Hedge Funds in an Institutional Portfolio

Considerations of goals, structuring and implementation

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A well-constructed hedge fund portfolio has the potential to provide robust portfolio diversification benefits throughout quiet and crisis markets, helping plan sponsors to meet the risk and return objectives of their plans, while limiting surprises.

This paper explores:

- *Goals for a hedge fund program in a portfolio context*
- *Failure of hedge funds to meet expectations in 2008*
- *Construction of a strategically robust hedge fund portfolio*
- *Program and portfolio management models and considerations*

Overview:

For several years, institutional investors have wrestled with developing an appropriate role for hedge fund (i.e., long/short, trading) strategies within their portfolio. Since the 2000-02 bear market (when hedge funds proved quite viable and valuable), the track record of hedge fund-type strategies has been mixed. The performance of the broad hedge fund indices, Portable Alpha, 130/30 strategies, and unanticipated illiquidity during the 2008 crisis severely tarnished hedge funds' image. Nonetheless, hedge funds still present the investor with a compelling investment solution due to their absolute return orientation (at least in concept). In this regard, institutional investors continue to pursue hedge fund strategies, but are seeking improved implementation models in the process.

With the above as background, PCA believes the foundation for a successful hedge fund investment program is a clearly specified purpose and expectation for each hedge fund allocation, within the portfolio context. While hedge fund tools can be utilized across multiple investment classes, and/or segregated as a stand-alone absolute return class, the factor in common among hedge fund strategies is the degree and precision of active management views they can express.

In assessing the value of any investment strategy, the primary considerations should be an assessment of its ability to deliver a positive real (above inflation) rate of return, and the risks associated with pursuing those returns. Traditional investments, stocks and bonds, have fairly well understood return expectations and risks. Investors in stocks have claims on the earnings of companies in which they invest. Investors in bonds have contractual claims to interest and principal payments, subject to the ability of the entity to pay. Traditional investments can typically be made passively, at very low cost. Unfortunately, the vast majority of traditional investments are highly correlated (move together), particularly during periods of financial market stress.

Hedge funds, on the other hand, are investment structures that are uniquely suited to pursue active investment management strategies, at least in concept. Active management means that a decision regarding the positioning of portfolio exposures and trading of underlying instruments must be made by a manager, and those exposures and trades can vary from one time period to another. The different strategies pursued by hedge fund managers are limited only by human imagination; however, because these strategies do not necessarily require exposure to the same economic / fundamental drivers as stocks and bonds, they hold the potential to produce returns that are unrelated to, and uncorrelated with, the investor's other portfolio investments and risks. In addition, in contrast to active managers in the traditional classes, the typical hedge fund structure provides incentives for and flexibility to managers to implement more pure active investment strategies.

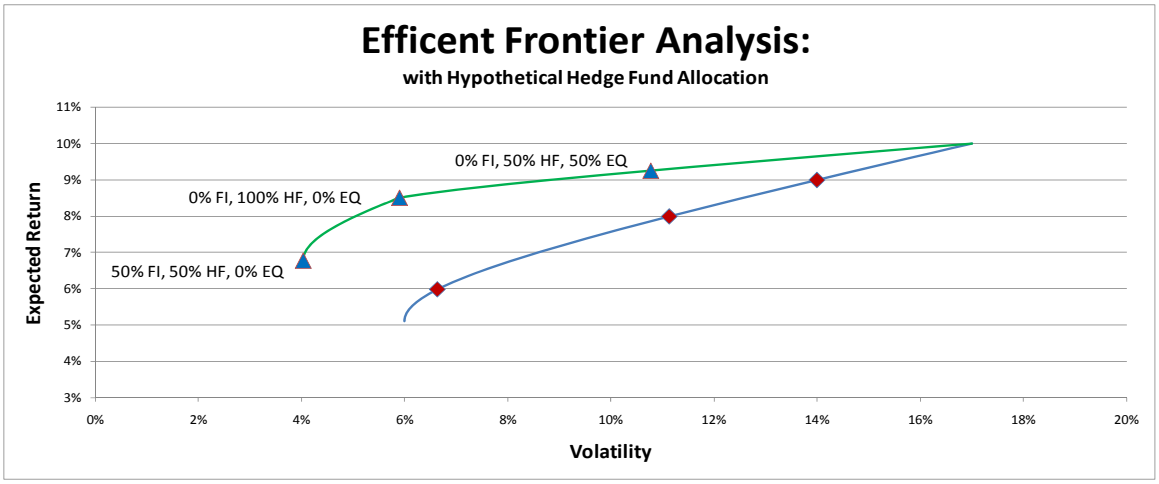
Nevertheless, despite the promise of unrelated and uncorrelated returns, the risks of certain common hedge fund strategies may become highly correlated with other portfolio risks during periods of market stress. Therefore, investors must understand the underlying risk factors/premiums latent in their supposed "pure" active strategies, so they are not surprised by a sudden movement in the risk premiums which will impact said strategies.

At the strategic level, hedge fund portfolio construction and its ongoing monitoring across multiple risk factors and paradigms, is critical. Establishing and managing a successful hedge fund program requires much more than assessing the skill of individual managers. This paper discusses a simple and clear framework for assessing program effectiveness that allows decision makers to monitor and manage their program oversight responsibilities in a straightforward manner. Clear communication of the expected sources of returns and the broad risks borne by each strategy type should provide decision makers with requisite understanding of program drivers, adding significant value to the program monitoring process.

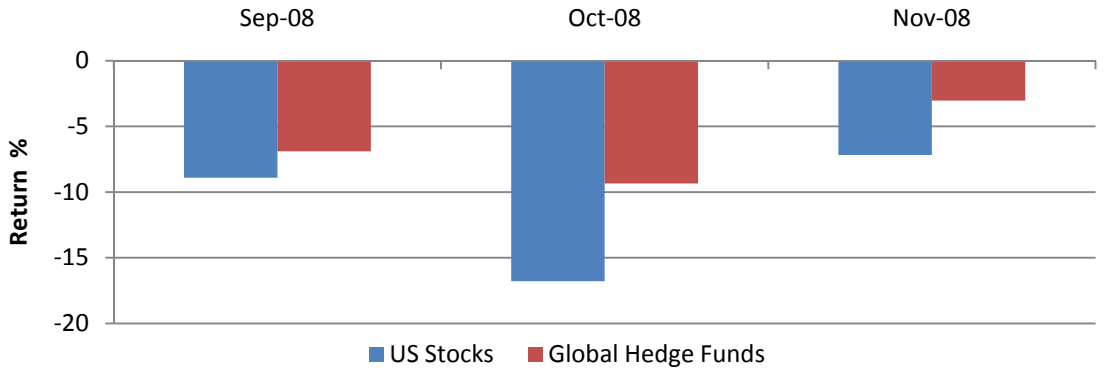
Why Consider Adding Hedge Funds to a Portfolio?

