Hedge Funds and Portable Alpha

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Hedge funds have occupied a niche position in both U.S. and European financial markets since the late 1940s[1] and hedge fund strategies such as convertible arbitrage have been practiced, in rudimentary form at least, for even longer. With the exception of a few superstar managers (e.g., George Soros or Julian Robertson) and a couple of spectacular blow-ups (Long Term Capital Management and, more recently, Amaranth), they have remained distinctly out of the limelight for most of that time. Over the past few years, however, hedge funds have received much more coverage in the popular press and increasing interest from institutional and retail investors[2] alike.

One of the more noteworthy recent topics related to hedge funds is their use in portable alpha applications. To provide a basis for this discussion we first review a few hedge fund basics. Next we provide a general overview of the concepts behind portable alpha, how hedge funds can be incorporated into this framework, and the risks that should be addressed when implementing this type of program.

Definition

Perhaps the most widely recognized definition of a hedge fund is legalistic: a (U.S.) hedge fund is an investment company that is exempt from SEC registration under either Section 3(c) (1) or Section 3(c) (7) of the Investment Company Act of 1940. Publicly offered investment vehicles must comply with strict SEC regulations with respect to the types of investments they may hold, amount of leverage employed, holding periods, portfolio concentrations and auditing frequency, to name but a few. Hedge funds, however, avoid SEC registration and the consequent restrictions by sacrificing their ability to market themselves to the general public. As a result, hedge funds may only be offered to limited numbers of "accredited" and "sophisticated" investors, effectively high net worth individuals and institutional investors such as pension plans, endowments and foundations.[3]

Differences from Other Investments

[1] In 1949 A.W. Jones, following an equity long/short approach, established what is widely regarded as the first hedge fund.

[2] Hedge funds have been popular with certain types of institutional investors (e.g., endowments and foundations) and high net worth individuals for some time, but for the most part have only recently gained significant traction with other types of institutional investors. In addition, serious strides are being made to allow retail investors to access hedge funds or mutual funds following hedge fund-like strategies.

[3] Relevant legislation includes the Securities Act of 1933 and the Investment Company and Investment Advisers Acts of 1940. Funds with non-governmental benefit plan investors must also concern themselves with ERISA; and those which attempt to minimize tax effects have to deal with federal, state and foreign tax and open records laws. One should not try doing all this at home.

In addition to being exempt from SEC registration, hedge funds differ from traditional pooled investment vehicles in several other important ways:

- *Legal Structure* – Hedge funds are usually designed as partnerships, typically with the fund manager acting as the general partner and the investors as limited partners.
- *Types of Investments* – While hedge funds invest in standard exchange-traded securities (e.g., stocks, bonds, futures and options), many are also active in private, unregistered securities and over-the-counter (OTC) derivatives contracts.
- *Use of Short-Selling* – Almost all hedge fund strategies make extensive use of short-selling, i.e., borrowing a security in order to sell it and purchase it back at a later date, either to hedge against other securities held long or to attempt to benefit from expected price declines.
- *Use of Leverage* – Most, but not all, hedge funds use some form of leverage[4]. The amount of leverage employed can range from zero for a typical distressed or activist equity fund to upwards of 10:1 for certain types of arbitrage strategies.
- *Fee Structure* – Hefty fees (some would say too hefty) have also become synonymous with hedge funds. The standard "1 and 20" fee structure refers to a 1% management fee and a 20% share of the fund's profits (sometimes above a hurdle rate and usually subject to high-water mark provisions), although management fees in the 3-4% range and performance fees up to 40% are not unheard of these days.

Major Strategy Types

Because of the flexibility provided by the use of derivatives, shorting and leverage, a wide array of hedge fund strategies have developed over time. While an almost limitless number of distinctions and unique variations exist, several main categories can be broadly defined:[5]

1. Equity Long/Short (L/S) is probably the most well-known and straightforward hedge fund strategy. Traditional equity strategies focus on finding stocks and/or sectors with above-average potential and purchasing them long or overweighting them versus the benchmark. Stocks and sectors that are expected to under-perform are largely ignored because the most a long-only manager can do is underweight them or not own them at all. In contrast L/S managers can actually translate the full range of their opinions into meaningful positions by not only purchasing attractive stocks, but also selling short stocks they feel are over-valued.

   Portfolios generally classified as L/S can range from being strictly market neutral at all times, to leveraged directional strategies (i.e., either net long or net short at any given time), to the newest fad, so-called "130/30" strategies that invest 130% long and 30% short, maintaining 100% net long exposure to the market.

