
Hedge Funds

September 2000 (Updated February 2002)

INTRODUCTION

Hedge funds refer to a broad group of investment strategies. The general thesis for investing in these strategies is that their returns are dependent upon exploiting pricing inefficiencies in public markets. As such, the returns should rely upon manager skill, rather than the performance of financial markets at large. As a result, managers might be able to provide strong absolute returns, regardless of how the market behaves. This prospect has become increasingly attractive in recent years, as the equity markets rose to lofty levels over the late-nineties and, subsequently, fell precipitously in 2000 and 2001. Many investors are looking to diversify away from traditional equity holdings, without sacrificing return. Hedge funds offer that hope.

Hedge funds are a catch-all classification for investment strategies that exhibit characteristics different from traditional active management. Some of these characteristics include: (1) multiple strategies may be employed simultaneously; (2) returns are more dependent on the skill of the manager than the direction of financial markets; (3) managers may invest in securities or engage in strategies that are usually “off-limits” to traditional money managers; (4) leverage is often employed; (5) investment vehicles are typically structured as limited partnerships; and (6) incentive fees represent a substantial portion of total management fees.

In this research note, we will examine some of the more prevalent hedge fund strategies and comment on their future prospects. In addition, we will examine other issues to consider before an institution invests in hedge funds.

There are some hedge fund strategies that can provide attractive returns or worthwhile diversification benefits, which are not entirely dependent on a manager’s stock picking skills. These are event driven strategies and certain arbitrage strategies. The event driven strategies appear to offer a systematic return for risk. However, the risk in these strategies is different than traditional market risk. As such, exposing a portfolio to these different risks can provide diversification benefits. Arbitrage strategies

also may offer a systematic positive return. Again, these strategies provide exposure to risk factors different than market risk factors.

Long/short strategies, particularly market neutral long/short strategies, also have some appeal relative to traditional active management. It stands to reason that the high fees available through long/short hedge funds (both traditional and market neutral) attract the most talented investment managers. A skillful long/short manager has the potential to add value through buying the most attractive stocks and shorting the least attractive stocks. Nonetheless, we remain somewhat skeptical of long/short strategies because numerous studies have shown that it is difficult to persistently add alpha.

STRUCTURE

Hedge funds are typically structured as private limited partnerships, with the manager acting as a general partner and the investors as limited partners.¹ The partnership format is attractive for hedge fund managers because they have wider investing latitude, as they are subject to less oversight from government securities regulators than other investment formats (e.g., open-end mutual funds). Managers of limited partnerships are also able to place restrictions on withdrawals, reducing the concern for redemptions that traditional money managers face. This allows managers the luxury of investing in less liquid securities. For investors uncomfortable with the limited partnership format, some hedge fund managers are willing to separately manage accounts for large investors.

The fee structures vary widely for hedge fund strategies. A typical fee structure is a 1% management fee, with an incentive fee, which is typically a 20% share of profits. Some partnerships have a “hurdle rate,” which must be earned before the management is eligible for the incentive fees. For instance a manager with a hurdle rate of 5% would have to earn more than a 5% return in a year before

¹ As limited partners, investors are liable only for the investment amount. General partners, on the other hand, have unlimited liability.

incentive fees could be collected. Most partnerships also have a provision, known as a “high-water mark,” which requires the general partners to restore any cumulative losses before incentive fees may be collected.² If the hurdle rate is high enough to reflect the risks the partnership is incurring and a high-water mark provision is included, even relatively high incentive fees can be palatable. Without these features, the incentive fee, in addition to a substantial management fee, can be difficult to justify.

The high fees charged by partnerships create a rather high hurdle for outperformance. Table 1, below, shows the gross return necessary to obtain a net goal return based on a 1% management fee and a 20% incentive fee at varying hurdle rates. For instance, a 10% net goal return requires 13.5% gross return if no hurdle rate applies. Said differently, a manager that posts a 13.5% gross return with no hurdle rate would receive fees totaling 3.5%. At a 5% hurdle rate, a 12.25% gross return is required to reach 10%, net of fees. Given that equity markets have earned only 11% over the past 100 years (and in our opinion will earn less going forward), the fees required for hedge fund investing are very high.³

Table 1: Required Gross Return Required to Reach Net Return Goal

Net Goal Return	Hurdle Rate		
	No Hurdle (%)	5% (%)	10% (%)
5%	7.25	6.00	6.00
10%	13.50	12.25	11.00
15%	19.75	18.50	17.25
20%	26.00	24.75	23.50

Many managers impose “lock-up” periods on hedge fund investors. This means that investors must commit to a minimum holding period for investments. It is not uncommon for limited partnerships to require a one-year or longer initial lock-up. Once the lock-up period has expired, investors may liquidate all or part of the investment at pre-specified intervals. Some partnerships allow liquidations on a monthly basis, while others only allow liquidations on an annual basis. Quarterly liquidity

is probably the most common interval. As a result, most hedge fund investments are less liquid than traditional investments.

HEDGE FUND STRATEGIES

There are numerous types of hedge fund strategies. In this Research Note, we will focus on those that are most common. Many hedge funds blend one or more of these different strategies in their portfolios, allocating capital opportunistically to those strategies perceived to offer the greatest profit potential.