In assembling an investment portfolio, institutional investors seek to add strategies that will increase expected return, reduce expected risk, or both. A familiar framework to institutional investors for visualizing the risk-return tradeoff is an efficient frontier analysis. If correctly specified, the risk-return impact of the addition, subtraction, or reweighting of investment classes can be illustrated with this basic tool. One stylized example that investors might examine shows the impact on the efficient risk-return frontier, when varying allocations to a hedge fund class are added to an optimization that previously included only U.S. stocks and U.S. bonds. But "buyer beware": efficient frontier analyses should be considered with extreme caution. They are driven by simplifying assumptions for return, volatility and correlation.[1]

Incorporating an investment class with an *assumed* low correlation to the other portfolio components and an *assumed* positive risk adjusted return (e.g., the *historical* profile of the HFRI Fund Weighted Composite Hedge Fund Index 2000 to 2007)[2] unsurprisingly shifts the risk / return tradeoff (efficient frontier) up and to the left (i.e. favorably) in an unconstrained optimization (see graph below).



However, the assumptions and implications of the preceding graph and analysis will likely be viewed with skepticism by anyone that experienced 2008 with a typical hedge fund portfolio that had characteristics similar to the broadly-diversified hedge fund universe (broad indexes). As shown below, hedge funds, in aggregate did not diversify equities well.



[1] Hypothetical expected return and standard deviation for US equities assumed at 10% and 17%, respectively. Expected return and standard deviation for bonds assumed at 5% and 6%, respectively. Correlation between stocks and bonds assumed to be 0.30. Single period return and correlation expectations for various portfolio weights.

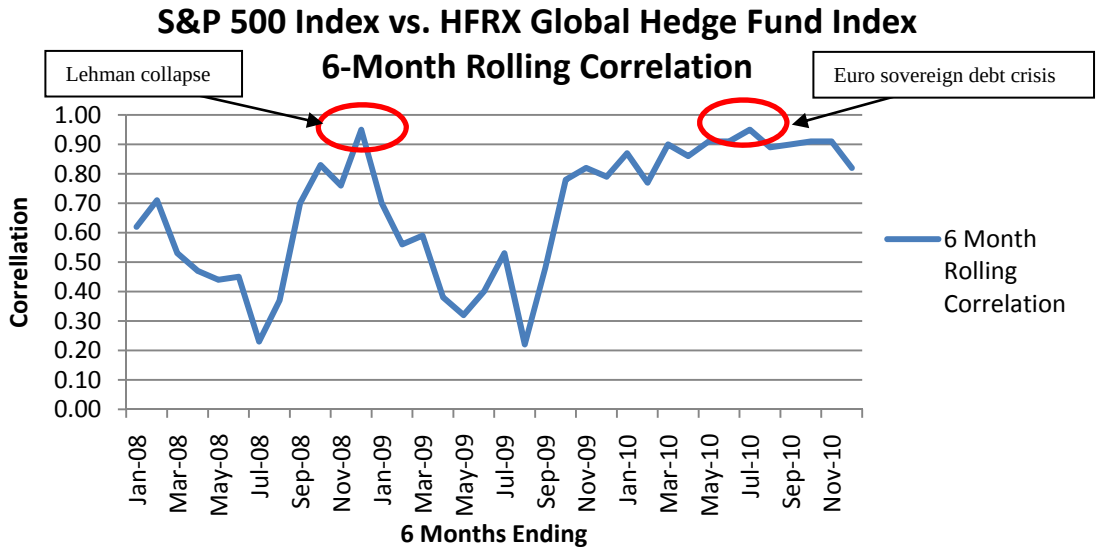
[2] Between 2000 and 2007, the HFRI Fund Weighted Composite Index returned 8.5%, had a standard deviation of 5.9%, and a correlation to US equities (S&P 500) and US bonds (BC Aggregate) of 0.69 and -0.08, respectively. This hypothetical portfolio analysis assumes that these relationships remain constant.

While the addition of a broadly diversified hedge fund class appears extremely attractive per the efficient frontier analysis which assumes low and constant correlation and high risk-adjusted returns, the events of 2008 should make it clear that the assumptions underlying this analysis were flawed, creating unrealistic expectations. In particular, as a result of 2008, investors were reminded that the assumption of a constant correlation relationship between their hedge funds and their equity portfolio may not be a good one.

What Happened in 2008?

The promise of a hedge fund / absolute return class is alluring. However, in 2008, the average hedge fund as defined by the HFRX Global Hedge Fund Index returned -23.25%. At the height of the crisis, correlations of hedge funds versus equities spiked towards 1.0 (with 1.0 representing tandem movements between the two classes, resulting in no diversification benefit during these time periods). This outcome was counter to the advertised benefits of hedge funds, which were supposed to exhibit a *lack* of correlation to the major classes, particularly equities (low or negative correlations of investment returns between classes help diversify an investment portfolio).

The problem was not only that the average hedge fund had substantial correlation with equities over the full cycle, which it did (the HFRX Global Hedge Fund Index had a 0.76 correlation with the S&P 500 over the 2000 to 2010 time period), but rather that the correlations are variable and have tended to spike at the most inopportune time during an investment cycle (see chart below).