   Another notable development within L/S is "activist" managers that run concentrated portfolios and take sizeable positions in target companies where they perceive fixable inefficiencies (e.g., a non-core division that can be sold off). Due to their status as a major shareholder, activist managers then attempt to influence the strategic direction of the firm and remedy the problems they identified initially. These types

[4] In this context leverage can refer to either financial leverage (i.e., using borrowed money to purchase additional securities) or economic leverage (i.e., using derivatives to magnify exposure to a given asset).

[5] For a more details and the risk-return potential of each strategy, please contact Alan D. Biller & Associates.

of strategies may employ shorting to some extent, either as stand-alone positions or to hedge their long positions against broad market or sector/industry price movements.

Dedicated Short-Selling (DSS) or short-biased strategies, yet another variation, are often treated separately from L/S because they display very different performance profiles.

2. Event-Driven (ED) strategies are those in which the fund takes positions based on a number of defined "special situations." These situations are usually centered on significant corporate events such as mergers and acquisitions, spin-offs, bankruptcies, recapitalizations and share buy backs. In addition, ED can include investing in companies exposed to exogenous factors with binary outcomes such as pending government legislation, FDA drug approvals or patent lawsuits.

   Distressed Securities (DS) strategies form a specific subset of ED and involve the purchase (or shorting) of the equity and/or debt securities of firms in stressed or distressed situations, e.g., reorganizations, bankruptcies, distressed sales and other corporate restructurings. Investments typically consist of bank debt, corporate debt, trade claims, common stock, preferred stock, warrants, collateralized debt obligations (CDOs) and credit default swaps (CDS).

3. Global Macro (GM) strategies brought hedge funds into the headlines. Most of us have heard of George Soros, Jim Rogers and the Quantum Fund, and Julian Robertson's Tiger Fund. These funds were pioneering visionaries of global market investing. Traditional GM strategies use a top-down approach to identify directional trades that will profit from anticipated movements of stock markets, interest rates, currencies and commodities. These movements may result from shifts in economic factors, political environment or global supply and demand for physical and financial resources. Systematic GM strategies, such as Global Tactical Asset Allocation (GTAA), follow very structured, quantitative approaches with well-defined risk controls and position and leverage limits.

   Managed Futures (MF) strategies gained prominence in the 1970s, and can also be grouped under the GM umbrella. MF strategies are typically run by traders registered as commodity trading advisors (CTAs) or commodity pool operators (CPOs). These strategies utilize proprietary trading systems, often based on technical analysis, to take long and short positions in both physical commodity and financial derivatives (futures, options and options on futures).

4. Relative Value (RV) strategies, somewhat of a catch-all category, use statistical, fundamental or technical analysis to identify relative pricing discrepancies between a wide range of physical securities and derivatives.

   Fixed Income Arbitrage (FIA) strategies seek to profit by exploiting pricing inefficiencies between related fixed income securities (i.e., spread or carry trades) while typically neutralizing exposure to interest rate risk. There are many variations within FIA including yield curve or term structure arbitrage, liquidity trades, corporate versus Treasury, municipal versus Treasury and cash bonds versus futures.

   Convertible Arbitrage (CA) strategies in their most basic form initiate a long position in a convertible bond while simultaneously taking a short position in the same company's stock. CA attempts to capitalize on mis-pricing of the convertible (the straight bond component, the embedded call option, or both) while hedging the position against movements in the underlying stock. This has been a staple strategy of hedge fund managers since around 1970 but its popularity has waned in recent years. This is because hedge fund managers, even if they are not CA specialists, are now able to easily identify and effect CA trades, quickly correcting most arbitrage opportunities. One remaining exception may be

managers with strong credit research capabilities who focus on convertibles issued by stressed/distressed firms.

Statistical Arbitrage (SA) strategies are based on complex quantitative models that incorporate both technical and fundamental factors to uncover pricing discrepancies between related equity securities. Long and short positions are initiated, typically using very high frequency signals, and portfolios are normally structured to be market, industry, sector, and dollar neutral.

Volatility Arbitrage (VA) strategies, in simple terms, trade volatility using derivatives and the underlying physical securities (as hedges). VA seeks out relative value trades where differences in the implied volatilities of two different derivative instruments, both based on the same underlying asset, can be arbitraged. Alternatively, trades are set up to exploit differences in the implied volatilities of different but highly correlated assets. In addition, VA strategies may employ directional trades, i.e., trade the current implied volatility versus historical volatility of the same underlying asset.

Two Principal Portfolio Uses

Recall that passive or index managers try to replicate the risks and returns of their chosen benchmark. Active managers[6] try to do better. One can decompose the risks and returns of active strategies into two parts: the portion attributable to exposure to the broad asset class (or index), and the portion attributable to active (non-index) management. The former is commonly referred to as *beta*, the latter as *alpha*.[7] One principal use of hedge funds is as a stand-alone investment meant to diversify portfolios of traditional stocks, bonds and real estate. , This is well-plowed ground and does not require comment here. Our focus is on the second principal use, namely as the alpha engine in *portable alpha* implementations. In this application, hedge funds are used to exploit the distinction between the risks and returns of both asset classes (betas) and active management (alphas). Just what does this mean?

