

Financial consultants characteristically calculate the past investment returns for different hedge fund managers in the belief that past investment success will be a good predictor of future success. We tested this hypothesis by analyzing whether winners tend to repeat their success in the subsequent year.

The cross-sectional standard deviation of hedge fund returns is considerably higher than it is for mutual funds. In other words, although the rewards from selecting the top-performing hedge funds are very high, so is the risk of selecting a dismal performer.

Most hedge fund attrition rates are three or four times greater than the mutual fund rates, and the differences are highly significant.

We showed that the practice of voluntary reporting and the backfilling of only favorable past results can cause returns calculated from hedge fund databases to be biased upward. Moreover, the considerable attrition that characterizes the hedge fund industry results in substantial survivorship bias in the returns of

²⁶ http://www.analysisgroup.com/AnalysisGroup/uploadedFiles/Publishing/Articles/HedgeFunds_Risks_and_Returns.pdf

indices composed of only currently existing funds..... The cross-sectional variation and the range of individual hedge fund returns are far greater than they are for traditional asset classes. Investors in hedge funds take on a substantial risk of selecting a dismally performing fund or, worse, a failing one.

3.5.2 Finding a home for hedge funds²⁷ - Canadian Investment Review Summer 2005

“the industry has been badly misled by self-reported and grossly biased peer group indices. Research into survivorship bias in hedge fund performance data shows there can be overstated returns and understated risk”.

3.5.3 Most Hedge Fund Investors Could Have Achieved The Same Performance In Traditional Asset Classes²⁸

Most investors can achieve similar performance in a properly diversified portfolio of stocks and bonds as they can in the average Hedge Fund of Funds (HFOFs), according to a historical analysis of hedge fund investment performance by Presidio Financial Partners LLC.

Demystifying Hedge Funds II compared the performance of a diversified portfolio of investments to the HFRI Fund of Funds Composite Index, the industry benchmark for HFOFs. The analysis found the following:

From April 2000 to March 2006, the diversified portfolio generated an average annualized return of 6.3%, compared to 5.2% for the HFRI Funds Index. The analysis period starts at the height of the bull market in April 2000 and included the bear market of 2000 to 2003, when many investors poured money into hedge funds.

Over a longer period, from January 1990 to March 2006, the same pattern of investment returns was repeated. The diversified portfolio of investments generated an average annualized return of 10.6% compared to 10.1% for the HFRI Funds of Funds. January 1990 is the inception of the HFRI Index.

The model diversified portfolio in Demystifying Hedge Funds II was designed to replicate the typical asset allocation of many individual and institutional investors and consisted of the following: 40% taxable bonds (Lehman Aggregate Index), 20% US large cap (S&P 500), 10% high yield bonds (ML Lynch High Yield Master II), 15% international equity (MSCI EAFE), 10% US small cap (Russell 2000), and 5% emerging market equity (MSCI EMF index). The analysis ignored factors that have historically lowered hedge fund returns, including the differences in tax efficiency and the quality of the data for the HFOF index, such as survivorship bias, backfill bias, and index methodology.

The study concluded that only 12 to 15 of the more than 1,000 HFOFs – and no more than 250 of the more than 8,000 individual hedge funds – deliver performance in line with their higher fees. The analysis reached that conclusion after evaluating the seven key factors below

3.5.4 Survey of Recent Hedge Fund Articles - EDHEC RISK AND ASSET MANAGEMENT RESEARCH CENTRE²⁹

Further evidence of the capacity-constrained nature of the hedge fund industry is provided by Agarwal et al. (2003). Using data from January 1994 through December 2000, they note, “... large funds with large inflows display poor future performance and a lower probability of exhibiting persistence. This finding is consistent with decreasing returns to scale in the hedge fund industry.” Mozes and Herzberg (2003) find similar results when examining hedge fund manager data from 1990 through 2001. They find, “... large relative increases in assets under management are strongly predictive of decreases in future performance.”

²⁷ <http://www.investmentreview.com/archives/2005/summer/findingahome.pdf>

²⁸ https://www.presidiofp.com/PRESIDIO/WEB/me.get?web.websections.show&ABWS_494

²⁹ http://www.edhec-risk.com/edhec_publications/RISKReview.2006-03-21.0110/attachments/Survey%20of%20Recent%20Hedge%20Fund%20Articles.pdf

3.5.5 Hedge Fund Returns: You Can Make Them Yourself! Harry M. Kat, Helder P. Palaro³⁰

Many of these papers apply methods, like standard mean-variance and Sharpe ratio analysis for example, which are ill-suited for the analysis of hedge funds returns and have, as a result, produced incorrect conclusions.

Fortunately, some studies have taken a more sophisticated approach and have made it clear that hedge fund returns are not really superior to the returns on traditional asset classes, but primarily just different.”

