

IV Hedge Fund Investment Strategies

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Perhaps one reason why it is difficult to arrive at a definitive characterization of hedge funds is the wide variety of investment strategies they undertake. Hedge funds, as portrayed in most press reports, have been variously discussed as “gunslingers” and “swaggering buccaneers” who routinely test the resolve of authorities in various countries.¹ However, in truth, the managers of hedge funds employ a vast array of investment strategies with the goal of producing profits for themselves and their investors. Their strategies include trades aimed at taking a view about the macroeconomic policies of selected countries as well as seemingly arcane movements in the pricing of the cash and futures relationship for the 30-year U.S. treasury bond: hedge funds operate both as speculators as well as hedgers. Since hedge fund investment strategies are only limited by the constraints imposed in their own prospectuses, it should not be surprising that their strategies cover a myriad of markets and instruments.

Although several data vendors classify hedge funds into as many as 28 different categories,² for the purposes here two main types are discussed—funds using arbitrage-type strategies and funds attempting to profit from perceived discrepancies in macroeconomic policies, the so-called macro funds. An “all else” category that includes individual sectors and special strategies is discussed in general terms to convey the diversity in the mix of strategies. Some discussion of various categories of hedge funds is also presented in Section III, matching the data source used to analyze various features of hedge funds. It is worth stressing that most categorizations of hedge funds are done for the purpose of helping investors understand how the funds intend to make money. However, while hedge funds may mostly use a given strategy, undoubtedly there are variations on the theme, and hedge funds are apt to assure themselves some latitude in their prospectus as to the types of strategies they can undertake.

Thus, the characterizations below should not be taken too literally.

The types of instruments used by hedge funds to implement their strategies can be quite varied. As a general rule, however, the instruments can be divided into three types: (1) spot or cash instruments; (2) futures, forwards, and swaps; and (3) options and contingent claims. The payoffs and risks inherent in these instruments are slightly different and thus it will be useful to separate them. Table 4.1 provides a very broad characterization of the types of instruments hedge funds are permitted to use, given their prospectuses. Since these data are based on the instruments that hedge funds claim they might use, the table should not be interpreted as an indication of the frequency of their use. Furthermore, some of the hedge funds do not indicate the types of instruments they use in the data set.

Of the types of instruments hedge funds use, spot or cash market instruments are usually the simplest to understand. For the most part, a standard list of these instruments would be foreign exchange spot contracts, fixed-income, and equity securities without any special features. The management of the risks of cash market positions is relatively straightforward in that one needs only have historical and current information about price levels (and perhaps forecasts of future values). This is not to say, however, that the actual risk is negligible, just that calculating various measures of risk can be undertaken relatively easily. For instance a position in Russian GKO government bonds or the Hungarian forint may be straightforward to value, but the risk of loss may be quite high. Many hedge funds use only spot or cash instruments to effect their strategies. Some use mostly spot or cash instruments, occasionally combining them with futures, forwards, or options to reduce certain risks.

Futures, forwards, and swaps are all instruments that have similar payoffs to spot and cash instruments in that their values either increase or decrease more or less one-for-one with the values of the instruments underlying them—that is, they have linear payoff structures. Since these instruments mature in the future, there is often additional risk, termed

¹See Celarier (1994).

²The appendix to this section reproduces the classification and description of hedge funds provided by Hedge Fund Research, Inc.

Table 4.1. Proportion of Hedge Funds Using Various Instruments Ranked by Quintile of Asset Size¹*(In percent)*

Quintile	Number of Hedge Funds	Stocks	Bonds	Currency	Warrants	Options	Futures
First	161	81	68	30	42	68	39
Second	161	91	61	22	47	66	34
Third	161	90	47	22	43	72	28
Fourth	161	94	43	17	40	60	19
Fifth	161	86	41	22	36	60	27

Source: Calculated from the Mar/Hedge database.

¹Eleven hedge funds did not have complete information on their use of various instruments, and hence, they are excluded from the sample.

“basis risk” that their movements may not exactly move with the underlying spot or cash rate until close to maturity. Thus, controlling and monitoring risks in these instruments is slightly more difficult than for pure spot or cash instruments. Hedge funds are often large users of these instruments, particularly futures and forwards, as it allows them to take positions on the movement of the underlying spot or cash market without having to hold the instrument itself (until delivery). Most funds have no particular commercial interest in owning the underlying instrument, which can sometimes entail a commodity with special storage issues (such as oil or soybeans), and prefer to offset their positions prior to the maturity of the contract. Among the most commonly used instruments are currency forwards, fixed-income futures and swaps, and equity index products.

Options and other contingent claims are very different from both of the other two types of instruments because they have payoffs that are either zero or some positive amount, depending on the value of the underlying instrument. Because options provide the “option” but not the obligation to execute the contract, the payoff from options is called “convex” and is nonlinear. This difference has several implications, the most important of which is that managing the risk in a portfolio of options is much more complicated than managing the risk of a set of spot or forward positions. Another feature of options is that while buyers are typically required to make an upfront payment of the cost of the option, if the strike price of the option³ is substantially different from the current price then a given movement in the value

of the underlying instrument may lead to a larger change in the value of the option. This feature provides greater leverage, in the sense of a larger potential price move in the option than in the underlying instrument.

Strategies Used by Arbitrage-Type Hedge Funds

Analytics Behind the Strategies

Arbitrage is defined as the ability to profit from current price discrepancies in two instruments that will, at their expiry or maturity, have the same value, or a value that is different by a known (certain) amount at the time the arbitrage is initiated. The use of the term “arbitrage” has been slowly loosened to refer to various misalignments or “mispricings” of similar instruments or instruments that are thought to have similar characteristics or underlying driving factors. Despite the weakening of the original definition, generally, hedge funds that view themselves as using an arbitrage strategy utilize some type of analytical model that values various instruments and attempts to profit from the discrepancy between their “model” value and the actual market price. The key is that this type of strategy always involves two transactions: a purchase of the “undervalued” instrument and a sale of the “overvalued” instrument. An outright purchase of an undervalued equity security, for example, would not qualify as an “arbitrage.”