LONG / SHORT STRATEGIES

Long/short managers are similar to traditional managers in that they take long positions in stocks they find attractive. However, unlike traditional managers, short sales are used to bet that unattractive stocks will fall or underperform the market. In addition, unlike traditional managers, many long/short managers have the ability to use leverage. Moreover, long/short managers have the flexibility to vary their net long position, or even build a net short portfolio. Market neutral long/short managers generally try to offset long and short positions.

Long/Short (Jones Model)

Pioneered by Alfred Jones, long/short funds were the first hedge fund vehicle. Focusing primarily on publicly traded stocks, Jones’ model uses short sales and leverage, or margin, in an attempt to produce risk-adjusted returns superior to those of the market. As an example, if a long/short manager has \$10,000 in capital, he may use leverage to purchase \$12,000 in long positions, while shorting shares valued at \$6,000. Therefore, the gross investment would be \$18,000 (\$12,000 long plus \$6,000 short, or 180% of net capital), but the net long position would be only \$6,000 (\$12,000 long minus \$6,000 short, or 60% of net capital). Since the net long position is only 60% of capital, some protection should be provided during a market downturn.

Long/short managers have the ability to add value through two areas (1) stock selection and (2) market timing. Stock selection return can be added if the stocks held long perform better than the stocks sold short. In addition, adjusting the net long position can add value. Most long/short managers tend to maintain a positive net long position since markets generally appreciate through time. Nonetheless, managers may take a net short position if they believe that equity markets will fall.

With regard to stock selection, long/short managers have the ability to make multi-tiered investments. Managers can

² Funds that are significantly below their high water mark often go out of business because managers have little incentive to keep them open. For instance, a manager that needs to earn 30% just to reach the high-water mark may find it financially rewarding to close the fund and start a new one, so that incentive fees are available on profits immediately.

³ See “What’s Next for the S&P 500?”, Hammond Associates Research Note, May 2000 (available at www.haifc.com).

place bets against style (e.g. buy growth and short value), size (e.g. buy large-caps and short small-caps), and sectors (e.g. buy technology and short consumer durables). Using one or more of these strategies could entail greater uncertainty, since capital is being placed in jeopardy on multiple levels across the market.

Since the net long position in long/short hedge funds is generally positive, the incentive fee charged in these strategies is a bit troublesome. Managers without a hurdle rate are rewarded with 20% profits for a return that may have come substantially because of a net long position. For instance, if a manager with a 60% net long position earns 15% during a year when the market earns 20%, 12 percentage points (60% x 20%) of the manager's return is attributable to the market's return.⁴ Why pay 20% of profits for returns attributable to the market? While paying incentive fees for skillful returns that are attributable to security selection, rather than market performance, may be justifiable, the challenge is to identify skillful managers.

The most appropriate incentive fee structure would be one in which a hurdle rate is set based on the manager's appointed benchmark net long position. For instance, if a manager is typically 60% long, a hurdle rate for a particular year could be established based on 60% of the market's return and 40% of the T-Bill return. Therefore, if the market appreciated by 20% in a year, while T-Bills earned 5%, the hurdle rate for the year would be 14% [(60% x 20%) + (40% x 5%)]. In this way, incentive fees would reward a manager only for returns added above market returns. Incentive fees would be available for successful security selection and tactical changes to the net long position away from the benchmark net long position. In practice, however, such fee structures are rare.

Market Neutral Long/Short

A market neutral manager uses techniques similar to a long/short manager with regard to stock selection. However, in order to minimize market risk, managers maintain a net long position of 0%. In other words, long positions match short positions. In this way, any returns earned above the T-Bill rate are a result of stock selection skill, which is active management in its purest form. Market neutral long/short managers often use quantitative models in their stock selection process, rather than traditional fundamental analysis. These "black box," quantitative models evaluate stocks based on factors such

as valuation, momentum, earnings surprises, relative strength, etc.

As with traditional long/short strategies, the crux of market neutral long/short strategies is a simultaneous, double bet on long and short positions. If the countervailing positions have characteristics similar to the overall market as to size, style, and sector, this strategy will not be overly risky and any excess returns should be a function of security selection. Additional risk will arise when the manager intentionally or unintentionally makes sizable bets in these collateral areas. When this occurs, the possibility for the manager to be doubly wrong is increased.

For instance, in 1999 some market neutral managers were buying value stocks and shorting growth stocks. While the short positions offset long positions on a dollar basis, there was an inherent style bias, which resulted in atrocious returns in the growth-driven rally of 1999. Of course, managers that bet the other way enjoyed strong gains.

Thus, from a risk-control standpoint, the ideal long/short strategy, where returns are based solely on security selection skill as opposed to style differences, would be one that matches long and short positions within industries and, at a portfolio level, matches the market's price-to-earnings, sector weights, average capitalization, and other risk factors. However, removing these other dimensions may result in lower potential for excess returns, because limitations are placed on a manager's ability to make bets.

An advantage of market neutral long/short strategies is that "alpha," or excess returns, is transportable to other asset classes through the use of futures. For instance, a market neutral manager could be hired and overlaid with S&P 500 futures. This would result in the returns of an S&P 500 index fund, with any alpha from the market neutral manager. Similarly, other indexes with futures contracts could be used. A market neutral manager could even enhance a fixed income allocation.