With hedge fund performance getting worse every year, the hedge fund industry has come to more or less the same conclusion. Unlike in the early days, hedge funds are no longer sold on the promise of superior performance, but more and more on the back of a diversification argument: due to their low correlation with stocks and bonds, hedge funds can significantly reduce the risk (as measured by the standard deviation) of a traditional investment portfolio without giving up expected return.

3.5.6 Lessons from a decade of hedge fund performance: Is the party over or the beginning of a new paradigm? By William Fung, David A. Hsieh, Narayan Y. Naik, and Tarun Ramadorai³¹

The opaqueness of hedge fund operations, voluntary nature of reporting and lack of uniform reporting standards are notorious sources of measurement errors that plague performance reporting of the hedge fund industry.² In addition, hedge funds are well known for their diverse investment styles. This further complicates the applicability of conventional index construction methods to hedge funds.³ The diversity of approach to investing together with the litany of potential measurement errors render existing indices of hedge funds difficult to interpret and often exhibit strange results.

....not only are the alphas time-varying, our results are consistent with the hypothesis that the alphas among the haves in the FoF sector are shrinking over time..... the supply of alphas from different hedge fund styles appear to be cyclical in that, depending on the market environment, different hedge fund styles are better sources of alpha. In addition, the empirical results do not show any style-timing ability even among those FoFs in the have alpha group.

3.5.7 Welcome to the Dark Side: Hedge Fund Attrition and Survivorship Bias over the Period 1994-2001³²

What most investors do not know however is that most hedge funds do not play the game for long. Only 59.5% of hedge funds that were around five years ago are still around today. Attrition in hedge funds is not just high but increasing as well.

3.5.8 A Reality Check on Hedge Fund Returns³³

...our results indicate that the backfill bias is underestimated, and has a substantial downward effect on the returns across most hedge fund styles and is consistent over time for the whole sample. We have no reasons to believe that our conclusions are limited to the Tass database.

The backfill or instant-history bias appears when hedge funds with good track records decide to report, and data providers backfill their files to show this track record. Recently, several studies appeared which try to estimate the size of the backfill bias. There is evidence that the size of the backfill bias is substantial. Consequently, performance numbers of hedge funds are in general upward biased. Therefore a good notion of the size of this bias is important for asset allocation decisions to hedge funds. Our results indicate the

³⁰ http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=191081

³¹ http://www.ch.bsibank.com/index.cfm?includepage=0504000000e.cfm/conference/Paper_Hsieh.pdf

³² http://papers.ssrn.com/sol3/papers.cfm?abstract_id=293828

³³ http://www.isb.unizh.ch/studium/courses04-05/pdf/0330_2004-10-26_3.pdf?PHPSESSID=b298c317ca06e4fb03a7234ebaa7e5f4

following.....on average the non-backfilled index series has a 4% lower return per annum than the backfilled series.

Long Term Capital Management is a famous example, this fund lost 92%of capital from October 1997 to October 1998 and did not report to databases....Fund of funds are often considered the most bias free styles of hedge funds. However, fund of funds still exhibit a significant backfill bias of 2.27 percent per annum, which is a substantial amount of their average backfilled annual return

3.5.9 Risk Measurement of Investments in the Satellite Ring of a Core-Satellite Portfolio: Traditional versus Alternative Approaches³⁴

Another problem with assuming that the Sharpe ratio has predictive ability is that one is assuming that the investment manager's style will not change going forward. Harding (2003) warns that among hedge fund managers: "It is common for a manager's early track record to differ significantly from later performance, due to his [or her] ability ... to exploit a particularly good anomaly with a small amount of money, or because when ... [the manager] had little to lose ... [the manager] could afford [to engage in risky investment practices.]" Note historic Sharpe ratios.

3.5.10 Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management - Report of The President's Working Group on Financial Markets (1999)³⁵.

The larger hedge funds — specifically the global macro funds and the global funds — are on the average riskier investments than the stock market as a whole.....during the period from January 1994 to December 1997.....global macro and global funds showed more impressive performance than the other hedge funds but they also took on greater risk. The average volatilities of these two classes of funds exceeded that of the stock market as a whole. The market-neutral funds and other funds performed poorly relative to S&P 500 but did so with less volatility than the stock market.....average Sharpe ratios, which measure returns relative to risk. Based on these ratios, the S&P 500 represented a better trade-off of risk and return than the global macro and global funds but a worse trade-off than the other hedge funds.

The risks the funds take and their need to meet return watermarks tend to lead to high failure rates. The funds that fail, however, usually close before net asset values fall to zero.of funds that survived over different periods starting from a sample of 397 funds in December 1994....fewer than three-fifths survived through the end of 1998.

3.5.11 Why Do Hedge Funds Stop Reporting Their Performance? By Alex Grecu, Analysis Group Burton G. Malkiel, Princeton University, Atanu Saha, Analysis Group CEPS Working Paper No. 124, March 2006³⁶

Survivorship bias estimates range from 0.16% [Ackermann, McEnally and Ravenscraft, 1999] to 4.5% per year [Malkiel and Saha, 2005]. Other studies' estimate survivorship bias to be 2.24% [Liang, 2000], 3% [Brown, Goetzman and Ibbotson, 1999] or 3.48% [Fung and Hsieh, 1997].