Many types of arbitrage strategies can be undertaken. An obvious one involves the simultaneous purchase and sale of two instruments that are expected at expiry or maturity to have the same value. Many hedge funds trade a cash instrument against its

³The strike price of an option is the price at which a call buyer contracts to buy the underlying instrument or the price at which the put buyer contracts to sell the underlying instrument.

futures counterpart—a classic case for arbitrage. The most popular in the United States is the U.S. treasury bond futures contract, in which self-declared, large participant hedge funds hold about 8 percent of the open interest.⁴ In this case, the object is to profit from a misalignment in the futures price of the cheapest-to-deliver bond, the one bond among those qualifying for delivery that would be cheapest for the seller of the futures contract to deliver,⁵ and the current market price of another bond that is expected to maintain a certain pricing relationship to the cash market price of the cheapest-to-deliver bond. Similar, but less complicated, relationships exist between, say, an index of equity securities and the futures contract price based on such an index. Similarly, the strategy may be initiated for relationships between a currency spot price and its associated futures contract price. For hedge funds deemed to be large futures market participants for reporting purposes, the most popular futures contracts are the five-year treasury note contract, where hedge funds account for about 10 percent of open interest, and the S&P 500 index contract, where hedge funds account for about 8 percent of open interest.

Another “arbitrage” strategy undertaken by hedge funds is a misalignment in prices of cash market fixed-income securities. For example, a hedge fund might have a model for the levels of yields representing a number of bonds with various maturities. This model of the “yield curve” at a given time may differ from the yields of some of the maturities indicating that certain bonds may be overpriced or underpriced relative to the model. The fund would buy those bonds it thought were underpriced relative to a correctly priced bond and sell those that were overpriced relative to another correctly priced bond to gain the differences between those prices and the prices that would be consistent with their model. In principle, the hedge fund would attempt to hedge any other risks associated with such a trade. For example, the fund would enter into other transactions to make sure a shift in the entire yield curve or some other possible alteration in the slope of the yield curve would not affect the outcome of the trade, thereby allowing it to profit purely from the observed price discrepancy.

Another arbitrage would be a mispricing because of the credit quality of two instruments. For exam-

ple, a corporate bond may have the same coupon and maturity as another, except that the second corporate entity has a different credit rating and the price does not appropriately reflect this credit risk difference. Perhaps the usual basis point differential between two such credit ratings is 30 basis points, but the current differential is 50 basis points (and the ratings are not expected to change). The “more expensive” bond, the one with the lower yield relative to the expected spread, would be sold and the “cheaper” bond would be purchased. These sorts of trades are routinely executed by hedge funds examining the differences in the creditworthiness of various U.S. corporate securities relative to the U.S. treasury bond yield spreads. Emerging market hedge funds (to be discussed below in detail) may attempt to arbitrage the difference between two sovereign bonds that have the same price but different credit ratings.

Combining aspects of the fixed-income market and the equity market is a strategy called convertible arbitrage. This strategy involves purchasing convertible securities, mostly fixed-income bonds that under certain circumstances can be converted to an equity security. A portion of the equity risk embedded in the bond is hedged by selling short the underlying equity. Sometimes the strategy will also involve an interest rate hedge to protect against general fluctuations in the yield curve. Thus, this trade would be designed to profit from the mispricing of the equity component of the convertible bond relative to traded equity.

Another variant that combines fixed-income securities and other securities is the mispricing of the options or other features imbedded in mortgage back securities. Often the complicated structures can be decomposed into various components that have counterparts in the market, permitting hedge funds to profit from deviations in the prices of the underlying components and the structured product. For example, the prepayment risk, the risk that the mortgage holder will prepay the mortgage prior to its maturity, in collateralized mortgage obligations may be mispriced relative to this risk embedded in other similar securities or in a portfolio of similar mortgages.

Within the equity market, a core position of purchased equities may be offset with a short equity index futures position or a put option on an equity index to mitigate the general market movements. In this case, the objective is to profit from the firm-specific characteristics of the chosen equities and to eliminate the risk of general marketwide movements. Similarly, some funds choose to buy the strong firms in an industry and sell the weaker firms, attempting to profit from the firm-specific differences within a given industry. These funds are often referred to as market-neutral funds.

⁴Open interest is a measure that accounts for the number of contracts initiated by futures market participants that are not offset by the end of a trading day, that is, the contracts are left “open.”

⁵The seller has the right to determine the maturity and coupon of the bond that gets delivered when the futures contract matures, assuming it meets the contract specifications. Typically, a number of different maturities and coupons meet such specifications.

The variety and complexity of various options contracts makes them fertile ground for arbitrage-oriented hedge funds. Since options valuation depends on a number of different variables, often in complicated ways, there are profit opportunities arising from better models of forecasting the underlying variables, most notably the volatility of the underlying instrument, as well as improved models for combining the underlying variables into prices. For instance, the implied volatility associated with different strike prices varies, usually with at-the-money options (those whose strike price is close to the current price of the underlying instrument) having lower implied volatility than other options with different strike prices. Analysis of the volatility relationship among strike prices may permit funds to see when specific options prices are out of line with their usual configuration.

Hedge funds also keep banks busy by arbitraging between their over-the-counter derivatives quotes. The situation may arise not just with plain-vanilla options but more complicated options. Hedge funds may compare the implied volatility in a structured product, for instance, a cap or floor structure with a barrier, or knock-out, option. A two-sided barrier option has a similar structure to a combined cap and floor but may have a different implied volatility, that is, a different price.

Strategy Determinants

Once a potential strategy looks promising, virtually all hedge funds examine whether the all-in return more than compensates for the degree of risk undertaken. Actually, many of the determinants of a viable strategy are not specific to hedge funds, but are common to many types of investors. The weighting of the determinants may differ, however, because of the compensation structures of hedge fund managers as discussed below. Three elements of this calculation are performed, with different types of hedge funds weighting their outcomes differently. The first is an examination of market risk, which usually includes some type of “stress test” to assess the downside risks of the proposed strategy. The second is an examination of the liquidity risk, that is, to see whether the hedge fund can enter and exit the markets for the instruments in a way that allows them to leave prices unaffected in normal times. Also important is whether they will be able to exit in a timely fashion during periods of market distress. The third is an examination of the timing and the cost of financing the position. If the expected duration of the trade is too long, making the cost of financing the position prohibitive, the strategy will not be undertaken.