Most investors use one and the same strategy, e.g., active equities, to deliver both alpha and beta. As a result their alpha and beta sources are not diversified, since the generation of alpha is usually highly correlated with the performance of the underlying beta. Why not construct portfolios in which alpha risks diversify one another, beta risks diversify one another and alpha and beta risks also diversify each other? This is not as complicated as it might appear.

The first step is to identify alpha sources that are independent of, or can be separated from, selected betas. An alpha strategy that can be managed independently of a beta strategy is portable in the sense that it can be combined with different betas.[9] This is not a new technique: some managers have been combining equity betas with bond alphas for many years. But, where both the alphas and betas are from standard asset classes (e.g., equities or fixed income), the amount of diversification that can be realized between them is quite

[6] For our purposes this includes "enhanced index", "quantitative" and "risk-controlled" strategies.

[7] In MPT, *beta* measures the sensitivity of a portfolio's returns to those of an appropriate index. E.g., actively-managed large-cap funds usually have beta in the range of 0.9 to 1.1 relative to the S&P 500 Index. A portfolio with beta greater than 1.0 should generate a higher return than the S&P 500 in a bull market and a lower one in a bear market. Portfolios with betas less than 1.0 should behave oppositely.

[9] *Exotic betas* are asset classes for which financial derivatives (futures, swaps, options) are either thinly traded or do not currently exist, e.g. fine art, P/Es, cargo shipping capacity or the shape of the yield curve. Many real portfolios are exposed to both standard and exotic betas. Of course, as new financial instruments appear, today's exotic betas may become tomorrow's standard ones. *Pure alpha* is the return that remains after removing (i.e., hedging away) all standard and exotic betas. Since a pure alpha strategy has no systematic exposure to any risky assets the appropriate performance benchmark is cash, typically 3-month Treasury bills or LIBOR. Note that it is not obvious that one can in fact remove all betas, exotic or otherwise, or do so on economically reasonable terms. E.g., can one hedge out exposure to real estate? What about cargo space utilization?

limited. So the second step is to identify alpha sources that behave differently than the typical set of betas and other alpha sources. Since hedge funds generally have low correlations with standard betas as well as with one another, they are well suited to play a role here.

Portable Alpha Use

The basic procedure for constructing a potable alpha portfolio has two components: 1) use financial derivatives (e.g., S&P 500 futures or a Lehman Aggregate swap) to gain 100% of the desired beta exposure without tying up 100% of the capital, and 2) invest the remaining capital[8] in diversifying, alpha-generating hedge funds.

Take for example a $100 million pension fund with a target allocation of 60% stocks and 40% fixed income that also wants to add alpha from an event-driven hedge fund and another pursuing convertible arbitrage. Ignoring the messy details of margin requirements, periodic re-balancing and the financing costs of the beta exposures, the basic procedure is as follows:

Step 1: Invest $45 million in the event-driven hedge fund.

Step 2: Invest $45 million in the convertible arbitrage hedge fund.

Step 3: Hold back $10 million in cash (T-bills).

Step 3: Enter into long futures (or swap) contracts that provide $60 million of S&P 500 exposure and $40 million of Lehman Aggregate exposure. Use the $10 million cash as collateral for these contracts.

End Result: The desired 60/40 stock/bond beta allocation with a total of $90 million in alpha overlays.

This process is illustrated in more detail in Chart 1 and the potential results are shown in Table 1.

No Free Lunch

Portable alpha approaches carry specific risks that are independent of the alpha sources utilized. The main risks are related to:

1. *Selecting Alpha Sources* – The entire notion of portable alpha depends on being able to identify and access managers capable of delivering a sufficient level of alpha on a consistent and sustainable basis. Even once such managers are found, investors must be mindful of their appropriateness in light of their own specific set of objectives, risk tolerance and constraints; the end (high levels of alpha) does not necessarily justify the means (unacceptable levels of risk, concentration or illiquidity).

   Alpha sources must also be evaluated based on the standard and exotic betas embedded in their returns. While difficult, this is necessary to separate true alpha-producing managers from those that derive the bulk of their returns simply by levering betas. In addition, these embedded beta exposures must be continuously monitored (and hedged, if necessary) to ensure that they don't distort the performance in unexpected and undesirable ways.

[8] In practice some amount of capital, typically in the neighborhood of 10%, would be set aside as collateral on the derivatives positions providing the beta exposure(s).