The fact that all of these studies' survivorship bias estimates are positive suggests, albeit indirectly, that funds that cease to report are generally worse performers than those that continue to report.We find that these funds' returns significantly worsen at the end of their reporting lives, which suggests that the majority of funds stop reporting because they fail. We find that that failure rates for hedge funds are high and rates remain high, even for longstanding funds.

This estimated shape of the hazard function in our study suggests that the failure rate increases during the first six years of a fund's existence, reaches a peak and then declines. As noted earlier, our findings show,

³⁴ <http://www.intelligenthedgefundinvesting.com/pubs/rb-ht.pdf>

³⁵ <http://www.treasury.gov/press/releases/reports/hedgfund.pdf>

³⁶ <http://www.princeton.edu/~ceps/workingpapers/124malkiel.pdf>

even after being in existence for ten years the estimated hazard rate falls minimally from the peak. This finding suggests that the risk of failure for hedge funds remains relatively high even after being in existence for a fairly long time. The unambiguous pattern of declining performance during funds' final months prior to cessation of reporting suggests that, on average, it is poor performance, and very likely failure, that explains hedge funds' cessation of reporting to the TASS database. The hypothesis that successful funds stop reporting because they do not want to attract additional capital does not seem to be supported by the data.

Indeed, the estimated likelihood of failure of a ten-year old hedge fund is not significantly different from the likelihood of failure of a five and a half year old fund. *These findings suggest that the risk of failure for hedge funds remains relatively high, even after being in existence for a fairly long time. Interestingly, this finding on hedge funds stands in sharp contrast to the estimated hazard rates for mutual funds* in a study by Lunde, Timmermann and Blake [1999] using a dataset of UK funds. Their study finds that the estimated hazard rate for a typical mutual fund drops sharply after it has survived for approximately ten years.

One reason why the risk of failure remains considerably higher for hedge funds is the *existence of so-called "high water marks."* Suppose a hedge fund has enjoyed a strong long-run performance but then suffers a sharp loss in net asset value in a single year. Not only will the fund manager fail to earn an incentive fee (usually about 20 per cent of any profits) during that poor year, but also the manager will be less likely to earn an incentive in the following years.

...a higher Sharpe ratio leads to an increase in a fund's survival time. This is an especially powerful result, supporting our earlier finding that poor performance, and not success, explains funds' cessation of reporting.

The estimated coefficient on the 'assets under management' variable implies that a fund's size is a strong predictor of a hedge fund's likelihood of survival; the bigger a fund, the less likely is its failure. These results are inconsistent with the hypothesis that funds stop reporting because they have become "too big."

Interestingly, we also find that hedge funds in the fund of funds category typically have a lower likelihood of failure. As pointed out in Malkiel and Saha (2005), however, such funds tend to provide lower returns than the average hedge fund universe. The results shown in this paper have important implications for investors. *The fact that hedge funds cease reporting because of unfavorable results implies that failure rates for hedge funds are extremely high. While some hedge funds have provided generous returns, we have shown that investors face a high risk of buying a poorly performing fund or, even worse, a failing one.* Moreover, since failure rates remain high, even for longstanding funds, this risk cannot be mitigated by restricting one's purchases to funds with a long record of past success.

4

Where in the Portfolio; Hedge Funds & Portfolio Fundamentals

The basic raison d'être of hedge fund investment is the ability to isolate relative value/return from the directional movement of the market. This allows hedge fund managers to leverage the differential value to provide enhanced return.

All hedge fund investment, whether it takes a market neutral or directional position or not, is based on the objective of leveraging a measurable and actionable valuation (whether it be excess risk or excess return) differential. This return management platform does not come without risk.

But do hedge funds have a place in the portfolio? If they do where do they fit in and how much should be allocated to them?

Many of attributes of hedge funds are indeed valuable within any portfolio.

4.1 Hedge fund portfolio attributes

- The ability to manage relative value; that is the focus on selling highly valued assets and buying under valued assets. This is in contrast to much of the financial services industry that favours buying the well established trends, leading many investors into buying high and selling low. Hedge funds appear to offer a way out of this morass.
- The focus on the management of absolute valuation risk; the retail wealth management industry is notorious for its neglect of and its inability to value and manage absolute risks. If an advisor is incapable of valuing absolute risk they will most likely invest assets at all levels, including those which will expose assets to poor long term returns for significant periods of time; in this instance a hedge fund may well protect an investor from poor valuation disciplines.
- The asset management expertise behind hedge funds; hedge funds allow investors to gain direct access to higher level asset management expertise, something which is not generally available even to the wealthy. Most portfolio management relies on rules of thumb or the notoriously fallible strategic management of the "mean variance optimiser" which manages neither absolute valuation risks nor current relative valuations.
- Many of those who favour hedge fund investment refer to the benefits of reduced price volatility/risk and the lack of correlation to the major asset classes. In fact, the major benefit of hedge fund investment is the apparent ability to lock in return. Why is locking in return important? Asset prices tend to go in cycles between over valued and under valued. The ability to lock in return is important where a portfolio has short to medium term liabilities or, wants to be able to permanently store excess return realised from transactions. If there were no other portfolio option available to investors, this would be a valuable benefit indeed.