Since hedge funds attempt to provide higher-than-normal returns to their investors and themselves, the

market risk component is, in all cases, of crucial importance. Many arbitrage-related hedge funds are explicitly attempting to profit from a particular type of market imperfection and thus try to minimize the other risks associated with the strategy. To do so, they must understand these risks and they typically have invested heavily in very sophisticated ways of measuring and monitoring risk. Many of the larger arbitrage funds perform very specific and extensive stress tests to observe what happens to their trades under various scenarios. In fact, one way of testing the models on which the strategies are based is to perform such experiments. For instance, the appropriate number of bonds to sell of one maturity against another maturity to take advantage of a yield curve misalignment may be calculated by moving the yield curve by 100 basis points in both directions or by assuming a particular slope change and then using the number of contracts associated with the scenario thought most likely. In essence this is part of a stress test and would be typical of any reasonably sophisticated risk management system. Some of the larger hedge funds have daily value-at-risk models that calculate the amount of money the fund could lose assuming a certain distribution of returns of the underlying instruments held by the fund and a prespecified probability of loss. So, for example, a hedge fund's VAR model calculates that the fund could lose “x” or more dollars over a one-day horizon, on 2.5 percent of the trading days (97.5 percent of the outcomes are losses less the “x”), assuming the underlying instruments follow a normal distribution.

Liquidity risk is also very important for arbitrage-type hedge funds. The ability to make money using arbitrage-type strategies means that both legs of the arbitrage trade need to be executed together—both at initiation and at termination of the trade. Thus, the liquidity of both markets needs to be such so as to enable the fund to get in and get out without disrupting the prices: a liquid market is essential. In fact, most arbitrage-type hedge funds use only very liquid markets: the U.S. Treasury and agency markets, the U.S. and other Group of Ten equity markets, and the major currency markets (mostly the deutsche mark and the Japanese yen). This is not to say that arbitrage hedge funds never enter smaller, less liquid markets but that the potential profits have to be large enough to offset the price impact of entering and exiting the market. These types of hedge funds are reluctant to enter into trades in which either side of a trade is in a market that could become illiquid during a period of stress.

Lastly, the timing and financing of trades can be of critical concern for some types of arbitrage hedge funds. For instance, suppose there appears to be a gap between the prices of an equity index futures contract for delivery nine months hence and the un-

derlying equity securities such that the strategy would involve selling short the equities and buying the index futures contract. Short selling U.S. equities is a trade that has a margin requirement of 50 percent (as established by Regulation T of the Federal Reserve Board) and buying the futures contract has an initial margin requirement of about 2.5 percent, depending on the contract. Holding the trade for nine months, the longest one would need to in order to assure a risk-free return in this example, means tying up one-half of the notional amount of the trade for that duration, in addition to the futures margin. This may be deemed too expensive as the opportunity cost of the capital for the short equity position may be quite high. Thus, the combination of the timing and the financing cost may mean that what initially look like profitable strategies are not.

Arbitrage hedge funds attempt to use the fact that they are using at least partially offsetting positions to obtain better financing arrangements. For instance, government dealers may be willing to finance a U.S. treasury bond position at a lower rate if taken against the 10-year bond futures contract than if the position was an outright position. Netting is commonly used as a means of lowering the cost of taking on positions as the lower risk on the netted position means that marked-to-market gains and losses will be commensurately lower. Along the same lines, hedge funds look for various instruments to profit from a given discrepancy between two markets, attempting to minimize the funding cost of the position by choosing the instrument with the lowest required margin.

Examples of Strategies

Yield curve misalignment. During January 1995, it became known that Orange County in California had incurred substantial losses associated with the purchase of some leveraged derivatives based on mortgage-backed security trades. The county was required to sell a large number of two-year U.S. treasury notes. At least one arbitrage-based hedge fund noted that this provided a classic arbitrage trade. They purchased two-year treasury notes while shorting one-year treasury bills and five-year treasury notes. Aside from making their investors a substantial profit with little risk, they viewed themselves as supplying liquidity in a period in which an aberration had forced markets out of alignment.

Equity-market-neutral investing. A classic equity market strategy is called the market-neutral portfolio. Essentially, these portfolios are constructed to eliminate the movement in equity indices, that is, general market movements. These strategies can take the form of number of purchased individual equities expected to outperform the equity market and a passive short equity index futures position or an

active short equity position. When an active short position is maintained, the strategy is often referred to as a long/short strategy, in which the simultaneously short position is maintained in stocks with poor value, earnings, or momentum characteristics. Portfolios can then be further fine-tuned to reduce both stock-specific or sector-specific exposure.

Equity derivative arbitrage. Another method of profiting from equities irrespective of the market's direction is to use derivative securities such as convertibles and equity warrants.⁶ For example, taking a positive view on a particular company can be expressed by buying the equity, the warrant, or the convertible. The latter two instruments provide an additional source of excess return, an element called "the derivative alpha," which is the value associated with the implicit leverage in the derivative instrument part of the security. Through these derivatives, which are both types of options, the investor "purchases" volatility in the equity. If the actual volatility experienced over the subsequent holding period is larger than the implied volatility embedded in the option's price at the time of purchase, there will be an additional return obtained from holding the equity derivative, over and above that obtained by holding the equity directly. This makes up part of the value of the derivative alpha. In addition, warrants and convertibles may appear cheap on a stock that is not borrowable (and thus has little downward pressure from short sales) or on a stock that is expensive because of other reasons.

Bond basis arbitrage. A very popular arbitrage is that between a specific U.S. treasury bond and the treasury bond futures contract traded on the Chicago Board of Trade. The futures contract specifies that a number of U.S. treasury bonds can be delivered by the seller of the futures contract to the buyer at maturity of the contract. The seller prefers to deliver the bond that is "cheapest" to purchase in the cash market. Calculating the relative cheapness of various bonds is fairly complicated (involving the "conversion factor" assigned to the bond for futures market delivery on a particular date and the overnight financing rate, or repo rate, for that specific bond), but there are a few determinants that are discretionary. Thus, when particular bonds become popular (or un-

⁶A convertible is a corporate bond or preferred equity issued by the company that allows the holder to exchange the bond for equity in a fixed ratio any time prior to maturity of the bond. Sometimes the numbers of shares to be exchanged for each bond are lowered over time to accommodate a generally rising stock price. A warrant is an option to buy the equity security at a fixed price prior to a specific expiration date. Warrants differ from regular options in that they are issued by the company and thus increase the number of shares outstanding when they are used. Often the warrants are attached to an issuance of equity and are not "separable," meaning that only current holders of equity can exercise them.

popular) because of unrelated events in the cash market, the normal relationship relative to the futures contract becomes distorted and arbitrageurs can buy or sell the bond, taking the opposite position in the futures contract, to make a profit. Rumors in the futures market on October 27, 1997 suggested that several large hedge funds bought futures and sold treasury bonds when prices of bonds responded to a “flight to quality” from the relatively large fall in equity prices on that day. That is, the cash bonds became “overpriced” relative to the futures prices as individuals flocked to buy U.S. treasury bonds and an arbitrage profit became available.