Market neutral long/short strategies should be attractive to those who believe active managers can add value through security selection, but do not want the market risk and market timing element with traditional long/short funds. Given a hurdle rate equal at least to the T-Bill rate, the typical 20% incentive fee is reasonable, since those incentive fees are only paid when a manager adds value through successful security selection.

M A C R O

Macro hedge-fund managers are the high rollers of the hedge fund industry. Investing legends, such as George

⁴ On the other 40% of the portfolio, the manager should earn at least the T-Bill rate.

Soros and Julian Robertson, made these types of hedge funds famous in the 80's and 90's. Macro managers usually utilize a top-down approach to investment management, focusing on inflation, interest rates, and currency movements. In addition to investments in traditional securities, these managers will often make sizable bets on macroeconomic factors, such as the direction of currencies and interest rates, by using leverage through derivatives.

An example is George Soros, manager of the Quantum Fund. In 1992, he made a \$10 billion bet that the United Kingdom would be forced to devalue the pound. In this case, Soros was correct. When the U.K. devalued the pound, Soros reaped profits exceeding \$2 billion almost overnight. Naturally, disastrous results can occur also. In 1994, many macro funds were decimated. One fund in particular lost 29% in a single month because of an ill-timed investment in Japanese bonds.

Macro investing has fallen out of favor over the past few years as the performance of the most prolific managers has dropped off. The funds of the aforementioned George Soros and Julian Robertson have both struggled in recent years due to bets on value stocks. In fact, Julian Robertson liquidated his fund in 1999, lamenting that he no longer understood the technology-driven market.

EVENT DRIVEN STRATEGIES

Event driven investing involves investing in corporations involved in extraordinary transactions, such as bankruptcy, mergers, reorganizations, and other special situations. There are two major sub-classifications of event driven strategies—merger arbitrage and distressed securities. Some event driven managers concentrate on a specific strategy, while others will invest in both merger arbitrage and distressed securities, among other areas, overweighting the area that appears most attractive at any given time.

Event driven strategies are appealing because there is a systematic reward for risk taken. Furthermore, the risk is different from market risk. As a result, diversification benefits are available. However, they are not likely to hold up well during times of severe market stress. Consequently, they may not provide the desired diversification when it is needed the most.

Merger Arbitrage

Merger arbitrage involves trading the securities of companies involved in mergers. A merger announcement usually results in a sharp increase in the stock price of the target company. Nonetheless, the opportunity for profit

still exists because, following the announcement of a deal, the shares of the target company will almost universally trade at a spread below the eventual acquisition price. This occurs because the market discounts the security on the chance that the deal fails. Consequently, profits can result from holding the shares until the completion of the deal.

The case for investing in acquisition targets centers on the argument that securities of acquisition targets are often discounted more than the risk of failure warrants. The argument is that there is an over-abundance of sellers after a deal announcement, because the downside risk of the deal falling apart appears much greater than the modest upside potential.

In a deal financed by a stock exchange, arbitrageurs will usually purchase the stock of the target company and sell short the stock of the acquirer. The idea is to insulate the position from price movements in the acquirer's stock, thereby locking-in profits if the deal is completed. Of course, if the merger is not completed, arbitrageurs will lose money.

To illustrate a merger arbitrage transaction, let's assume ABC Corporation agrees to acquire XYZ Corporation for one share of ABC stock for every share of XYZ stock. Before the deal is announced, ABC stock is trading at \$50, while XYZ stock is trading at \$30. After the deal is announced, ABC stock remains unchanged, while XYZ stock increases to \$40 in anticipation of receiving a share of ABC stock valued at \$50. The market does not boost the price of XYZ to \$50 because there remains a chance that the deal would fail, resulting in XYZ falling back down to the pre-announcement price of \$30. Therefore, merger arbitrageurs have the potential to profit from the differential between the market price of ABC stock and the market price for XYZ stock of \$10 (\$50 - \$40) by purchasing shares of XYZ stock. However, since the arbitrageurs will receive shares of ABC stock upon the merger's completion, they are exposed to market risk in ABC shares. To insulate against this market risk and lock-in the \$10 premium, they will sell short shares of ABC. If ABC falls, say, to \$40 before the deal is completed, thereby lowering the value of the deal to XYZ shareholders, merger arbitrageurs will still earn the \$10 profit because gains from the short ABC position would offset losses in the long XYZ position.

A merger arbitrage manager's greatest risk is an economic, political, or market shock that causes deals to collapse, such as a stock market crash. The risk of collapsing deals is one that cannot be hedged by the short sale of the acquirer's stock. In addition, once invested, merger

arbitrage managers are exposed to an increase in the spread between the market price and the acquisition price. This can occur if deals are perceived to have a lower probability of completion, or if liquidity dries up. Increasing spreads resulted in substantial losses for some merger arbitrage managers in October 1987 and August 1998. Nonetheless, in both instances, most deals were eventually completed, so managers had the opportunity to recoup the losses in just a few months.

To minimize security-specific risks, merger arbitrageurs will usually invest in many different deals. Arbitrageurs also attempt to add value through their knowledge of possible regulatory pitfalls, enabling them to identify deals that are likely to be completed and those more likely to fail.