There are nevertheless many negative features that detract from their use within portfolios

4.2 Hedge fund negative portfolio attributes

- The **asset allocation**, leverage and risk management of these investments are not transparent; this makes it impossible to reconcile the risks and returns of the funds with the risk and return profile of the core portfolio.

- A portfolio should be built from the ground up; meaning asset allocation should be built on a valuation of both the absolute risk and returns of an asset and the relative valuation relationship between assets.
 - If you cannot determine the allocation, the leverage or the directional position of a hedge fund you cannot align it to a valuation, allocation and management structure. You just do not know how much to allocate or how to manage it within the portfolio.
 - If a hedge fund cannot be incorporated within the asset allocation and risk/return structure of a portfolio, it cannot be part of a core portfolio holding.
 - Unless the portfolio manager has an allocation component that he or she can directly relate to a hedge fund allocation, a hedge fund can only be considered as a “*risk capital investment*”, allocated outside of the core portfolio structure; this should only be capital that can afford to be lost, which means wealthy investors with aggressive marginal risk preferences who have initiated the request for high risk investment.
 - A significant hedge fund allocation will limit the ability of the portfolio manager to manage excess risk and excess return, in particular where portfolios have ongoing financial liabilities.
- While many hedge fund strategies exhibit low levels of standard deviation and strong management of absolute risk during normal investment conditions, we know that **risks are uncertain and potentially significant**. **These risks** make such vehicles inappropriate for conservative investors looking for lower risk investment strategies or for low risk components of any portfolio.
 - Hedge funds are **less liquid investments** that cannot be sold at a moments notice. Portfolios that incorporate hedge fund allocations into the core portfolio (diversification structure) are exposed to the inefficiencies and risks that such lack of liquidity poses.
 - **Average performance** of many of the supposedly “lower risk” retail friendly hedge funds (market neutral, fixed interest and fund of funds) suggest that there is little or no benefit over the more conventional lower risk asset classes while conventional value/contrarian investment strategies are just as competitive against the more directional hedge funds in terms of their management of absolute risk and the provision of absolute return. Indeed, a disciplined manager with a strong and flexible global mandate, a value bias and a relative value investment discipline is just as capable of producing hedge fund type returns, for a sizeable component of the portfolio, for lower than hedged fund costs and lower than hedge fund risks.
 - All investment styles have **an associated performance risk**. Hedge funds are no exception to the rule. Hedge funds have under performed over the last few years, including those styles that should outperform during periods of strongly rising markets.
 - **Hedge funds are essentially trading vehicles**. While a value or contrarian fund can afford to wait for a share price to move, hedge funds cannot; their returns have to be essentially point in time, otherwise their leverage becomes a drag on performance and their hedges start to drift. This poses a risk to hedge fund performance when the demand for hedge fund type returns exceeds the supply of opportunities for hedge fund type returns.
 - Their **high costs** relative to traditional investment vehicles. The average fund of funds, the vehicle that is supposed to select the best of the hedge fund offerings, has offered poor performance relative to value biased indexes. It is hard to believe that management charges have not had a hand these results.

4.3 The fundamentals of a hedge for the personal portfolio

A hedge is something which is perfectly balanced between two outcomes and unaffected by either, whereas a hedge fund is dependent on the outcome of two supposedly “perfectly” balanced events.

A hedge fund, by selling a falling asset and buying a rising asset, takes away the directional movement of the market, leaving the sum of the gains from the investment sold short and the investment bought long.

But this presupposes that market risk is dangerous and that the returns associated with market risk are not worth having.

In fact, we know that over very long periods of time, the total returns on higher risk stock market investments are worth having and the risks (volatilities) on the way are often immaterial to the final outcome.

Indeed, providing your initial investments were purchased at a reasonable valuation and you have paid attention to sell highly valued assets and recycling capital into under valued assets, you will have made a good return by taking on market risk.

The only times when taking on directional market risk becomes a problem is when we need capital invested in assets exposed to market and economic risks. Significant market and economic risk can impact the value of assets for long periods of time; it can often take between 5 and 10 years, and sometimes longer, to recover previous nominal highs.

The objective of wealth management is to be able to sell high, in other words the ability to manage excess return. Where liabilities exist over periods likely to be impacted by market and economic risk, excess return needs to be recycled into assets capable of producing a guaranteed capital and income return. Where capital does not have an attached liability over a period likely to be impacted by significant risk, excess return can be recycled into undervalued higher risk assets capable of producing future excess return and limited downside risk.