The reason behind this unattractive behavior is that, in general, hedge funds do not necessarily invest exclusively in "hedges." Their investment positions are largely constructed of underlying stock and bond positions, the same stocks and bonds represented in traditional portfolios. The valuation models and principles that most fundamentally-focused hedge funds employ (and most investors employ for that matter) for pricing equities and credit instruments, do not tend to function as expected in a crisis. During a crisis, protection of capital matters, not relative valuations. In a panic, positions must be closed without regard to an investment's intrinsic value or fundamental drivers. Long positions are sold and short positions are covered (i.e., eliminated), regardless of valuation. To paraphrase Warren Buffett, "the market becomes exclusively a voting machine, rather than a weighing machine." Market panics are a landslide vote against all types of market risk (economic growth risk and illiquidity risk) and a vote for principal protection.

In such market panics, strategies that rely on normalized evaluation of fundamentals, but are unable hold their positions, get hurt badly. In particular, strategies which employ leverage to augment their fundamental views (which is standard practice among hedge funds) have little room for this temporary "irrationality". In fact, they tend to contribute to the panic by their inopportune forced or preemptive unwinding of positions. This scenario begs the question, "Is this type of correlated movement surmountable in the construction of an institutional absolute return portfolio?"

Who Were the Winners in 2008?

Those who benefit from such a market panic situation are typically trend followers and/or momentum traders. These market participants are often highly agile directional traders who are able to reposition quickly to capitalize on rapidly-developing market trends and the evolving supply / demand dynamics that unfold quickly during a market crisis.

"When large groups of investors are forced into action, liquidity disappears, credit issues come to the forefront, fundamental valuation becomes less relevant, and persistent trends occur across markets while investors fervently attempt to change their positions desperately seeking liquidity. Thus, times of market crisis,… represent times when market participants become synchronized in their actions creating trends across markets. It is only the select (few) most adaptable market players who are able to take advantage of these "crisis alpha" opportunities. The majority of market players, especially those which are the most exposed to underlying liquidity and credit risks, can suffer losses which may often be further magnified by the use of leverage."[3]

Traders that have survived more than one market cycle, rely less on their skill of finding good long-term trades, and more on their ability to exit poorly-performing positions early, i.e. "stopping" their losses. In fact, many successful traders have a higher percentage of losing positions than winners. They just lose much less money on their losing positions, and make a lot of money on their winners. They cut their losers quickly and let their winner run. Do they care about valuations or fundamental drivers? Yes, but only until the trade goes against them, and they "hit their stops." A trader that talks about the long-term does not typically last that long. To be successful, active traders need to focus on today's market action, trends, sentiment, and supply-demand dynamics.

Active Positioning / Traders Move the Markets

Within liquid and publicly-traded asset classes, markets are highly efficient, but these markets are only made efficient by the marginal active traders, who continually take active positions in the market. These traders are oftentimes hedge funds. The returns to these "pure" active managers are returns which are not dependent upon the drivers of the major asset classes of debt and equity. More specifically, returns exclusively to pure active management are not dependent on the compensated risk exposures embedded in the major traded asset classes: interest rate risk, economic growth exposure risk, inflation risk and illiquidity risk, etc.[4]

Many Hedge Funds Have Significant Equity Market Risk Exposure

However, many hedge fund managers and strategies actually *do* have significant ongoing exposure to (and derive much of their return from) compensated market risk factors. The largest of these market risk exposures is equity market beta. This significant exposure to equity market

[3] "Crisis Alpha and Risk in Alternative Investment Strategies", pg 2, Kathryn M. Kaminski, Ph.D., Alexander Mende, Ph.D., http://www.cmegroup.com/education/featured-reports/crisis-alpha-and-risk-in-alternative-investment-strategies.html

[4] Hedge funds with no exposure to compensated risks have no ongoing expected return outside of their returns to active management, plus a return to cash, minus fees and implementation costs. An isolation of active management is therefore the conceptually unifying factor among many different types of hedge fund strategies.

beta explained the majority of the high correlation between equity markets and the broad hedge fund indices.

Hedge Fund Return Attribution

Nevertheless, there is reasonable evidence that hedge fund "alpha" (returns not explained by exposure to other macro factor risks and not highly correlated with market risk exposures) does exist and has been successfully captured by hedge fund managers.[5] According to the Ibbotson, Chen, Zhu study published in 2011 and based on data from 1995 to 2009, pure alpha captured by hedge funds has been positive over the past 10 year period. However, the pure alpha is not large (approximately 3% across all strategy types), is expensive to access (fees represent 3.4% of gross hedge fund returns, meaning managers keep more than half of the alpha for themselves as fees), is fleeting, and often comes bundled with a healthy dose of market beta risk exposure. Furthermore, it stands to reason that managers who are successful in capturing these excess active returns (alpha) will both grow assets under management and be emulated. As a result, so the active returns to such strategies will oftentimes be arbitraged away as more investors seek to mimic such profitable trades. Nevertheless, the good news from the above study is that "alpha" does exist and can potentially be captured.

PCA believes that a well-structured absolute return strategic class is possible to construct and is valuable because it can provide a source of positive and uncorrelated returns. However, broad hedge fund indices are not representative of such a strategic class due to their significant ongoing exposure to major macro/market factors. Therefore, an institutional absolute return class should be structured differently than any of the broad hedge fund indices or the many hedge fund of funds that exhibit very similar characteristics to the indices. In this respect, an appropriately structured absolute return class would incorporate the following considerations:

1. The class should be structured as a portfolio of strategies that are consistently liquid and provide a source of uncorrelated, positive, risk-adjusted return.

2. Fund asset size and strategy crowding are the natural results of successful active management, and the enemies of active return.

3. In order for the hedge fund portfolio to deliver on a promise of an uncorrelated return during both normal markets and crisis markets, the portfolio should contain significant exposure to strategies based on momentum, sentiment, and trend capturing (divergent strategies, see below) that are negatively correlated to strategies based on capturing intrinsic value (convergent strategies) at times of market turmoil.

4. Finally, any and all strategies employed should be risk managed so that each can survive a crisis regardless of their interim drawdown.

Convergent and Divergent Investment Strategies

As we have discussed earlier, an institutional hedge fund absolute return class allocation should be regarded as a portfolio component designed to provide uncorrelated, real returns (in excess of cash and net of all costs) from active management decisions. This portfolio component's return expectation should compensate for the volatility, lack of transparency, and less-than-immediate liquidity of the hedge fund allocation.