Italian tax-driven arbitrage. Until mid-1996, the Italian government imposed a 12.5 percent withholding tax on investors from countries lacking a reciprocal tax treaty with Italy. Since reclaiming the taxed amounts were considered so cumbersome, the spreads between Italian government bonds and the rate for lira interest rate swaps traded as though the 12.5 percent could not be reclaimed; this added about 100 basis points to a fixed rate government bond issue yielding 8 percent. This meant that government bond yields were driven above lira swap rates. By buying the fixed rate Italian government bonds, financing them in the lira repurchase market, and setting up a lira interest rate swap with offsetting payment streams, arbitrageurs were able to construct offsetting cash flows. The profits on the trade then stemmed from the ability of the arbitrageurs to obtain below-market rates on the repo transactions and then routinely file for the withholding tax rebate. Moreover, further gains were obtained when the spread between the Italian government bonds and the lira interest rate swaps converged as the withholding tax was eliminated.

Credit duration risk via an options convexity trade. This strategy compares foreign bonds with U.S. treasury bonds and uses options to take advantage of a differential movement in bond prices due to the market’s assessment of credit risk. For example, the trade may match a Mexican government bond (UMS) with a U.S. treasury bond having the same set of cash flows (or a set of cash flows with the same duration). While changes in the bonds’ prices will be the same for various interest rate changes (duration is matched), the UMS bond will respond more dramatically to perceived credit risk changes (the price is more sensitive to changes in volatility). The fund could implement this strategy by buying UMS option straddles⁷ and selling U.S. treasury

bond option straddles. A weighting of UMS straddles to U.S. treasury bond straddles would leverage the changes in a way that the larger movements (either up or down) in the UMS bonds would make the options even more valuable relative to the U.S. treasury bond straddles, which will lose money if prices move dramatically up or down. However, the position is immune to a change in the convexity of the bonds from an interest rate change due to the offsetting options positions and their matched durations.

Strategies Used by Macro Funds

The strategies of macro hedge funds differ from those of arbitrage funds in that they are typically based on models using information on economic fundamentals. The arbitrage funds, as their name implies, use arbitrage-based models of price determination to detect profitable differences in prices rather than attempt to ascertain whether the level of prices is appropriate to begin with. There are many different types of strategies employed by macro hedge funds but they are universally known for taking a “top down” global approach to their investments, whether they are in stock markets, fixed-income securities, foreign exchange markets, or physical commodities. One macro hedge fund manager described the investment approach of macro funds as being “based on an understanding of economic cycles across a large number of countries (with particular focus on the Group of Seven nations); an assessment of where we are in these cycles; and how financial markets are likely to behave at various points in those cycles.” More specifically, most macro funds purport to look for macroeconomic “imbalances” combined with changes in what might be termed “market psychology.” They attempt to discern the types of events that might start a large trend or movement. When investing in foreign markets, many believe that it is important to keep track of what the local financial and industrial firms are doing as there is a feeling that when a trend is likely to change, the market psychology of the locals plays an important role in furthering the “new trend.” The larger macro funds routinely send individuals to the countries to perform “on the ground” analysis.

In currency markets, the classic macro fund strategy is to examine countries that maintain a pegged exchange rate to the dollar but have little economic reason for using the dollar for the peg. Then there is an examination of the underlying macroeconomic fundamentals to see if they are consistent with an exchange rate valued at the peg. Some funds use rather detailed macroeconomic modeling techniques; others use less quantitative techniques, examining historical relationships among the various variables of interest.

⁷A straddle is a purchase of both a put and a call option at the same strike price giving the opportunity to profit from either an upward move or a downward move in the bonds’ price by the maturity date relative to a strike price. The price of the option reflects the expected volatility; in more volatile markets straddles will be relatively more expensive to purchase than in less volatile markets.

As a large part of their macroeconomic assessment, hedge funds examine the safety and soundness of the banking sector and its connections to other parts of the financial sector. Excess liquidity and credit growth within the banking sector are often cited by funds as leading indicators of subsequent banking problems. Extensive use of (and dependence on) unhedged foreign-currency-denominated debt of banks and other industrial groups is also a tip-off for hedge funds. Of course, a pattern of high and rapid appreciation of various assets is also used as a signal of a financial sector awaiting a downturn. These items all point to the difficulty a country would have if it were to implement a high interest rate defense of a currency or otherwise tried to tighten monetary policy.

Another aspect to the typical macro hedge fund's strategy is an analysis of political risk and the probability that their strategy may, or may not, be implemented or that after the positions are in place, the fund may be unable to withdraw from the markets. Political risk is also part and parcel of investing in the Group of Seven countries, as political events can change the prospects of some types of trades quite substantially. For example, the country composition of the European Monetary Union is related to the behavior of various markets, perhaps with profound consequences for hedge funds. Of course, political risk continues to be a large part of sovereign risk analysis and many macro hedge funds who enter into sovereign bond markets do extensive analysis of the sovereign risk underlying these trades. The global setting in which the macro policies of various countries are decided is also of critical importance to assessing the likelihood of various macroeconomic developments that, in turn, affect the positions of hedge funds. The recent increase in global liquidity (the large number of countries pursuing relatively loose monetary policies) is thought, for instance, to be driving a number of developments in both developed and developing financial markets.

Strategy Determinants

Once a strategy looks appealing, the next step is to determine how the trade will be undertaken and the amount of leverage to be associated with it. Moreover, these two aspects of implementation are highly dependent and are critical for the returns eventually reaped by hedge funds. The decision is no different than the one an arbitrage-based fund makes except that leverage (which is synonymous with the method of financing the position) is of greater importance. Since macro hedge funds are less likely to use offsetting positions, as arbitrage funds do, they typically have positions with higher risk and the costs of financing the position will be commensurately higher.