In this respect, market neutral hedge funds provide an opportunity to transfer market and economic risk into an “asset” with reduced downside risk and a “reasonable return”.

But, the problem is that such a risk and return profile can be just as easily earned by taking an allocation to lower risk fixed interest investments and, at the very short end, cash. This is cheaper and less risky than a hedged allocation to the stock market.

Only if you are being irrational about market risk would you decide to take a market neutral hedge fund allocation for the longer term portion of your equity portfolio. The only other time when a hedged investment may have theoretical merit or rational, is where the investor and/or advisor does not possess the knowledge and expertise needed to make a decision over valuation. In this case, you should either not be making the decision or should change your advisor.

4.4 The management of risk and return at the margin

If the most important attribute of a hedge fund is the ability to lock in return and protect this return from market risk through a combination of selling high and buying low, then there is no reason why a conventional portfolio structure should not be capable of achieving the same objective.

That is a conventional portfolio structure focussed around the management of the relationship between assets and liabilities at the short end including the recycling of excess return from overvalued equities into lower risk fixed interest. Such an approach depends on the ability to sell high and buy low, the probability of which increases with a focus on relative value; the more areas of relative value you are able to allocate to the greater the opportunities for managing excess return throughout the market and economic cycle and hence the greater the opportunities for managing risk. The more flexibility you have to invest globally and within markets to different styles, market cap and sectors, the better.

The management of excess risk and return requires the ability to value absolute risk. Valuing absolute risk helps to quantify the time frame of risk and hence the amount of the transfer of excess return to manage significant market and economic risk. Valuing absolute risk also helps to manage the overall relative valuation framework.

The more traditional the portfolio and the more heavily weighted to the domestic market, to large caps, to one style irrespective, the fewer the opportunities for managing excess return.

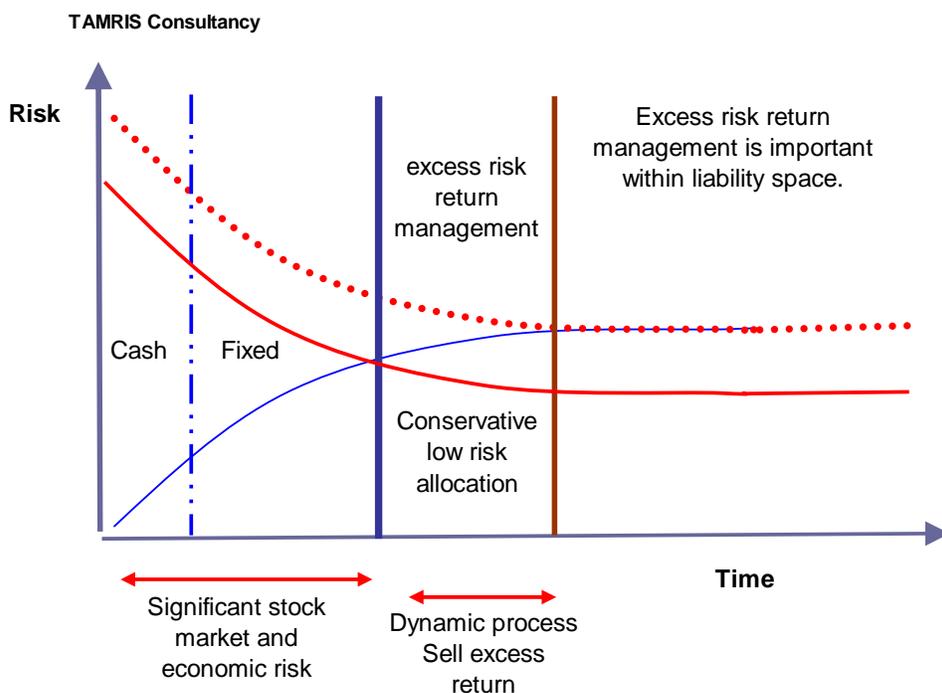
In fact, under such an approach, the portfolio is fairly well structured between a lower risk dedicated portfolio and a long only equity portfolio.

It is the management of the portfolio at the margin, where the low risk allocation and the equity allocation meets, that needs to be managed. It is this part of the portfolio that is exposed to market and economic risk and, it is the level of risk relative to liabilities that determines the time frame of the risk and the amount of capital at risk.

It is the capital at risk that is the amount of capital that could be construed as requiring a hedge fund type of management. This allocation may be no more than 5% of the portfolio during periods of low market and economic valuation and as high as 15% to 20% during periods of significant market and economic risk.

A properly constructed, planned and managed portfolio should provide all the benefits of a hedged investment with less extreme risk consequences and much lower costs.