When structuring such a portfolio, three conditions should be recognized: 1.) a significant portion of an investment's real return is generally accompanied by risk however defined, 2.) even

[5] "The ABCs of Hedge Funds: Alphas, Betas, and Costs", Roger G. Ibbotson, Peng Chen, CFA, and Kevin X. Zhu, Financial Analysts Journal, Jan/Feb 2011.

uncorrelated returns involve volatility, and 3.) expectations for real, uncorrelated returns (pure alpha) should be tempered.[6] The return to skillful active management is valuable and results from active market positions, but is typically inconsistent, and requires diligent pursuit. Finally, different types of active management strategies deliver during different market environments. It is likely not possible for a single hedge fund strategy to deliver the same results during both convergent and divergent market environments.

Given the conceptual discussion above, we address implementation/portfolio construction practices that have succeeded in producing the desired attributes. The following section borrows liberally from an article published in the Summer 2004 edition of the Journal of Alternative Investments.[7] We recommend reading the Chung, Rosenberg, Tomeo article, which introduces the concepts of convergent and divergent investment strategies that we summarize below.

Convergent Strategies

Convergent strategies are based on the premise that securities have an intrinsic value based on their future cash flows and the degree of uncertainty surrounding those future cash flows. These strategies seek to benefit from the convergence of the security towards its intrinsic value. Furthermore, many of the arbitrage strategies assume that there is compensation (on average) for bearing exposure to illiquidity risk. These strategies tend to have more of a micro, company or security specific focus. Examples of these strategies include:

- equity market neutral
- equity long-short
- relative value
- event driven
- arbitrage strategies

Divergent Strategies

Divergent strategies concentrate solely on supply and demand factors. These factors may or may not have anything to do with market and/or security fundamentals. They are as likely to be driven by psychological, geopolitical or technical factors, as by fundamental/intrinsic value considerations. These types of strategies may be pursued using currencies, equities, futures, options, or most any other type of liquid instrument. These strategies tend to have more of a macro focus. Examples of classifications of these types of strategies include:

- global macro
- managed futures
- proprietary trading strategies

Next, it is important to summarize how these different types of strategies performed during various broad market environments. While the universe of hedge fund strategies does not breakdown perfectly along the lines delineated above, the major hedge fund index classifications do a reasonable job of classification in a way that demonstrates the differences (see table, next page).

[6] It is unreasonable to expect double digit real returns to an institutional-sized portfolio in the absence of market exposure. Under the Efficient Market Hypothesis, the expected return to a portfolio with no market exposure and no skill is the risk free rate minus fees.

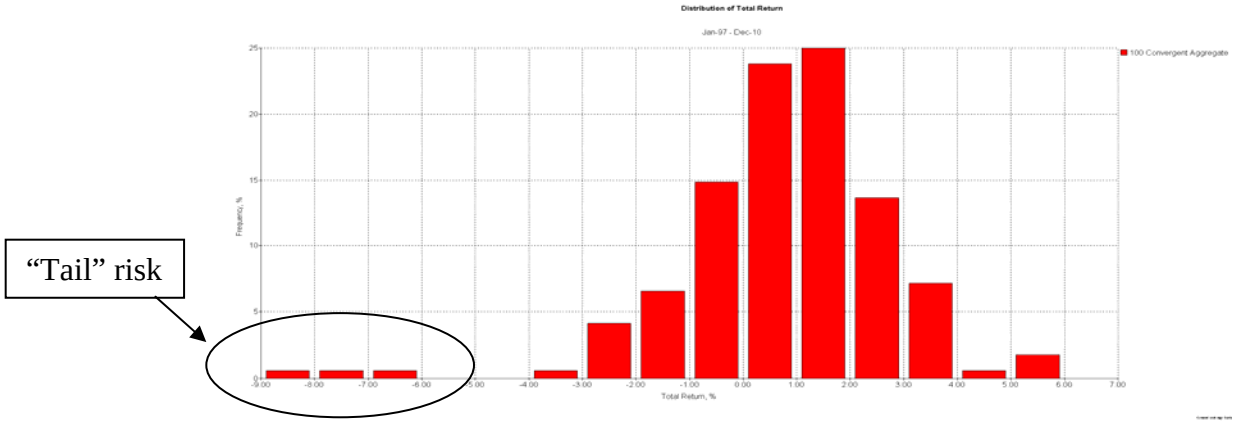
[7] Chung, Rosenberg, Tomeo; "Hedge Fund of Fund Allocations Using a Convergent and Divergent Strategy Approach," *Journal of Alternative Investments*, Summer 2004.

Performance Analysis of Convergent & Divergent Strategies Over Various Market Environments[8]

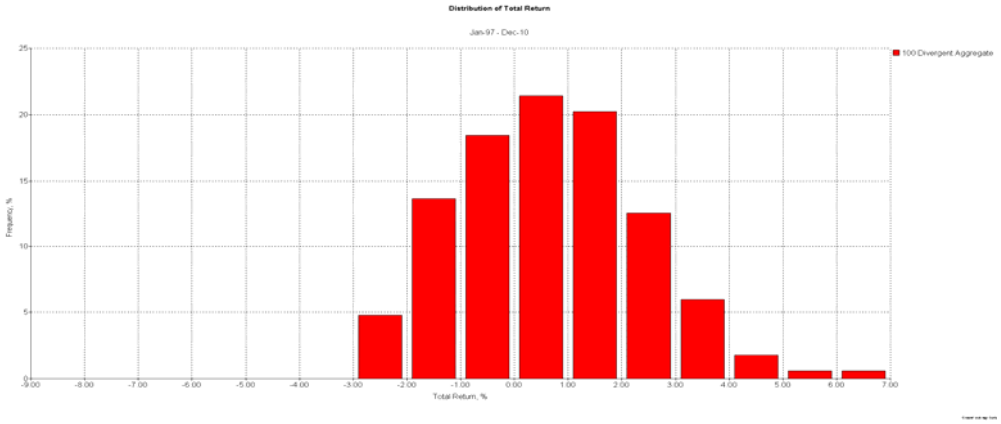
		Bear Market		Bull Market		Bear Market		Bull Market	
Strategy Type	**Component**	**Return**	**StDev**	**Return**	**StDev**	**Return**	**StDev**	**Return**	**StDev**
	%	**2000-2002**		**2003-2007**		**2008**		**2009-2010**	
Convergent Strategies Aggregate	100.0%	5.14	5.95	11.45	4.03	-22.22	10.68	18.03	5.94
HFRI Equity Hedge Index	33.3%	1.44	10.28	12.12	5.67	-26.65	13.06	17.32	8.87
HFRI Event Driven Index	33.3%	4.65	6.88	13.71	4.87	-21.82	9.79	18.21	5.93
HFRI Relative Value Index	33.3%	9.21	2.22	8.50	2.30	-18.04	9.71	18.43	3.88
Divergent Strategies Aggregate	100.0%	7.72	6.28	7.38	5.73	6.52	6.52	5.27	4.86
Barclays Global Macro Index	50.0%	8.39	5.51	9.81	5.48	-0.65	6.52	7.12	5.00
Barclays CTA Index	50.0%	6.92	8.76	4.94	6.78	14.09	7.47	3.42	5.29