Risk management by a large macro fund is often done on an integrated basis so that positions taken in one market can be related, through a correlation analysis, to those in other markets. Some funds perform four or five scenarios for each trading idea to explore what may happen when the assumptions underlying the trade are altered. As the technology for assessing large amounts of data improves, stress tests are becoming a common diagnostic technique. Further, there are often limits on the types of trades and the market exposures that can be taken by various traders within the fund based on a number of criteria, including the recent track record of the trader, the risk the trade would entail relative to the rest of the portfolio, and the liquidity in the market in which the trade is to be executed. It is important to remember that even the largest hedge funds have a limited number of strategies being implemented at any one time and risk management is, in most cases, much simpler than for a large money center bank. One of the largest macro hedge funds is still able to produce a report at the end of each day with a profit and loss statement and position report that fits on one letter-sized page.

After determining that the strategy fits within the portfolio of strategies and its risk characteristics are acceptable, the fund must determine the instrument. This decision is twofold: both the financing characteristics (leverage) must be meshed with the liquidity concerns. For large hedge funds, the liquidity of the instrument is often a constraint. Since they are frequently taking outright bets on the directions of various markets and are expecting to generate higher than normal returns from doing so, they need to lever themselves. This makes the established positions larger and can disturb markets when they are either initiating or terminating a trade. The "market impact cost" needs to be factored in when the trade is initiated and more often than not means that plain-vanilla or "primary" instruments are likely to be the least costly. Thus, large macro funds use spot or cash, forwards, futures, and swaps. Occasionally, they use plain-vanilla options and seldom use complex derivatives. Usually a macro hedge fund is sophisticated enough to piece together its own complex derivative if that kind of payout is desired. Forward and futures markets have leverage characteristics that are typically more appealing than spot transactions, whereby only a small proportion of the face value of the trade needs to be put up in advance.

In general, the leverage characteristics (margin requirements) of the instruments are determined in conjunction with the riskiness of the instrument and the riskiness of the hedge fund, as perceived by its counterparties. Thus, although leverage is higher for certain basic instruments—forwards greater than spot, for instance—the amount of leverage that can

be obtained is generally lower for positions that entail higher risk. In some cases, the expected movement in the price of an instrument that would be necessary for a macro hedge fund to profit is not large enough relative to the costs of initiating the position to make it worthwhile. For instance, several hedge funds anticipated a fall in the Korean won but found that the costs of taking a position of a size that warranted the expected gains were too large to make the trade feasible.

Examples of Strategies

The examples below attempt to show how hedge funds use various instruments. Some of the examples could be correctly classified as arbitrage-related trades since some of the risk is transferred. However, since it is mostly macro hedge funds executing these trades they are included here. To the extent that hedge funds execute strategies in cash or spot markets, the outright purchase or sale of securities is relatively simple and is not discussed as a separate category, even though establishing short positions in some cash markets can be difficult.

Short currency strategy. A very typical strategy used by macro hedge fund is to sell a currency forward when the hedge fund expects it to depreciate. Since the forward market is an over-the-counter, interbank market, the hedge fund normally executes its sale through a bank or foreign exchange dealer. However, hedge funds could, in principle, find corporate counterparties (or even central bank counterparties), thereby bypassing the bank intermediary.⁸ A bank will normally establish a credit line with the hedge fund, meaning that the bank will be willing to execute forward trades (and other instruments) of a certain size based on a credit assessment of the hedge fund. Typically, the hedge fund must post a certain amount of collateral with the bank, 5 percent is an often-quoted number, to initiate the position. While forward contracts usually do not require payment until maturity, most banks dealing with hedge funds (and other financial counterparties) require two-way collateral agreements in which a daily mark-to-market assessment of the position is done and any losses owed by the hedge fund are paid by a set time to the bank intermediary. The two-way collateral agreement also means that when the bank is on the losing side of the transaction it makes payments to the hedge fund. These strategies typically use forwards with horizons that fit those of the

hedge fund's assessment of the likelihood for a depreciation. However, sometimes hedge funds use shorter-dated contracts and roll them over if the expected movement has not occurred by the time they expire. At an extreme, in five major currencies, there is a rolling spot contract traded at the Chicago Mercantile Exchange that permits a spot transaction to be rolled every day without making or taking delivery of the underlying currency.

In the Thai baht, hedge funds presumably acted through a number of counterparties to establish their short baht positions. Some hedge funds established positions early in 1997 and probably rolled them over prior to the actual decline in July. Others established their positions somewhat later and could execute trades in liquid one-month or three-month contracts without needing to roll them.

Put options strategies. Another way in which to express an opinion that a currency is likely to depreciate is to buy put options. A put option provides the buyer the right, but not the obligation, to sell at a particular price (the strike price) during the period leading up to expiration of the option. To obtain this right to sell, the option buyer must pay the seller a premium, the option's price, which reflects the probability that the currency will depreciate below the strike price (in dollars per foreign currency terms). The assessment of the probability that the option is valuable when it expires is determined mostly by the volatility of the currency's movements and the length of time to maturity. If the currency has been tightly managed and most participants expect it to remain within a narrow trading range, the volatility embedded in the price of the option will be low and consequently the option will be relatively cheap. Apparently, such was the case for options written on the Thai baht. A number of large banks allegedly sold put options on the baht to hedge funds. The hedge funds purchased the options as part of the overall strategy of shorting the baht. Put options had the advantage that implied volatility was abnormally low, making them cheap, although they had the disadvantage that the premium had to be paid up front. There are some variants to the strategy, however, such as selling puts at strike prices that are cheaper than the purchased put (further out-of-the-money). This limits the profits as the currency depreciates but also lowers the cost of the original put option.

Sovereign bond purchase. A hedge fund may decide that holding Brazilian government debt is advantageous based on an assessment of its economic fundamentals. The fund may decide that a Brady bond purchase is the best way to take advantage of such a decision. These Brady bonds may be purchased outright from a counterparty investment bank or the hedge fund may decide it does not want the risk of an interest rate move in the United States that

⁸There have been unsubstantiated rumors that in some South-east Asian countries, where local banks were inhibited from executing forward contracts, domestic corporates and central banks were willing to take the other side of forward contracts. It is unclear whether hedge funds or foreign banks were the counterparties for these transactions.

would affect the price of the bonds, in which case the fund would short U.S. treasury bonds or notes of a similar duration against the Brady bonds. The short position could be maintained by borrowing the U.S. treasury bonds or notes by means of a reverse repurchase agreement. Alternatively, the hedge fund could simply take a short position in the U.S. Treasury futures contract with approximately the same maturity date and then tailor the number of futures contracts sold to obtain the correct duration or convexity characteristics to match the Brady bond. In this case, the hedge fund has obtained the credit risk to Brazil it desired without an outright interest rate exposure.