4.4.1 Graphical illustration of management of excess risk and return

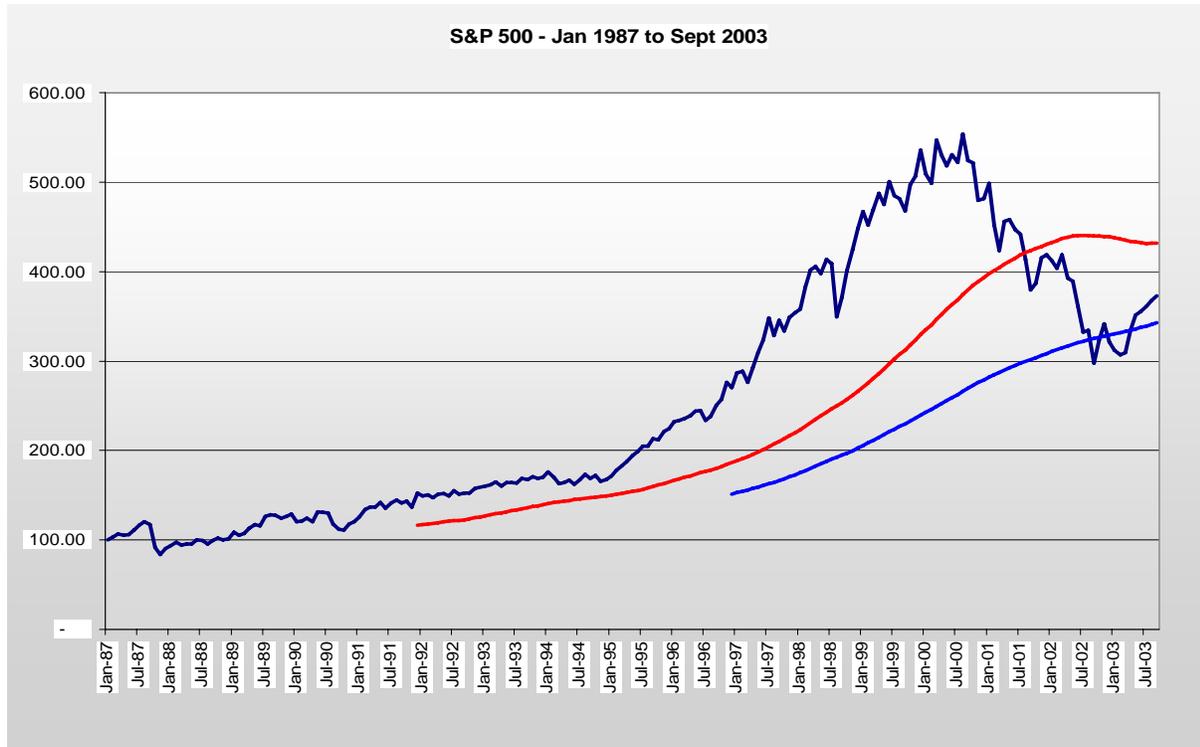


Note a portfolio always needs a low risk allocation to manage significant market and economic risk. This risk will increase during mature market and economic cycles; this is defined by excess risk management in the diagram. The size of this excess risk management component is effectively the amount that needs to be managed in accordance with “hedge fund attributes” and could be termed the optimum hedge fund allocation. Any allocation beyond this time frame does not need to be hedged because the time frame of risk carries it beyond a period likely to be impacted by economic and market risks; as long as the relative valuation of the allocation is managed.

4.5 Standard deviation and the hedge fund

It is worthwhile assessing the importance of the management of standard deviation as a worthwhile hedge fund attribute and by virtue of this a valuable investment worth having within the portfolio.

This is important because standard deviation as a risk degrades over time. Once you look at holding an investment for five years or more, even the significant market and economic risks are reduced, let alone the monthly gyrations in price. Once you hold an equity allocation for 10 years the impact of volatility as a risk to return becomes insignificant. The following chart shows the effective 5 year and 10 year moving average, or the effective 5 and 10 year volatility of the S&P 500 from January 1987 to September 2003.



This is important, because if volatility is not an important risk then purchasing a hedge fund that may provide a lower return and a larger compendium of more significant risks just for the sake of its lower monthly normal deviation in price does not make sense. Indeed, if you look at the performance of the market neutral and fund of fund indexes since 1995, the performance is hardly worth taking the risk for. Again, if we look at the above chart we will note that the effective volatility of a non hedged investment over a long time frame is probably little different from that of a hedge fund whose aim is to neutralise market risk.

If the investor is looking for short term risk management, then a hedge fund still makes no sense given the fact that market neutral and fund of fund performance is close to that available from a lower risk fixed interest investment. Indeed, why take the greater hedge fund risks when you can guarantee return with a government fixed interest security?

As for the longer term, a conservative hedge fund allocation makes no sense whatsoever. This leaves only the more aggressive funds which tend to have high standard deviations anyway and whose total risks are yet higher still. This is of course assuming that the reported standard deviations of hedge funds are the actual risks facing a hedge fund investment, which as discussed it is probably not.