At a macro level, the returns available from merger arbitrage investing are dependent on merger activity. The profitability of merger arbitrage is reliant on the spread available between the market price after the merger announcement and the acquisition price. In the bull market of the late nineties, merger activity was very high, which may have helped keep spreads wide, as there were an abundance of deals in which arbitrageurs could invest. However, as merger activity dried up over the recent bear market, the spreads available have been considerably lower, as merger arbitrageurs have had far fewer deals in which to invest. Additionally, if institutions continue to pour more money into merger arbitrage funds, spreads will likely decline due to the law of economics—more money chasing a limited number of merger deals.

Distressed Securities

Distressed securities funds invest in securities (most often debt) of companies that are experiencing financial distress. Often companies will be in bankruptcy or experiencing extremely poor operating results. Most managers in this area perform analysis on the various classes of a company's debt and other securities to determine the expected payoff. After comparing this information to the current market prices, managers decide whether to take a pass, to buy the security, or, perhaps, to short the security. Managers often have the ability to hold non-public securities, such as bank debt. Distressed securities managers tend to use little leverage.

The argument behind investing in distressed securities is that prices of assets for troubled firms are below their intrinsic value due to inefficiencies in the market. Many institutional investors are not willing or legally able to invest in troubled companies. For instance, many

institutions cannot hold defaulted debt securities. As a result, the securities are available at a lower price than the uncertainty in the company's future alone should dictate.

The primary risk for this strategy is, of course, the inability of the companies to honor their debt. The major economic risk is a prolonged recession or depression that impairs the ability of companies to repay debt. Usually, however, managers will purchase securities with at least some asset backing to mitigate the losses in case of default. Once the economy approaches bottom in a recession, or begins recovery, opportunities should be available for distressed managers as there would likely be a greater number of distressed companies in which to invest. Such a scenario is being played out today, as the supply of distressed companies has greatly increased the opportunity set for distressed securities managers.

ARBITRAGE STRATEGIES

Arbitrage strategies generally involve attempting to capture pricing discrepancies between similar securities. The word "arbitrage" is a misnomer, because it implies that risk-free profits are available. In reality, these arbitrage strategies involve taking risk, but the risks are often independent of market risks.

We discuss two arbitrage strategies: convertible arbitrage and fixed income arbitrage. These are just a small sampling of potential arbitrage strategies. Other strategies include stock index arbitrage and closed-end fund arbitrage, among others.

Convertible Arbitrage

Convertible arbitrage combines the purchase of convertible securities with the simultaneous short sale of the underlying equity securities. Arbitrageurs seek to exploit pricing discrepancies between a convertible security and its underlying stock. Convertible securities will always trade at a premium to the conversion value, which is the value if converted to the underlying stock, because investors are willing to pay for the downside protection the bond provides relative to the common stock, while they participate in the equity's upside potential. The conversion value is simply the value of the investment if converted to stock.

An arbitrageur would attempt to find securities that he believes are trading at a conversion premium that is too low, with a hope that the conversion premium will

increase.⁵ The arbitrageur would then purchase the convertible security and short the underlying stock. The shorting of the underlying stock insulates the portfolio from equity market volatility.

The amount of stock required to hedge away the equity risk depends upon the sensitivity of a convertible security to the underlying stock. If a convertible security is deep “in the money,” meaning that the conversion value to the underlying stock dwarfs the present value of the future interest payments on the bond, the bond will behave more like the underlying stock rather than a bond. This means that the short equity position would have to be relatively high to hedge away the equity risk. On the other hand, if the convertible bond is far “out of the money,” meaning that the present value of the future interest payments exceeds the conversion value to the underlying stocks, the convertible security will behave more like a bond, which means that equity risk could be hedged away with a relatively low short position.

One risk of convertible arbitrage investing is rising long-term interest rates because, like other bonds, rising interest rates will cause the market value of convertibles to fall. The short sale of the underlying stock cannot completely hedge this risk. Although stocks tend to perform poorly during times of rising interest rates, this is not always the case. Another risk is credit risk, as convertible securities have historically been issued below investment grade. Therefore, deteriorating credit quality will likely lead to losses. Because the recent bear market has curtailed the issuance of secondary equity offerings, a large number of companies, including a larger proportion of investment grade issuers, have secured financing through the issuance of convertible securities. In fact, 2001 was the largest year of convertible securities issuance ever, providing significant supply for convertible arbitrageurs.

Fixed Income Arbitrage

Fixed income arbitrageurs seek to capture pricing differences between similar fixed income securities, while keeping neutral interest rate exposure. There are numerous ways to implement fixed income arbitrage strategies. For instance, a manager may try to exploit pricing

discrepancies between a futures contract and the underlying bond, or bet on the direction of credit spreads in Germany. Managers often used sophisticated computer models to identify pricing discrepancies. The pricing inefficiencies that fixed income arbitrageurs are trying to exploit are usually very small. As a result, most managers use a high degree of leverage.

One risk to which fixed income arbitrageurs are exposed is the risk that the pricing differences between two securities get worse rather than better. Some arbitrage strategies exist because of liquidity—liquid issues generally trade at a higher price than non-liquid issues. Some arbitrageurs will, therefore, sell liquid securities and buy illiquid securities, in an attempt to capture the liquidity premium. However, during times of crisis the premium for liquidity is higher, which works against some arbitrage strategies. For instance, Long Term Capital Management, which was on the brink of going under prior to a Federal Reserve-led bailout, employed some highly leveraged fixed income arbitrage strategies, betting that liquidity premiums would decline.