In addition, it is helpful to visualize return distributions of each broad strategy class.

Convergent Strategies Aggregate (monthly return distribution):



Divergent Strategies Aggregate (monthly return distribution):



A review of these charts show that the convergent strategies tend to have more positive returns bunched consistently around 0% to 2%, but have suffered from big, periodic negative "tail" events.

[8] Past index performance is not indicative of future performance, and suffers from significant survivorship biases. Nevertheless, the distribution shapes and behavior of indexes versus one another are valid.

Based on the above findings, we can begin to conclude it may be appropriate to group fundamental-driven, micro-focused hedge fund strategies together with momentum-driven, macro-focused trading hedge fund strategies within the same strategic class. However, we would also stress that both strategy groups need to provide high levels of liquidity and provide returns that are driven primarily by active management, not market exposure.

Combining convergent and divergent strategies that complement one another in a variety of market environments will likely cause the stand-alone absolute return / hedge fund class to meet its dual objective of producing meaningful real returns and providing reasonable crisis protection over the long run.

Finally, relative value, event driven, and arbitrage strategies tend to exhibit materially higher levels of illiquidity risk. As a result, we believe these particular strategies may be best grouped together and allocated to on a stand-alone basis, as a sub-element of an absolute return class (or even an equity class).

Constructing an Absolute Return Portfolio

Based on the concept of balancing a portfolio between convergent and divergent strategies, we examined numerous weighted combinations of these strategies (see table below).

Performance Statistics
2000 - 2010

	Annualized Return, %	Annualized StdDev, %	Skew	Kurtosis	S&P 500 Correlation	Sharpe Ratio	Sortino Ratio
100% Convergent	7.27	6.50	-1.32	4.92	0.75	0.69	1.83
90%Con / 10%Div	7.27	6.05	-1.15	4.15	0.73	0.74	2.06
80%Con / 20%Div	7.27	5.67	-0.94	3.23	0.71	0.78	2.30
70%Con / 30%Div	7.25	5.35	-0.69	2.24	0.67	0.82	2.55
60%Con / 40%Div	7.23	5.11	-0.42	1.30	0.61	0.86	2.75
50%Con / 50%Div	7.21	4.97	-0.17	0.57	0.54	0.87	2.88
40%Con / 60%Div	7.18	4.93	0.03	0.14	0.46	0.88	2.90
30%Cov / 70%Div	7.15	5.00	0.18	-0.02	0.36	0.86	2.80
20%Con / 80%Div	7.10	5.16	0.27	-0.03	0.27	0.83	2.61
10%Cov / 90%Div	7.06	5.42	0.32	0.00	0.17	0.79	2.36
100% Divergent	7.01	5.75	0.35	0.04	0.09	0.74	2.09

The above data indicates that an approximate 40/60 mix of convergent and divergent strategies would result in an absolute return portfolio with the highest historical return to volatility profile (highest Sharpe ratio), highest return-to-downside volatility (highest Sortino ratio), and a positive skew (elimination of fat tails), as well as a lower correlation with the S&P 500 Index. In addition, mixes in the 30/70 to 70/30 range also appear to provide reasonable risk-adjusted benefits. Despite the caveats associated with conducting an historical analysis using admittedly flawed indexes, the conclusions do provide a reasonable indication that appropriate blends of convergent and divergent strategies should prove to be beneficial to the institutional investor. The key point is that the convergent and divergent strategies tend to offset one another (as one would expect). Therefore the combined convergent/divergent portfolio structure should produce a more consistent outcome that is more in-line with expectations for a dedicated hedge-fund class.

As we have pointed out, the high degree of correlation that convergent strategies have with the S&P 500 Index make them less beneficial diversification tools within the typical institutional portfolio. Again, the major cause of this issue is the convergent strategies' significant embedded

exposures to equity market beta throughout their portfolios. However, certain convergent strategies can be carefully selected to help mitigate the directional equity exposure in constructing a client's actual absolute return strategic class.

It may be somewhat counterintuitive that the best combinations are weighted more heavily towards divergent strategies. This structure has not been the favored construction of most hedge fund portfolios since their mainstream adoption by institutions. Reasons for this seeming disconnect are multi-faceted:

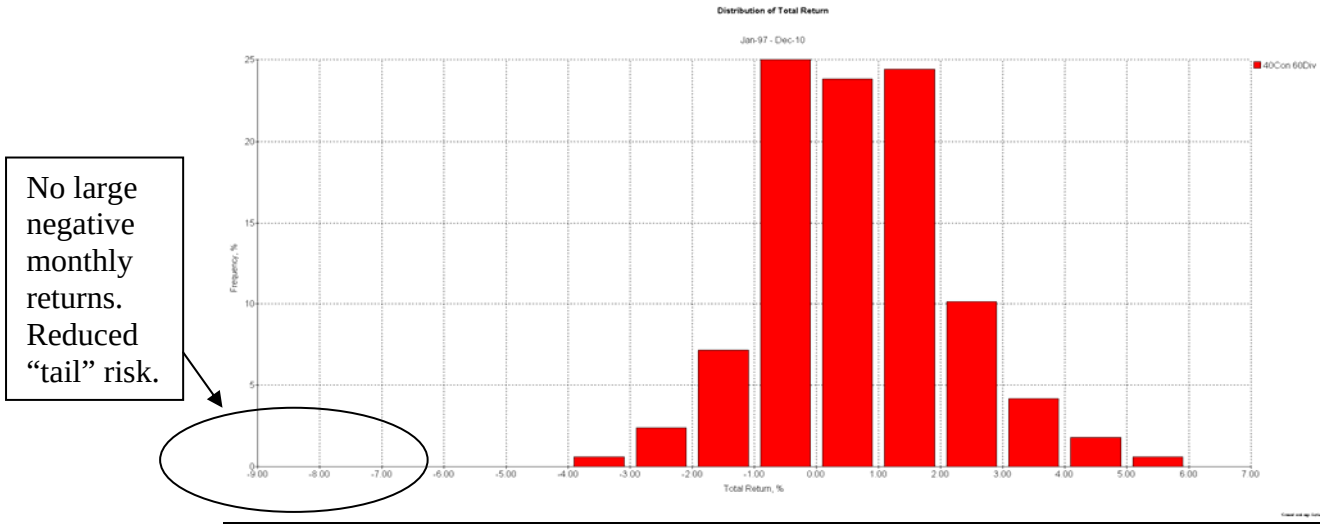
1. Convergent strategies tend to be more "consistent"… until they aren't. They have high kurtosis (peaked distributions with "fat negative tails"). This type of return profile has fewer negative months, and when a normal distribution of returns is assumed (which is likely an inappropriate assumption), a higher Sharpe ratio for the strategies.

2. Convergent strategies "make sense" to investors within an efficient markets framework. Convergent strategies take advantage of security pricing that departs from "fair" value, leading to an eventual moving of securities' prices back to "efficient" or "intrinsic" prices. This "rational world" assumption seems to be reasonable most of the time.

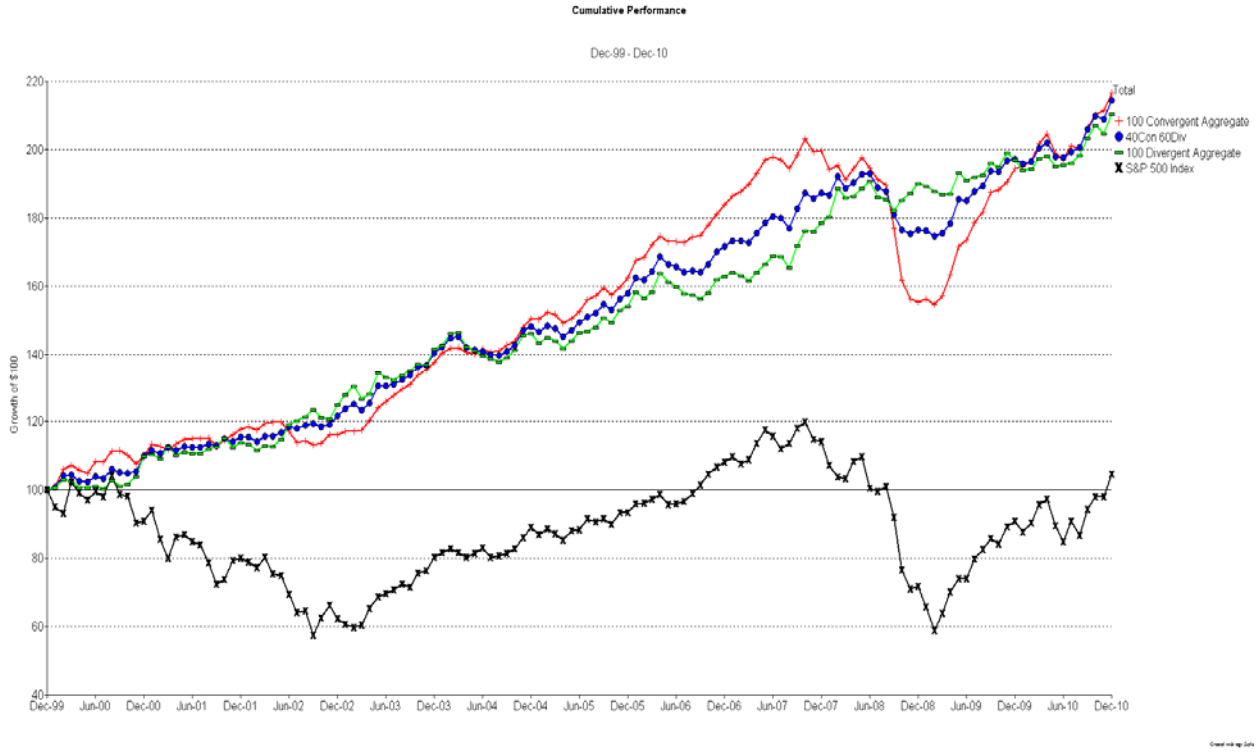
3. Trading strategies that benefit from trends and market shifts are sometimes deemed not to be "investment" strategies. These types of strategies are often deemed useless or invalid under the assumption of an "efficient market."

However, it is because convergent strategies are susceptible to tail events, the most ideal portfolio combinations should be weighted more heavily to divergent strategies. Furthermore, because the "tail events" of convergent strategies are highly correlated with distress in the remainder of the investor's portfolio (e.g., distress in the equity markets), a heavier weighting to divergent strategies in a hedge fund portfolio should provide more diversification benefit to the rest of the portfolio as well, particularly during a market crisis.

The key aim of selecting a portfolio diversified among convergent and divergent strategies is to generate a return distribution that minimizes the large negative tail events of a largely convergent hedge fund portfolio. Preventing large monthly losses of capital is a laudable and reasonable objective (below is the monthly return distribution of a 40/60 composite of convergent/divergent strategies from 1997 to 2010).



Reduced tail risk and lower portfolio volatility, can result in a better absolute return portfolio return/risk profile. As indicated below in blue dots, the portfolio diversified between convergent and divergent strategies provided a smoother growth path, while diversifying the large equity exposure of most portfolios (the S&P 500 Index is the bottom line in black). The 40/60 convergent/divergent portfolio is consistently between the 100% convergent (red) and 100% divergent (green) portfolios, which tend to move opposite one another during crisis periods.