4.6 Where in the portfolio?

Market neutral and fund of fund hedge funds may have lower volatility risk but their extreme event risk and their marginal performance differential relative to low risk assets make them a questionable low risk allocation within a portfolio.

Market neutral and fund of funds may have lower volatility but their long term return profile to value orientated investment strategies makes them a poor choice for longer term investors able to accept the short term price movements of equity investments.

Market neutral and fund of fund investments may be uncorrelated to traditional asset classes during periods of normal investment risk but they are exposed to changes in market dynamics. Short term risk management for those able to value risk is probably better achieved through much simpler exchange traded derivative positions.

More specific, aggressive directional hedge funds may provide a performance enhancement to a portfolio, but this performance is not consistent and the risks uncertain. Allocation to specific hedge fund styles requires significant knowledge of relative value in the specific areas.

Placing a hedge fund within the allocation structure of a portfolio that has a liquidity management objective can also complicate the management of that objective while equity allocation and management can also be constrained by a large hedge fund allocation.

The risks of the more aggressive hedge fund investment that would add value in terms of potential return are great and should only represent capital that can afford to be lost and should not be considered as part of the core portfolio or core portfolio strategy.

Hedge fund attrition rates are high, performance differentials between the good and the bad are wide and the importance of accessing the best hedge fund management critical. Most retail investors, even most high net worth investors are unlikely to be able to access the best managers.

Many financial advisors who lack valuation expertise and a valuation allocation and management discipline and who have suffered during the 2000/2003 bear market have naturally become endeared to hedge funds as an asset class at the precisely the time they became less effective. Average hedge fund returns since 2002 have been significantly less than investors could have achieved through conventional asset classes while over the longer term most investors would have been better served by a value biased, globally diversified investment style..

Managing hedge fund allocation is next to impossible without a) knowledge of a funds allocation, leverage and risk management strategy and b) the expertise needed to be able value and allocate to hedge fund strategies themselves.

The portfolio construction weapon of choice for much of the retail financial services industry, the mean variance optimiser, is inappropriate for either determining or managing the allocation to hedge fund investment. In this case, hedge funds can be particularly attractive to those that lack a fundamental understanding of the risks and rewards of hedge fund investment and a perspective of hedge fund investment relative to other methods of managing risk and return over time.

In a well managed portfolio, there should be no place for a hedge fund, since the portfolio will have all the attributes of a hedge fund. In a poorly constructed, planned and managed portfolio it is possible that a large hedge fund allocation may improve the management of risk and return, but at what potential and uncertain cost?

4.7 Summary, Where In The Portfolio

If the attributes of hedge funds are necessary and attractive (*management of absolute valuation risk, locking in return and the management of relative valuation and access to better asset management expertise*) but are high risk without necessarily providing a higher return, are lower risk without necessarily providing the security a portfolio needs and, costs are too high to justify the return or the costs of taking the risk, why not just use traditional asset classes and investment styles?

All basic portfolios are short/long portfolios in terms of their allocation to cash and fixed interest and equities and the fundamental equity management discipline of selling high and buying low.

It should be possible to protect financial needs from volatility risk, to provide income and capital security against significant stock market and economic risk, to manage absolute valuation risk and relative valuation at all times, effectively providing all the “marketed benefits” of hedge fund investment.

In other words all portfolios should be carefully balancing short and long term financial needs against the risks and returns of short and long term financial assets at all points in time. All portfolios should theoretically, in the hedge fund sense of the word, be a hedge fund biased to the size and timing of financial needs, given risk preferences and the current absolute and relative valuations in the market place.

Consumer fundamentals

The financial services industry seems to be forever focussed on developing new ways to charge more for what they should already be doing for less. Hedge funds represent another managed product in a long line of managed products, but with a difference. They represent in part many of the attributes of a properly constructed portfolio.

But, consumers need more efficient portfolio integration, not more expensive products which make the integration of the management of assets and financial needs yet more complex. The consumer needs cheaper solutions, not more expensive asset management options than they already have.

For decades the financial services industry has moved slowly towards greater consumer protection, yet in the space of a few years we appear willing to give all that up to allow the retailisation of an unregulated, opaque hedge fund industry.

We need to stand back and think just for a minute about what it is that is actually happening to the consumer of financial services.

In the late 1990s one of the most widely accepted principles of portfolio management, the importance of buying low and selling high was jettisoned in favour of buying the best performing assets at the time; technology, telecommunications, media and internet stocks.

Value investment was considered a thing of the past and value investors under performed the major market indexes significantly. This precipitated a move towards index investment to avoid this type of performance risk.

In the bear market of 2000 to 2003 the hedge fund outperformed most managed investment vehicles, but few noticed that the jettisoned value investment styles out performed too.

By moving towards an indexed investment approach investors have handed over relatively under valued securities to the hedge funds and bought more of the overvalued securities that hedge funds would be selling. Indeed, by taking an indexed approach to investment and by buying a hedge fund, investors are paying more for the privilege of a portfolio they should already hold.