Another risk is model risk. Fixed income securities have become increasingly complicated in recent years as asset backed bonds and other exotic bonds have gained prominence. Due to prepayment risk and other factors, it is more difficult to derive a true value on these securities relative to traditional bonds; furthermore, it is harder to predict how they will react to changes in interest rates. If a model does not properly account for risk it could lead to erroneous portfolio allocations, which can be disastrous when coupled with leverage. Mispesified models contributed to the downfall of Granite Capital’s \$600 million fund in 1994, as the portfolio did not act as expected to the Fed’s sudden increase in interest rates.

OTHER CONSIDERATIONS

Investing in hedge funds presents investors with some additional considerations not usually faced when investing in traditional asset classes. When evaluating these investments, it becomes necessary to evaluate these additional risks. We comment below on some issues faced by hedge fund investors.

Leverage

Leverage, through borrowing or the use of derivative securities, probably poses the biggest risk to investors in hedge funds. Most stories of hedge fund blow-ups come down to the use of leverage in one form or another. Many managers, particularly in some arbitrage strategies, use leverage to magnify gains from narrow market

⁵ The conversion premium on a convertible security behaves much like a call option on the underlying stock. All else equal, call options are more attractive during times of high volatility, because there is a higher chance of high, positive returns. As such, call options are more valuable during times of high volatility. Likewise, the conversion premium on convertible securities is higher during times of high market volatility.

inefficiencies. Some market inefficiencies are so narrow that leverage must be used to make the returns attractive. The problem with leverage is that it is a dual-edged sword: when more money is invested than underlying capital, the probability of an unexpected severe market dislocation ruining the fund is higher.

A problem in the financial markets, and many hedge fund strategies in particular, is that return distribution curves exhibit kurtosis. In other words, the standard deviation statistic understates the probability of experiencing large losses. Unexpected large losses can quickly lead to the demise of highly leveraged fund. If a manager has five-to-one leverage (\$5 of assets for every \$1 of capital), a 20% decline in the assets will decimate the capital. The propensity for unexpected large losses to occur was painfully evident in August 1998.

The use of leverage alone, even high amounts of leverage, does not necessarily mean that a fund is overly risky. When evaluating funds it is important to understand how leverage is used and to what extent it creates risk for investors. Furthermore, it is important to understand how leverage will affect the strategies during periods where “everything goes wrong.”

Incentive to Take Risk

A potential conflict of interest is the incentive for managers to take on risk. Incentive fees reward managers when the fund does well, but receive their standard management fee when the fund performs poorly. Therefore, the more risk a manager takes, the greater the upside potential, with little immediate downside impact from losses, other than a reduction in assets. This conflict of interest may be reduced if the manager has a significant portion of his personal wealth in the fund, since it may mitigate the incentive to assume extraordinary risks.

Transparency

Another risk investors in hedge funds face is the lack of transparency. Transparency simply refers to the ability (or inability) of an investor to observe investments a manager is making. Since hedge funds are generally cast in the form of private partnerships, they are not required to reveal their activities or holdings, and some do not volunteer this information. Therefore, it is difficult to ensure the general partners are acting in accordance with the limited partners' wishes. This may allow other risks to arise without the limited partners' knowledge, and the damage may already be done before the limited partners are aware problems exist.

The most effective tool against this risk is to avoid it altogether by investing only in partnerships that offer a sufficient degree of transparency. A recent trend toward increased transparency has developed, since some investors and consultants, including Hammond Associates, demand full disclosure of investment strategy and periodic risk exposure summaries of the portfolio, which can be customized to each manager's strategy. In some cases, particularly when short selling stocks, a manager has justifiable reasons for not revealing their specific holdings. As a result, periodic analysis of risk at the portfolio level, rather than the security level, may allow for sufficient risk monitoring, without compromising the manager's positions.

More importantly, the selection of any hedge fund manager should be based on trust. Simply put, an investor probably should not hire a hedge fund manager for whom they would require full portfolio transparency. The most effective risk monitoring may occur before the manager is even hired. Rigorous due diligence, with particular attention to the general partner's integrity and qualifications, is paramount.

Fraud

A disturbing problem experienced by some hedge fund investors is fraud. With less government oversight, hedge fund managers have a greater opportunity to mislead investors. Most fraud cases in hedge funds are not outright thefts, rather they are an effort to hide investment losses. Some managers that have experienced losses have attempted to hide them by overstating the market value of the portfolio. The only way to completely guard against fraud is to only use separately managed accounts. Hedge funds that offer sufficient transparency are also helpful, but that is not fail-safe. The potential for fraud also argues for broad diversification. Diversification can reduce the idiosyncratic risk associated with these investments.

Asset Capacity

Since some hedge funds look to exploit narrow market inefficiencies, the level of assets managed in the strategy is important. At the manager level, the amount of assets employed in a strategy can certainly affect the realized return, as large trades may move market prices and dampen performance. This can also be an issue at a macro level. Excessive amounts of assets allocated to merger arbitrage, for instance, could result in a lower spread between the market value and offer price on the deal, making it harder to earn above-normal returns. Some strategies face this risk more than others.

Traditional long/short and market neutral long/short managers should not run into macro capacity problems, because the public equity markets are so large. Nonetheless, they may still run into manager-specific capacity problems. Event driven and arbitrage strategies have a higher likelihood of running into macro capacity problems, because there are a limited number of deals and opportunities for all funds in a strategy to invest.