Credit derivatives strategies. More recently, hedge funds have found it convenient to enter into a credit derivative known as a total rate of return (TROR) swap. A total rate of return swap is structured so that the buyer swaps the “total return” on the reference asset for a regular floating rate payment (in general, based on the London interbank offered rate (LIBOR)). For example, the buyer agrees to pay the total return on an emerging market Brady bond, consisting of all contractual payments as well as any appreciation in the market value of the bond; the seller agrees to pay the buyer LIBOR plus a spread and any depreciation in the value of the Brady bond. The TROR swap protects the buyer against a deterioration of credit quality, which can occur even without a default. A hedge fund may be either a buyer or a seller depending on the credit risk they would like to take on.

A more recently developed credit derivative is the credit spread option. This option provides a payout to the buyer when the spread on two underlying assets exceeds a predetermined level. The buyer pays a premium for such protection and the seller provides a payment based on the spread. Since the credit risk of many fixed-income securities is often measured as a spread over a comparable maturity “risk-free” security, this derivative product is highly sensitive to the market’s assessment of credit risk in these securities and is especially tailored to holders of emerging market debt and other high-yielding debt instruments.

Strategies Used by Emerging Market Hedge Funds

Some hedge fund experts believe that emerging market hedge funds are the fastest growing segment of the hedge fund industry. As one fund manager put it, “I see a new brochure every day regarding a new emerging market hedge fund.” These funds are described as focusing on either equity or debt markets of developing or emerging countries. They are classified by region as most focus on a geographic re-

gion, although their prospectuses may permit them to trade in a number of different areas.

Combination Macro Funds and Arbitrage Funds

Emerging market hedge funds execute strategies that depend on the economic fundamentals of various countries, but often have components that mitigate certain risks associated with these strategies. Many of these funds can be characterized as “value investors,” looking for underpriced equities or bonds and investing in these plain-vanilla instruments. Others take more sophisticated approaches attempting to profit from pricing discrepancies among a single country’s bonds or among the bonds of a number of countries with related economic characteristics. Since many of the markets are underdeveloped and illiquid, the size of transactions is relatively small.⁹ However, at the same time, the small and illiquid markets mean that inefficient pricing of various securities abound. Often the mispricing of bonds is due to a lack of understanding about how various repayment schedules or restructuring efforts operate. Sometimes a large supply of restructured bonds are held by commercial banks, pensioners, and public sector suppliers whose selling behavior may be governed by their own liquidity needs rather than an understanding of the bonds’ underlying value. Bets on the outcomes of various political events also cause differences of opinion and different valuations.

Special Considerations

Relative to the Group of Ten countries, emerging market hedge funds pay far more attention to credit risk. In many instances, the trades are executed to profit from differential opinions about the credit risk of the sovereign entity or local institution. Since the volatility of prices (and yields) is much higher in emerging markets, risk management and the timing of trades become even more critical. For instance, since 1993, market volatility has ranged from 9 percent to 25 percent for the Emerging Markets Bond Composite index, while volatility in the U.S. three–seven year treasury composite index ranged from 3 percent to 5 percent.

With perhaps the exception of the Brady bond market, liquidity considerations are often present. Sometimes the desired purchase of equity in an emerging market may be so large that it involves ac-

⁹That said, the emerging Brady market is considered quite liquid and there are a number of derivative securities written on Brady bonds suggesting that counterparties view their ability to price and deliver the underlying Brady bonds as unimpeded.

quiring a significant amount of the outstanding shares. In some countries this may trigger foreign holdings rules or other regulations designed to discourage foreign ownership. Also of concern to some countries is the rapid growth of money managed by these types of funds. While not as large as the more traditional macro funds, emerging market hedge funds are quickly obtaining capital.

Political risk also receives special attention for emerging market hedge funds relative to those operating in Group of Ten countries. Although, clearly, there is an element of political risk in all investing, the effects of political risk on returns in emerging markets is far more evident. Emerging market hedge fund managers, though, often attempt to utilize their expertise about a region or specific country to profit from their political risk assessments.

Other Types of Hedge Fund Strategies

While the main hedge fund categories have been outlined above, there are a number of niche funds that broaden the scope of activities pursued by hedge funds. These include a category loosely referred to as “event related” as well as three more traditional categories: value investing, short selling, and sector funds. Each will be discussed in turn below.

Event-Related Funds

Hedge funds specializing in event investing focus on securities of companies undergoing some major structural change—merger, acquisition, or reorganization. In some circles, these strategies are referred to as “risk arbitrage,” which is an oxymoron since, in principle, arbitrage is risk-free. Sometimes the fund is said to deal in “distressed” securities.

A typical example of event investing would begin by a hedge fund observing that a merger has been proposed between two entities. Often an announcement occurs after the potential acquirer files certain forms with various regulators or makes public its intention to purchase another entity. The hedge fund then examines the market prices of the shares and the theoretical spread available on the deal. Often the equity price of the acquirer drops, and the equity price of the firm to be acquired increases. Ultimately, the equity price will reflect both firms after the merger is complete. The fund estimates the time to complete the merger and the annualized return on the investment if undertaken and compares these to a “baseline” yield that could be obtained from other investments. The annualized return includes the purchase and sale of the equity of the two merging companies and the cost of executing the short position, any dividends gained or lost, and the commissions.

After calculating the return, the fund examines the probability that the deal will go through. Mergers require a shareholder vote and in many cases the further approval of the U.S. Justice Department and perhaps other regulators, such as bank regulators in the case of bank mergers. If the annualized return, taking into account the probability of completion, is greater than the baseline, the fund will execute the deal. Similar exercises are used to examine the securities of a firm undergoing a reorganization or other kinds of restructuring.

Value Investing

A strategy of value investing is little different from the typical mutual fund strategy of attempting to discern investments, mostly equity, that are undervalued relative to their potential. Hedge funds are probably more likely to use hedging methodologies designed to offset industry risk and reduce market volatility than their mutual fund counterparts. However, the basic strategy remains the same—comparing the market’s assessment of the value of a company with the hedge fund’s evaluation of the company’s real worth, also known as its intrinsic or private market value. This analysis involves both a quantitative and qualitative review of the company using such quantitative variables as the price/earnings ratio, price/cash flow ratio, balance sheet information, and cash flow estimates and such qualitative elements as the competitiveness of the industry, its ability to price its product, the management capabilities, relationship to its labor force, and the availability of capital. When a company appears undervalued in the market relative to the fund’s assessment by a margin that would imply a return acceptable to hedge fund investors, the fund buys the undervalued security. Depending on its view, the fund may hedge out the general market risk by selling an equity index futures contract or by other means.