But the irony of the situation worsens. Hedge funds that look to minimise market risk are exposed to the same types of performance risks that all investment styles at some time or other are faced with. Hedge funds as an investment style have indeed significantly under performed over the last three years.

Most of the problems that we see can be traced back to the fact that the industry lacks a framework in which risks and returns of assets can be properly managed and integrated with the management of financial needs over time. A portfolio should be able to do all the things that a hedge fund is capable of and, probably more.

The financial services industry is able to deliver a much better quality solution that could fit all investor profiles and preferences at a lower cost and a lower risk than the competing alternatives currently available.

For more information on this solution please see the TAMRIS March 2006 review, "In Search of the Truth: Magic Numbers & Safe Withdrawal rates". Also relevant information on consumer fundamentals and the recycling of risk can be found in the TAMRIS Special Report, "The Risks They Pose & Consumer Fundamentals". All these documents can be found in the [Technical section of the moneymanagedproperly.com website](http://moneymanagedproperly.com).

Conclusion

Hedge funds are a far more complex area than many would like to believe. This is not because they are complex beasts, they are, but because they appear to answer the prayers of many an investor and, they appear to offer something for nothing while having an argument that appears to back up their claims.

They appear to offer lower volatility (?)

In reality, the actual risk of a hedge fund is higher than the volatility would suggest and, they introduce a whole host of other potentially more dangerous risks to the portfolio. The focus on standard deviation is unhealthy since it detracts from valuation risks which are a far more important source of risk. A properly constructed portfolio should have the diversification needed to reduce overall volatility and the structure to protect the client from risks far more significant in their impact than standard deviation.

As an investment style they appear to offer superior return (?)

Hedge funds in their heyday, the late 1980s to early 1990s may well have done, according to the performance figures, but over the last 10 to 12 years, no, as an investment style, they definitely have not. While the earlier average returns may have been biased upwards, perhaps significantly so, the latest performance figures give serious cause for concern over the rationale for the vast majority of hedge fund investment. You would have been better serviced by a conventional portfolio where short term risk was managed by low risk asset allocation and where long term return was managed by a simple value biased index. Hedge fund type attributes are not the preserve of the hedge fund industry. They have been available at the margin for a very long period of time.

They promise to complement a portfolio's allocation to stocks and bonds (?)

If you do not know the allocation of an investment and you do not know the risk position of an investment, then you cannot value or allocate or manage an allocation to the investment. Quite how an asset class whose market neutral hub appears to perform like a bond but is higher risk in nature and under performs a value biased equity index, whose risk may explode during a significant risk event, that is illiquid, exposed to high attrition rates and fraud can be referenced by a bland, innocuous statement of universal application is absurd.

But the attributes of a hedge fund are very much needed for the efficient and structured management of risk and return over time, especially in the presence of financial needs. The good news is you do not need a hedge fund to do this. The bad news is that you do need access to higher level asset management expertise and portfolio construction expertise that is generally unavailable to most investors, and that is the rub. Many investors are left between a rock and a hard place.

This is not to say that hedge funds do not have a place. If you are wealthy enough to be able to afford the risks of the funds that can deliver the returns and, you have access to the expertise that can select and manage your hedge fund investments and that also has the sense to keep these outside of your core portfolio, then hedge fund investment may have a role. But they are definitely not for all and sundry and they are definitely not the domesticated retail friendly animals we are led to believe.

In truth the entire portfolio should be hedged to some degree or other and at any one point in time, depending on market and economic risks, the management of excess risk and return at the margin will account for between 5% and 20% of portfolio allocation. But this activity should be managed within a central portfolio structure that values, allocates and manages all its components in accordance with the long and the short demands of the portfolio. The only time an allocation to a hedge fund can be considered at all is where the allocation and management of the hedge fund is aligned with the valuation, allocation and management framework of the portfolio itself.

Addendum: A Nod to the shape of things to come

It is important to note the conflict of the two paradigms, the hedge fund view of risk and return and modern portfolio theory's view of risk and return.

It is important to note this conflict in the context of a more efficient form of capitalism which relies on transparency of information about risk and return for the efficient allocation of capital.

Hedge funds are not transparent, but at the very heart of the fundamentals of the hedge fund lies relative valuation and, relative valuation lies at the heart of the efficient allocation of capital.

As discussed in this report you can achieve all the benefits of the hedge fund through the structured use of conventional asset classes. But, this structured use of asset classes relies on the ability to value the risks to return and the time frame of risk and return as it relates to liabilities.

If we are to move to an efficient allocation of capital, portfolio theory needs to be able to include liabilities into the valuation of risk and return, something which it does not currently do.

As such, hedge funds represent the half way house between the portfolio theory of the past and the portfolio theory of the future in the sense that in the future excess risk and excess return could well disappear from the market place.

This is the true objective of modern capitalism. Indeed, once we get to where we are going the problems that structure is created to manage will no longer exist and, will only cease to exist through the management of structure.

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