Portfolio Construction Factors (qualitative)

The desired qualitative attributes in a well-constructed absolute return portfolio are:

1. Sufficient diversification;
2. Reasonable liquidity; and
3. Reasonable transparency

The absolute return portfolio should have low correlation with traditional investment markets, regardless of the market environment. This means that the strategies should not have consistent exposure to the main risk factors that drive traditional investments: global economic growth, interest rates, or inflation. The preceding sections of this paper have examined these more quantitative and strategy-specific portfolio construction issues. This section now focuses on the more qualitative aspects of portfolio structuring.

Diversification

The portfolio should seek to diversify individual managers, strategies, strategy types (convergent versus divergent), and should seek to isolate each individual management organization from the exogenous and endogenous issues that can impact any one organization (redemptions, blowup risk, fraud, organizational upheaval). Questions that need to be answered include: How many funds of the same type should be used to diversify manager risk? How many different sponsor organizations should be utilized to minimize portfolio-wide exposure to a particular organization's business risk? Should micro-focused organizations be viewed differently than macro-focused ones? These are policy questions which should be explicitly addressed in the structuring process, but different organizations will choose to address them differently.

Liquidity

The portfolio should have reasonably liquidity so that it can be rebalanced, to and from, within a reasonable time period. Illiquid strategies and private equity do not belong in this portfolio. On the other hand, divergent strategies are among the most liquid hedge fund strategies. In particular, "In 2008, investors used managed futures accounts like an ATM machine, taking redemptions that totaled more than $35 billion to meet their liquidity demands."[9] Managed futures (a divergent strategy class)[10] is now the largest single hedge fund strategy type by assets under management, and typically have terms with no gate or lockup provisions.

Transparency

Finally, the portfolio must be transparent. While it is typically not necessary or constructive to have position-level portfolio transparency presented to the Board, those responsible for the portfolio's construction and monitoring should have this level of access. The plan sponsor's staff and/or institutions engaged by the plan sponsor to monitor the portfolio need to have sufficient periodic access to the portfolio's underlying positions, along with ongoing dialogue with decision makers at the underlying managers, to assess each strategy's implementation and risk positions.

Portfolio Management Function

The portfolio management function of the absolute return portfolio should have several key areas of focus:

1. Strategy selection, constraints and portfolio proportional allocation decisions

[9] http://www.barclayhedge.com/research/press_releases/PR_Oct_5_2010.html

[10] Managed futures is a divergent strategy: Chung, Rosenberg, Tomeo; "Hedge Fund of Fund Allocations Using a Convergent and Divergent Strategy Approach," *Journal of Alternative Investments*, Summer 2004.

2. Portfolio rebalancing and portfolio tilting decisions
3. Manager due diligence and selection within strategy type
    a. Strategy and manager due diligence
    b. Organizational/investor-base due diligence
    c. Operational due diligence
4. Ongoing monitoring of underlying managers, manager replacement
5. Reporting to decision makers

From a governance perspective, the plan sponsor (possibly with the assistance of a strategic consultant) should be engaged in strategy selection (types of strategies), constraints (e.g. liquidity, leverage limits, no private equity) and proportional strategy allocation and decisions (convergent / divergent). These are strategic decisions that will reasonably restrict the investment class' likely behavior. Furthermore, the plan sponsor should receive reporting on portfolio tilting, rebalancing, and manager replacement activity, though performance of these duties should rightfully be delegated.

To best perform the delegated portfolio management duties highlighted above, there are several types of hedge fund portfolio management models currently being utilized by institutions:

1. Institutional Multi-Strategy Funds
2. Institutional Fund-of-Funds
3. Institutional Manager-of-Managers Separate Account Platforms
4. Combinations / Hybrid Solutions
5. In-House Portfolio Management

Each of these types of portfolio management models has important pros and cons. Tradeoffs exist involving costs, transparency, customization, managerial simplicity, impact of other investors, access to best-in-breed managers, objectivity, knowledge transfer, organizational risk, and headline risk. Furthermore, there are significant differences between the portfolio management requirements involving micro-focused versus macro-focused managers.

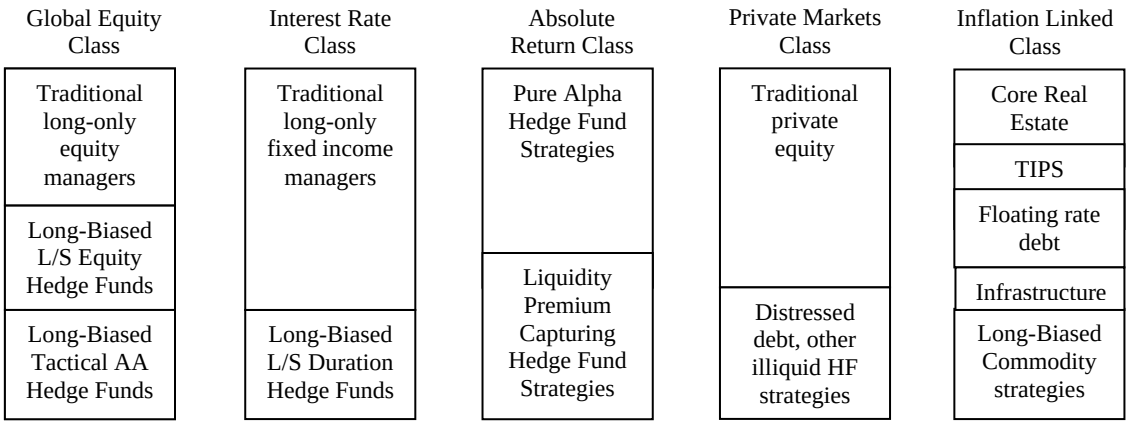
	Multi-Strat	Fund-of-funds commingled	Managed Separate Account	Hybrid Solutions	In-house portfolio mgmt
Accessible to small plans	yes	yes	no	no	no
Managerially simple for plan	yes	yes	yes	somewhat	no
Additional fees in addition to manager level fees	no	yes	yes	yes	no
Real-time position level transparency to manager	yes	somewhat	somewhat	somewhat	somewhat
Diversity of investment themes across multiple orgs	no	yes	yes	yes	yes
Seek out best in breed managers	no	yes	yes	yes	yes
Organizational risk diversified, ring-fenced	no	yes	yes	yes	yes
Redemptions of others impact you	yes	yes	no	no	no
Customizable	somewhat	no	yes	yes	yes
Eliminate underperforming strategies quickly	no	yes	yes	yes	yes
Require significant internal staff resources	no	no	no	yes	yes
Provide knowledge transfer to staff	no	no	yes	yes	somewhat
Negotiable fees for large mandates	somewhat	somewhat	yes	yes	n/a
Headline risk mitigated, diversified	no	yes	yes	somewhat	no
Operational due diligence is objective	no	yes	yes	yes	yes
Portfolio risk management by outside party	yes	yes	somewhat	somewhat	no
Portfolio reporting	yes	yes	yes	somewhat	no