Short-Selling Funds

The use of a short-selling strategy is the primary reason why the limited partnerships and offshore funds that receive investments from wealthy individuals obtained their title as “hedge” funds. Some funds continue to use this strategy realizing that it matters little, from an economic perspective, whether you buy stock first and sell it later or sell it first and buy it later. Strategies that involve short selling include matched trading (selling some stocks short, while buying other stocks of equivalent value), market-neutral strategies (see above), hedging, and short-only portfolios. Often leverage is added to the short sale, making the profit higher when the stock price falls, but also racking up larger

losses when the price rises. Interestingly, though, because of the mechanics of short sales on equity in the United States, a short-sale strategy on low or zero dividend stocks will outperform a long-only strategy in a market with moderate to high interest rates and symmetric increases and decreases in stock prices.

The mechanics of a short-sale strategy are as follows. Suppose an investor has an amount of capital to invest and decides to undertake a short-sale transaction. The investor sells short a stock at the current market price. The capital (the cash outlay that would otherwise be spent on the purchase of a long position) is invested in U.S. treasury securities with the same holding period as that expected for the short sale. The proceeds from the short sale are held as restricted credit by the brokerage firm holding the account. Interest, called a short-credit rebate, is paid on this amount. The amount of restricted credit is adjusted daily to reflect the change in the stock price. As the stock price declines, the restricted credit is released to become free cash, which earns a slightly higher interest rate than the restricted credit. If the stock price increases, the restricted credit must be increased, either through the sale of the investments (the treasury securities) or by borrowing through a margin loan at an assumed interest rate higher than that on the short credit rebate. The reason that a short strategy would outperform the long-only strategy on low or zero dividend stocks in an environment of moderate to high interest rates is due to the cushion provided by the interest on the collateral (the treasury securities) and the short rebate. These elements continue to provide a positive cash flow that exceeds that provided by the long stock position (since there is no dividend).

Of course, it is useful to recognize that losses on a short position are unlimited since stock prices can continue to rise without bound, while losses on a long position are limited as the stock price can only fall to zero, no further. Moreover, since the losses on the short position must be paid as they are incurred, a short seller may run out of capital even if over the long run the stock price declines. Thus, the timing of trades and the depth of the short sellers' pockets are important determinants of success.

Sector Funds

Categorizations of hedge funds, like mutual funds, often include subcategories for various industry groups or regions. The strategies undertaken in these funds are similar to the ones described above except that they apply only to the "sector" within which the fund agrees that it will trade. Some sectors may have characteristics that imply the strategies need to take a slightly different form; for instance, a swap taken by a fund specializing in commodities may involve a

commodity swap and not an interest rate swap, but the fundamentals of doing so are the same. Examples of sector funds are included in the appendix. They are divided into emerging market funds specializing in various geographic regions (Asia, Eastern Europe and the countries of the former Soviet Union, and Latin America) and funds specializing in different industries (energy, financial, health care/biotechnology, metals/mining, miscellaneous, real estate, and technology).

Appendix. Characteristics of Hedge Fund Strategies

This appendix provides the classification of hedge funds used by Hedge Fund Research (HFR). Other data providers and hedge fund consultants have their own classification schemes. HFR recently expanded their original classification of 15 "strategies" to 28 to accommodate recent developments in the hedge fund industry. In some cases, these classifications do indeed appear to be strategies; in others they appear to be a type a financial instrument or a geographic area for investment. The purpose in providing this information is to show that such classifications are relatively rough guides for investors, since the scope of activities of hedge funds is so large as to make generalizations about their strategies necessarily incomplete as well as the large breadth of hedge fund investment styles. The descriptions of the classifications are reproduced from Hedge Fund Research Inc. (1997).

Convertible Arbitrage involves purchasing a portfolio of convertible securities, generally convertible bonds, and hedging a portion of the equity risk by selling short the underlying common stock. Certain managers may also seek to hedge interest rate exposure under some circumstances. Most managers employ some degree of leverage, ranging from zero to 6:1. The equity hedge ratio may range from 30 to 100 percent. The average grade of bond in a typical portfolio is BB-, with individual ratings ranging from AA to CCC. However, as the default risk of the company is hedged by shorting the underlying common stock, the risk is considerably better than the unhedged bond's rating indicates.

Distressed Securities strategies invest in, and may sell short, the securities of companies where the security's price has been, or is expected to be, affected by a distressed situation. This may involve reorganizations, bankruptcies, distressed sales and other corporate restructurings. Depending on the manager's style, investments may be made in bank debt, corporate debt, trade claims, common stock, preferred stock and warrants. Strategies may be sub-categorized as "high-yield" or "orphan equities." Leverage may be used by some managers. Fund managers may run a market spread using S&P put options or put option spreads.

Emerging Markets funds invest in securities of companies, or the sovereign debt of developing or “emerging” countries. Investments are primarily long. “Emerging Markets” include countries in Latin America, Eastern Europe, the former Soviet Union, Africa and parts of Asia.

Emerging Markets: Asia involves investing in the emerging markets of Asia.

Emerging Markets: Eastern Europe/CIS funds concentrate their investment activities in the nations of Eastern Europe and the CIS (the former Soviet Union).

Emerging Markets: Global funds will shift their weightings among these regions according to market conditions and manager perspectives. In addition, some managers invest solely in individual regions.

Emerging Markets: Latin America is a strategy that entails investing throughout Central and South America.

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

Equity Market Neutral investing seeks to profit by exploiting pricing inefficiencies between related equity securities, neutralizing exposure to market risk by combining long and short positions. Typically, the strategy is based on quantitative models for selecting specific stocks with equal dollar amounts comprising the long and short sides of the portfolio. One example of this strategy is to build portfolios made up of long positions in the strongest companies in several industries and taking corresponding short positions in those showing signs of weakness. Another variation is investing long stocks and selling short index futures.

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

Event-Driven is also known as “corporate life cycle” investing. This involves investing in opportunities created by significant transactional events, such as spinoffs, mergers and acquisitions, bankruptcy reorganizations, recapital-

izations and share buybacks. The portfolio of some Event-Driven managers may shift in majority weighting between Merger Arbitrage and Distressed Securities, while others may take a broader scope. Instruments include both long and short common and preferred stocks, as well as debt securities and options. Leverage may be used by some managers. Fund managers may hedge against market risk by purchasing S&P put options or put option spreads.