Capacity has become an increasingly important consideration, as capital has flown into hedge funds at record levels. While the significant asset flows have likely been driven by the recent disappointing performance of the equity markets, increased invested capital may truncate future hedge fund performance. In addition, the number of new hedge fund managers has kept pace with the increased invested capital. Some of these new hedge fund managers may lack the necessary skill, risk controls, or business acumen to successfully run a hedge fund. As a result, a widening dispersion in hedge fund manager returns may likely result, placing even greater importance on successful manager selection.

Unrelated Business Taxable Income

Many hedge funds use leverage in their funds. This subjects non-taxable investors to unrelated business taxable income (“UBTI”). UBTI is taxable even for non-taxable institutions. The UBTI problem can be avoided by investing in funds based outside the U.S. Many domestically managed hedge funds offer off-shore counterparts for institutional investors.

HEDGE FUND PERFORMANCE

Performance history on hedge funds is limited. CSFB/Tremont, a joint venture between Credit Suisse First Boston and Tremont Advisors, Inc., maintains indices on a number of strategies, the returns of which are net of management and incentive fees. The CSFB/Tremont Hedge Funds indices are the industry’s only asset-weighted indices. However, their data only go back to 1994. We have a few concerns regarding the CSFB/Tremont data, as detailed below.

1. Many of the returns in the index are based on market value estimations self-reported by the limited partnerships and are, therefore, subject to error.
2. The degree of leverage used on average is unknown.

3. Some survivorship bias may be present (e.g., the poorest performers have gone out of business).⁶
4. CSFB/Tremont cannot be certain the funds they track are investing in the strategies in which they are classified.
5. Managers within a strategy may vary substantially. If managers within a strategy have low correlations with each other, as we suspect they do, the volatility (standard deviation) of the strategy will be artificially lowered. Without having an accurate volatility statistic, it becomes difficult to evaluate the performance of a given strategy.

Despite the problems with these composite indexes, we present in Table 2, below, the risk and return statistics for seven hedge fund strategies, as well as the CSFB/Tremont Hedge Fund index, which is proxy for the broad universe of all hedge fund strategies.

Table 2: Trailing Returns for Hedge Fund Strategies (At 12/01)

	1 Year (%)	3 Years (%)	5 Years (%)	8 Years (%)
CSFB/Tremont Hedge Fund	4.4	10.6	11.1	11.6
CSFB Long/Short Equity	(3.7)	13.1	15.6	13.4
CSFB Dedicated Short Bias	(3.6)	(1.4)	(2.0)	(1.2)
CSFB Equity Market Neutral	9.3	13.1	13.5	11.5
CSFB Global Macro	18.4	11.8	13.1	14.0
CSFB Event Driven	11.5	13.5	10.8	11.8
CSFB Convertible Arbitrage	14.6	18.6	12.8	11.0
CSFB Fixed Income Arbitrage	8.0	8.8	5.3	6.8
S&P 500	(11.8)	(1.0)	10.7	14.0
Russell 2000	2.6	6.5	7.6	9.8
Lehman Aggregate Bond	8.4	6.3	7.4	6.9
T-Bills	4.6	5.3	5.3	5.1

As the table shows, most strategies have not been able to live up to the returns offered by the S&P 500 over the eight years since 1994. Only the CSFB Global Macro index has equaled the returns of the S&P 500 over this period. Nearly all other hedge fund indices, with the exception of Dedicated Short Bias, have provided respectable absolute returns, but not at the same level as the S&P 500. However, a comparison to the S&P 500 is probably not

⁶ CSFB/Tremont tracks funds on a monthly basis, and leaves the performance of liquidated funds in the historical returns. In this way, they eliminate much of the survivorship bias problem. However, managers often do not report their performance the month in which they go out of business. Presumably, a poor final month is the reason that some managers go out of business. This may place an upward bias on the indices. In addition, the index includes funds that are closed to new investors. Although the inclusion of closed funds may more accurately reflect the performance of hedge funds in general, an investor would not necessarily be able to duplicate the results, since the index is not investable.

appropriate, because these strategies have a lower level of market exposure. Not surprisingly, lower exposure to the market has clearly benefited nearly all of the strategies over the recent difficult period for the equity markets.

Going forward, we think it is likely that hedge fund strategies will experience lower returns than their past returns. Hedge funds enjoyed the wind at their back from a booming equity market in the late nineties, and a confluence of events that played into many of their strategies in 2000 and 2001. In addition, hedge fund use was less prevalent in 1990 than today, which means that risk premiums may have been higher in the past. As more institutions have invested in hedge funds over the past decade, particularly over the past couple of years, some of the “inefficiencies” may have been bid away.