Hedge Fund Roles within the Broader Strategic Portfolio

Establishing a clear framework for setting program expectations and assessing program effectiveness is paramount to allow decision makers to fulfill their program oversight responsibilities. Clear communication of the expected sources of returns and the broad risks borne by each strategy type provides decision makers with requisite understanding of program drivers, making the decision maker's monitoring and assessment of the program possible.

Regardless of whether the plan establishes an absolute return strategic class, it is not necessary to exclude long-biased hedge funds strategies from consideration. Hedge funds exhibiting ongoing long-biased market exposure may prove attractive because they have significantly more implementation flexibility and nimbleness than traditional long-only managers. As a result, such funds may be best grouped as active managers within their respective investment classes of expertise. For example, an emerging markets manager that has very little true short exposure on a stock selection basis, may nevertheless make significant benchmark relative bets on a country basis. However, the ongoing "beta" exposure is expected to be significant to long-only emerging market equities, making the manager's neutral positioning highly-correlated with emerging market equity risks, thus properly grouped with that portion of the portfolio.

If institutions choose to incorporate long-biased hedge funds throughout their traditional investment classes, they must determine the best portfolio management model for these types of manager allocations. Furthermore, these allocations to active management should be integrated into a coherent risk-budgeting framework that incorporates active risk allocations within the strategic class to all active managers, including more traditional, long-only active managers. An illustrative example of such a framework is as follows:



Conclusion

PCA believes the foundation for a successful hedge fund investment program is a clearly defined purpose and expectation, within the total portfolio context. Institutions may find it helpful to separate hedge funds into two distinct roles: first, pure active management strategies within an absolute return strategic class; second, hedge fund strategies that maintain risk exposures similar to existing strategic classes (e.g., publicly traded debt and/or equity) placed within those strategic classes.

A well-defined investment framework and establishment of clear lines of responsibility for monitoring, assessing, and communicating program expectations and results, will allow decision makers to better utilize and monitor hedge funds throughout the portfolio.

Glossary of Hedge Fund Terms

equity market-neutral
Equity market-neutral strategies attempt to exploit market inefficiencies by being simultaneously long and short different stocks within the same sector, industry, market capitalization, or country; while neutralizing exposure to overall equity market movements. By avoiding market, or beta, exposure, they are designed to produce consistent returns with low volatility and low correlation in a variety of market environments. Assuming the portfolio is ideal and has zero market exposure, all returns that are generated are the result of stock selection.

equity long-short
An investing strategy that involves taking long positions in stocks that are expected to increase in value (undervalued), and short positions in stocks that are expected to decrease in value (overvalued). Strategies can vary in regard to overall market exposure (net long or net short), investment style (value, growth, fundamental, quantitative, technical, etc...), geographic concentration, and sector focus.

relative value
A hedge fund strategy that seeks to take advantage of mispricings, or price differentials, between related financial instruments, such as stocks and bonds, by simultaneously buying and selling the different securities of the same company. These strategies attempt to profit from the "relative value" of the two securities as they move towards their intrinsic values. Relative value strategies typically utilize instruments that are historically highly correlated, and take advantage of the corresponding price discrepancies when they occur. These strategies often employ significant leverage.

event driven
Event driven strategies attempt to profit from "special situations" that typically occur when a company undergoes significant change or difficulty. These strategies involve long or short positions in the securities of companies that are undergoing spin-offs, mergers, acquisitions, financial distress, liquidations, operational challenges, or other meaningful alterations that impact their corresponding financial instruments.

arbitrage strategies
Arbitrage strategies are similar to relative value and event driven strategies in which they seek to capitalize on price anomalies that occur between securities of a single company, or securities of related companies or markets. Such arbitrage opportunities may occur during very narrow time windows, or during broader timeframes in which the securities are affected by corporate changes, market events, investor preferences, or structural changes. Leverage is often utilized to enhance returns, especially when the strategy attempts to capture mispricings that are small in nature.

global macro
Global macro strategies attempt to generate positive returns by basing portfolio holdings on the prevailing economic and political conditions throughout the world. These strategies typically utilize currencies, equities, options, and fixed income instruments to profit from directional movements in the macroeconomic environment. The underlying positioning will vary depending on the current global economic environment, and leverage is often employed in order to enhance returns.

managed futures
An investment strategy that takes long and / or short positions in futures contracts to exploit trends / movements in financial markets. These strategies most commonly utilize futures contracts in currencies, commodities, equities, and government bonds. Managers of this type of strategy are known as "Commodity Trading Advisors" and are required to register with the U.S. government's Commodity Futures Trading Commission (CFTC). Approaches to this type of strategy are extremely varied, but due to the nature of instruments employed, are typically very liquid, and are "marked-to-market" daily. Separate accounts, managed on behalf of clients by the advisor, allow investors almost immediate liquidity at all times.

proprietary trading strategies
Proprietary trading strategies are unique approaches that typically employ a combination of other strategies. Essentially a catch-all category, proprietary trading strategies use a wide variety of investment processes (fundamental, technical, quantitative, etc…) across the entire financial instrument spectrum, in an attempt to generate positive returns. The success of such strategies varies greatly from one manager to the next, as does the actual philosophy and approach utilized. However, the factor uniting such strategies is their focus on short-term trading (i.e., hourly or daily), rather than longer-term positioning.