Fixed Income (Total) is a composite of the various Fixed Income Indices, namely Fixed Income: Arbitrage, Fixed Income: Convertible Bonds, Fixed Income: High Yield, Fixed Income: Miscellaneous and Fixed Income: Mortgage-Backed.

Fixed Income: Arbitrage is a market-neutral hedging strategy that seeks to profit by exploiting pricing inefficiencies between related fixed income securities while neutralizing exposure to interest rate risk. Fixed Income Arbitrage is a generic description of a variety of strategies involving investment in fixed income instruments, and weighted in an attempt to eliminate or reduce exposure to changes in the yield curve. Managers attempt to exploit relative mispricing between related sets of fixed income securities. The generic types of fixed income hedging trades include: yield-curve arbitrage; corporate versus Treasury yield spreads; and cash versus futures.

Fixed Income: Convertible Bond funds are primarily long only convertible bonds. Convertible bonds have both fixed income and equity characteristics. If the underlying common stock appreciates, the convertible bond’s value should rise to reflect this increased value. Downside protection is offered because if the underlying common stock declines, the convertible bond’s value can decline only to the point where it behaves like a straight bond.

Fixed Income: High-Yield managers invest in non-investment grade debt. Objectives may range from current income to acquisition of undervalued instruments. Emphasis is placed on assessing credit risk of the issuer. Some of the available high-yield instruments include extendible/reset securities, increasing-rate notes, pay-in-kind securities, split-coupon securities and usable bonds.

Fixed Income: Miscellaneous

Fixed Income Mortgage-Backed funds invest in mortgage-backed securities. Many funds focus solely on AAA-rated bonds. Instruments include: government agency, government-sponsored enterprise, private label fixed- or adjustable-rate mortgage pass-through securities, fixed- or adjustable-rate collateralized mortgage obligations (CMOs), real estate mortgage investment conduits (REMICS) and stripped mortgage-backed securities (SMBSSs). Funds may look to capitalize on security-specific mispricings. Hedging of prepayment risk and interest rate risk is common. Leverage may be used, as well as futures, short sales and options.

Macro involves investing by making leveraged bets on anticipated price movements of stock markets, interest rates, foreign exchange and physical commodities. Macro managers employ a “top-down” global approach, and may

invest in any markets using any instruments to participate in expected market movements. These movements may result from forecasted shifts in world economies, political fortunes or global supply and demand for resources, both physical and financial. Exchange-traded and over-the-counter derivatives are often used to magnify these price movements.

Market Timing involves allocating assets among investments by switching into investments that appear to be beginning an uptrend, and switching out of investments that appear to be starting a downtrend. This primarily consists of switching between mutual funds and money market funds. Typically, trend-following indicators are used to determine the direction of a fund and to identify buy and sell signals. In a up move "buy signal," money is transferred from a money market fund into a mutual funds in an attempt to capture a capital gain. In a down move "sell signal," the assets in the mutual fund are sold and moved back into the money market fund for safekeeping until the next up move. The goal is to avoid being invested in mutual funds during a market decline.

Merger Arbitrage, sometimes called Risk Arbitrage, involves investment in event-driven situations such as leverage buyouts, mergers, and hostile takeovers. Normally, the stock of an acquisition target appreciates while the acquiring company's stock decreases in value. These strategies generate returns by purchasing the stock of the company being acquired, and sometimes, selling short the stock of the acquiring company. Managers may employ the use of equity options as a low-risk alternative to the outright purchase or sale of common stock. Most Merger Arbitrage funds hedge against market risk by purchasing S&P put options or put options spreads.

Relative Value Arbitrage attempts to take advantage of relative pricing discrepancies between instruments including: equities, debt, options and futures. Managers may use mathematical, fundamental or technical analysis to determine misvaluations. Securities may be mispriced relative to the underlying security, related securities, groups of securities, or the overall market. Many funds use leverage and seek opportunities globally. Arbitrage strategies include dividend arbitrage, pairs trading, options arbitrage and yield curve trading.

Sector (Total) is a composite index of the Energy, Financial, Healthcare/Biotechnology, Metals/Mining, Miscellaneous, Real Estate and Technology sectors indices.

Sector: Energy is a strategy that focuses on investment within the energy arena. Investments can be long and short in various instruments with funds either diversified across the entire sector or specializing within a sub-sector, *i.e.*, oil field service.

Sector: Financial is a strategy that invests in securities of bank holding companies, banks, thrifts, insurance com-

panies, mortgage banks and various other financial services companies.

Sector: Healthcare/Biotechnology funds invest in companies involved in healthcare, pharmaceutical, biotechnology and medical device areas.

Sector: Metals/Mining funds invest in securities of companies primarily focused on mining, processing and dealing in precious metals and other commodities. Some funds may employ arbitrage strategies on a worldwide basis.

Sector Miscellaneous

Sector: Real Estate involves investing in securities of real estate investment trusts (REITs) and other real estate companies. Some funds may also invest directly in real property.

Sector: Technology funds emphasize investment in securities within the technology arena. Some of the sub-sectors include multimedia, networking, PC producers, retailers, semiconductors, software and telecommunications.

Short Selling involves the sale of security not owned by the seller; a technique used to take advantage of an anticipated price decline. To effect a short sale the seller borrows securities from a third party in order to make delivery to the purchaser. The seller returns the borrowed securities to the lender by purchasing the securities in the open market. If the seller can buy that stock back at a lower price, a profit results. If the price rises, however, a loss occurs. A short seller must generally pledge other securities or cash with the lender in an amount equal to the market price of the borrowed securities. This deposit may be increased or decreased in response to changes in the market price of the borrowed securities.

Fund of Funds invest with multiple managers through funds or managed accounts. The strategy designs a diversified portfolio of managers with the objective of significantly lowering the risk (volatility) of investing with an individual manager. The Fund of Funds manager has discretion in choosing which strategies to invest in for the portfolio. A manager may allocate funds to numerous managers within a single strategy, or with numerous managers in multiple strategies. The minimum investment in a Fund of Funds may be lower than an investment in an individual hedge fund or managed account.

References

- Celazier, Michelle, 1994, "How the Banks Caught Hedge Fund Fever," *Global Finance* (March), pp. 48–53.
- Hedge Fund Research, Inc., 1997, "Statistical Explanations and Definitions," *HFR Journal*, Vol. 4, No. 1, pp. 34–49.