Table 3: Return and Risk Comparison (1/94 – 12/01)

	<i>Annualized Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>
CSFB/Tremont Hedge Fund	11.6	10.4	0.62
CSFB Long/Short Equity	13.4	13.7	0.60
CSFB Dedicated Short Bias	(1.2)	19.0	(0.33)
CSFB Equity Market Neutral	11.5	3.7	1.75
CSFB Global Macro	14.0	15.4	0.58
CSFB Event Driven	11.8	7.0	0.96
CSFB Convertible Arbitrage	11.0	5.3	1.11
CSFB Fixed Income Arbitrage	6.8	4.4	0.38
S&P 500	14.0	17.6	0.50
Russell 2000	9.8	21.7	0.22
Lehman Aggregate Bond	6.9	4.1	0.43
T-Bills	5.1	0.3	—

Table 3, above, compares the returns, standard deviation, and Sharpe Ratio of the CSFB/Tremont indices relative to traditional market indices. Hedge funds, with the exception of Dedicated Short Bias, have shown remarkable risk-adjusted returns since 1994. The CSFB/Tremont Equity Market Neutral index, for instance, has returned an impressive 11.5%, annualized, while exhibiting annual volatility of only 3.7%, less than that of the Lehman Aggregate Bond index. This yields an impressive Sharpe Ratio of 1.75, more than three times that of the S&P 500. Even the Long/Short Equity index, which includes managers with substantial equity market exposure, experienced a much lower standard deviation than the S&P 500. The Sharpe Ratio of the Long/Short Equity index was greater than that of the S&P 500. Nonetheless, the standard deviation statistic for these indices is suspect because of the aforementioned problems.

To the question of diversification benefits, in Table 4 the correlation of the various hedge fund strategies to the S&P 500, Russell 2000, and Lehman Aggregate are shown. As the table shows, the hedge fund strategies offer correlation benefits to traditional securities. The CSFB/Tremont

Long/Short Equity index experienced a correlation of 0.61 to the S&P 500 over the last eight years. Against the Russell 2000, however, the Long/Short Equity index exhibited a correlation of 0.82. This suggests that some of the correlation benefits relative to the S&P 500 are attributable to a smaller average market capitalization.

Not surprisingly, the Dedicated Short Bias index is strongly negatively correlated to the S&P 500, while Convertible Arbitrage and Fixed Income Arbitrage show little reliance on market direction. It is surprising, however, that the CSFB Equity Market Neutral index exhibits a correlation to the S&P 500 of 0.46. The positive correlation contradicts the name of the strategy and demonstrates that investors must look beyond labels. A hedge fund that touts a market neutral approach may not be market neutral at all. Nonetheless, the broad hedge fund universe, as represented by the CSFB/Tremont Hedge Fund index, has demonstrated significant diversification benefits.

Table 4: Correlation Coefficients (1/94 – 12/01)

	<i>S&P 500</i>	<i>Russell 2000</i>	<i>Lehman Aggregate</i>
CSFB/Tremont Hedge Fund	0.50	0.60	0.23
CSFB Long/Short Equity	0.61	0.82	0.13
CSFB Dedicated Short Bias	(0.77)	(0.83)	(0.01)
CSFB Equity Market Neutral	0.46	0.35	0.11
CSFB Global Macro	0.28	0.28	0.30
CSFB Event Driven	0.55	0.63	0.04
CSFB Convertible Arbitrage	0.11	0.20	0.13
CSFB Fixed Income Arbitrage	0.08	0.15	0.13

Examining the performance of hedge fund strategies in down markets can also assist in evaluating the diversification benefits of hedge funds. In Table 5, the average return of the hedge fund strategies are shown for months in which the S&P 500 experienced a positive return and months in which the S&P 500 experienced a negative return.

Table 5: Up and Down Market Performance (1/94 – 12/01)

	<i>Average Positive Month</i>	<i>Average Negative Month</i>	<i>August 1998</i>	<i>4/00 – 9/01</i>
S&P 500	3.8	(3.8)	(14.4)	(29.3)
CSFB/Tremont Hedge Fund	1.9	(0.8)	(7.6)	2.9
CSFB Long/Short Equity	2.4	(1.4)	(11.4)	(9.7)
CSFB Dedicated Short Bias	(2.5)	4.9	22.7	43.7
CSFB Equity Market Neutral	1.1	0.5	(0.9)	18.5
CSFB Global Macro	2.1	(0.6)	(4.8)	28.8
CSFB Event Driven	1.5	(0.1)	(11.8)	11.9
CSFB Convertible Arbitrage	0.9	0.9	(4.6)	28.5
CSFB Fixed Income Arbitrage	0.7	0.3	(1.5)	12.0

Performance over the April 2000 to September 2001 period is cumulative.

Also shown in Table 5 are the performance during the tumultuous August 1998 and the cumulative return over the recent bear market of April 2000 to September 2001.

As the table shows, in positive months for the S&P 500, the hedge fund strategies underperformed the S&P 500 on average, which, again, is not surprising since they have lower market exposure than the S&P 500. On the other hand, during months in which the S&P 500 declined, a number of the strategies enjoyed positive returns, on average, and even those strategies that fell declined less than the S&P 500. This suggests that hedge funds have provided downside protection.

Examining August 1998, however, paints a different picture of the down market performance. In August 1998, the S&P 500 shed 14.4%, as the Russian debt default and Asian currency crisis sparked a flight to quality and liquidity. Investors poured into Treasury bonds at the expense of riskier, less liquid securities. The effect was damaging to all the hedge fund strategies shown above, some more so than others.

While the strategies did not experience the same depth of losses of the S&P 500 in August 1998, the results were disappointing for many investors. The Event Driven index, for instance, lost 11.8% for the month, as spreads on mergers increased on fears of deal blowups and investors shunned illiquid, distressed issues. Even the Equity Market Neutral index fell 0.9%. Not surprisingly, the Dedicated Short Bias index jumped an impressive 22.7%.