2. *Obtaining Beta Exposures* – As the more pedestrian component of a portable alpha approach, beta exposures receive much less attention than do the alpha sources. They typically comprise the majority of the return and risk of the combined portfolio, however, so the beta side should not be neglected. With so many moving parts, extra diligence is required to ensure that management of the beta exposures and periodic rebalancing are carried out in proper fashion: due to the use of derivatives and leverage, errors in this area can quickly become magnified. Even with superior alpha sources, mismanagement of the beta exposures can derail an otherwise successful portable alpha program.

Aside from the risks associated with any portable alpha approach, one that uses hedge funds as an alpha source must also take into account the particular risks inherent in these types of investments:

1. *Leverage* – Many hedge fund strategies employ leverage to magnify returns from small price discrepancies into large ones. This is a profitable approach when the market is calm and acting predictably but sudden, unexpected reversals or dislocations are exacerbated by leverage. Even if these dislocations are temporary, if they are severe enough they can lead to fund failures and significant investor losses.

2. *Liquidity and Pricing* – In any market crisis, securities dealers will mark down prices sharply and in certain circumstances may not even be willing to provide firm quotes. Many hedge funds magnify this inherent market risk by carrying portfolio investments at prices based on their own models (so called "marked to model") rather then marked to market. These rather subjective pricing techniques can hide losses from investors for long periods of time (e.g., see recent news about CDO's).

3. *Capacity* – Many hedge fund strategies exploit inefficiencies in relatively small market niches. "Hot" money or increased competition from other fund managers can easily swamp such markets, depressing returns for all participants.

4. *Manager Selection* – Returns vary widely across hedge fund strategies and the managers who implement them. With traditional assets such as stocks, bonds or real estate, allocation decisions impact returns much more than does manager selection. This is not the case when dealing with hedge funds.

5. *Fees and Incentives* – Hedge funds normally charge 2% of invested capital, plus 20% of fund profits. Therefore hedge fund managers profit handsomely when the fund does well; conversely, hedge fund managers share losses only to the extent that when they under-perform they don't share in any future gains unless and until returns exceed a specified high-water mark. This fee asymmetry erodes net returns realized by investors, has implications for "optimal" hedge fund allocations, and gives hedge fund managers a perverse incentive to abandon underperforming funds and/or take on unreasonable levels of risk in order to maximize the value of their option-like payoff structure.

6. *Strategy/Model Risk* – Hedge funds often employ highly complex mathematical models, assumptions and inputs to run their strategies: the accuracy, appropriateness and limitations of these tools may be difficult for many plan sponsors to verify.

7. *Transparency* – Aside from the complexity of many hedge fund strategies, monitoring them is further hampered by managers' reluctance to release information to investors, a reluctance that in fact is reasonable given the need to maintain an edge in a highly competitive market.

The answer is an unequivocal…Maybe! On the one hand, because many hedge fund strategies have low correlations with traditional asset classes and have attractive risk/return ratios, they provide an efficient way to diversify alpha and beta risks. On the other hand, since 2001 average hedge funds returns have not been spectacular: a small number have done extremely well, but many others have not (see Table 2). Also, hedge funds require much more initial due diligence and ongoing oversight than do traditional strategies. In short, hedge fund-based portable alpha strategies are not for everyone but because of their real potential, they deserve serious consideration. For all but the most sophisticated investors, however, the services of experienced and knowledgeable advisors are essential.

Table 2: Return, Risk and Return/Risk (December 2001 - April 2007)

	Return, %	StdDev, %	Return / Risk
HFRI Fixed Income: Arbitrage Index	7.45	1.32	5.6
HFRI FOF: Conservative Index	6.93	2.30	3.0
HFRI Fixed Income: Mortgage-Backed Index	9.10	3.19	2.9
HFRI Equity Market Neutral Index	4.49	1.80	2.5
HFRI FOF: Diversified Index	8.02	3.51	2.3
HFRI Macro Index	9.52	4.99	1.9
HFRI Convertible Arbitrage Index	6.08	3.26	1.9
ML Emerging Market Bond Index	14.91	8.29	1.8
ML Euro High Yield	19.13	11.55	1.7
HFRI Equity Hedge Index	9.48	5.87	1.6
LB Aggregate Bond	4.93	3.74	1.3
EAFE	16.09	13.06	1.2
Corporate Bond	5.72	4.97	1.2
LB TIPS	7.02	6.13	1.1
ML U.S. Convertible Bond Index	8.46	7.62	1.1
S&P MidCap Index	12.83	13.06	1.0
S&P SmallCap Index	13.96	15.13	0.9
Russell 3000	7.90	12.17	0.6
Russell 1000	7.54	12.00	0.6
S&P 500 Index	6.85	12.08	0.6