It is important to note that some funds within these strategies fared much worse than the index returns indicate. Indeed, some funds did not make it through the month. The margin calls caused by the markets decline forced some highly leveraged managers to sell into an illiquid market, exacerbating the problems. As mentioned previously, this happened to Long Term Capital Management, resulting in a bailout led by the Federal Reserve.

The lesson from August 1998 is that hedge fund strategies do not always provide the desired level of protection when it is needed the most. Economic shocks that cause investors to reevaluate risk tolerances can lead to unexpected losses. Nonetheless, each strategy experienced losses lower than those of the S&P 500 (although some individual managers lost much more than the S&P 500), still providing some downside protection.

The recent bear market from April 2000 to September 2001 provided an interesting test for hedge funds. While the asset class as a whole, as measured by the

CSFB/Tremont Hedge Fund index, gained only a cumulative 2.9%, this was a welcome relief to most investors, as the S&P 500 fell a cumulative 29.3% over the same period. Simply put, most hedge fund strategies lived up to their name and hedged most portfolios.

Obviously, some strategies were better suited for this environment than others. For example, Dedicated Short Bias benefited greatly from the sharp drop in equity markets worldwide. Most Long/Short Equity managers, on the other hand, were penalized for their long equity bias, but still provided substantial downside protection. Convertible Arbitrage managers enjoyed a near perfect environment for their strategy, as falling interest rates boosted the value of their bond positions and falling equity markets generated profits on their short stock positions.

The historical performance of the CSFB/Tremont indices, particularly over difficult periods for traditional equities, makes a strong case for hedge fund investing. However, we only have eight years of performance history, which makes it difficult to get a true sense of how the strategies will perform over the long run. Furthermore, past performance is often a poor predictor of future results.

IMPLEMENTATION

If it is decided to invest in one or more of the hedge fund strategies, manager selection becomes an issue. Manager selection is particularly important for hedge fund strategies. Unlike traditional managers where performance is highly dependent upon the asset class in which they are invested, the performance of hedge funds is highly dependent on manager skill. Furthermore, less regulatory oversight puts more burden on investors during the due diligence process.

A central issue in employing a hedge fund strategy is the number of managers to employ. Stephen Brown, William Goetzmann, and Roger Ibbotson analyzed the performance of off-shore hedge funds between 1989 and 1995. They found evidence that hedge funds provided positive risk-adjusted returns.⁷ Surprisingly, however, they found little evidence of differential manager skill.⁸ Furthermore, they

⁷ The authors went on to say that they are hesitant to say that hedge funds added value on average because they could not fully neutralize survivorship bias. Annual data was used in their calculations. The performance of funds that existed at the beginning of the year but did not make it through the year is not included.

⁸ In an unpublished paper, Vikas Aarwal and Narayan Naik of the London Business School found some evidence of hedge fund

found that about 20% of hedge funds went out of business each year.

The lack of differential skill among managers argues for diversification among several managers. If winners do not repeat, there is little incentive to take on the idiosyncratic risk involved with selecting just one or a handful of hedge funds. Investing in several funds minimizes the impact of a single manager blow-up.

Once managers are hired, oversight becomes critical. It is crucial to ensure that managers continue to operate in the strategy for which they were hired. Furthermore, it is important to ensure that managers are not taking undue risk through leverage or speculative financial instruments. Sufficient fund transparency and diligent, effective risk monitoring are necessary to adequately monitor hedge fund managers.

Investors can delegate the time intensive manager selection and oversight duties to a “fund-of-funds” manager. Using a fund of funds can also reduce the administrative headaches of investing in limited partnerships. Naturally, employing a fund of funds adds a layer of costs, on top of the high fees charged by the underlying hedge fund managers. Fund of funds usually charge a management fee ranging from 0.5% to 1.5% and some charge incentive fees. The additional costs of using a fund of funds manager may be worthwhile for smaller institutions or those just getting started with hedge funds.

CONCLUSION

Hedge funds warrant consideration for institutional investors; however, these strategies are not a “magic bullet.” To reap rewards from hedge fund investing, investors must accept new or additional risks. Most strategies should provide some protection relative to traditional managers during an equity market downturn, as most hedge fund managers are not as exposed to the equity markets. However, there are other considerations, such as leverage, that makes due diligence and rigorous oversight much more important than with traditional active managers.

From our standpoint, the most promising strategies are event driven strategies. They provide exposure to systematic risk factors that should be rewarded by the market. These risk factors are different than market risk, which means diversification benefits are available. Of

concern are the significant asset flows into the asset class, as additional capital chasing a limited number of deals may truncate future returns. Long/short strategies, particularly market neutral long/short strategies, also have some appeal as an alternative to traditional active management. For those that believe managers can add value through stock selection, these strategies represent an attractive substitute to traditional active strategies, as they can benefit from skillful stock selection on both long and short positions.

A persistent concern that we have is the high cost of hedge fund investing. After incentive fees are included, hedge funds charge substantially higher fees than traditional active managers. This establishes a high hurdle for outperformance going forward. Nonetheless, the historical performance data compiled by CSFB/Tremont suggests that hedge funds have performed remarkably well relative to equity markets on a risk-adjusted basis, net of fees.

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persistence, but determined it to be more attributable to losers continuing to be losers rather than winners continuing to be winners.