

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF FINANCE

AN ANALYSIS OF THE HEDGE FUND INDUSTRY

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SPRING 2013

A thesis submitted in partial
fulfillment of the
requirements
for baccalaureate degrees
in Finance and Philosophy
with honors in Finance

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ABSTRACT

The hedge fund industry has thrived over the past century. Hedge funds are able to invest in unique ways and utilize various strategies as they attempt to provide investors with superior returns. The process of starting a hedge fund can be a daunting task and involves numerous legal, financial, administrative, and other relevant aspects. This analysis of the hedge fund industry details the process of creating a hedge fund from scratch step-by-step. Additionally, the various strategies that investment funds can choose to employ are outlined. Lastly, this study analyzes hedge funds returns and broader equity market returns in order to ascertain whether hedge funds are able to consistently provide market-outperforming returns.

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Chapter 1

Introduction

A cloud of mystery has surrounded the hedge fund industry for the better part of the past century. The words “hedge fund” often elicit the thoughts of complex financial transactions, shady back-room dealings, and immense riches to the average citizen. In this thesis, I will examine the hedge fund industry and shed some light on how the industry operates using a threepronged approach. First, I will provide a step-by-step manual on how to start a hedge fund and the various factors necessary in order to successfully operate in this ever-shifting economic landscape. Next, I will provide an overview of the hedge fund world by detailing several industry fundamentals and trends. These topics will include hedge fund strategies, shareholder activism, notable industry titans, and famous trades. In aggregate, this will help build a solid foundation of working knowledge for the financial industry. Next, I will examine previous studies done on hedge fund returns versus broader market returns and review the findings that previous researchers have reached. Lastly, I will analyze returns of the HFN aggregate index versus the S&P 500 Total Return index and explore how my findings compare with these past analyses.

A hedge fund is a private investment fund that has gained immensely in popularity since its creation dated back to sometime in the 1920s. The goal of a hedge fund is to provide returns to its investors through investments in various markets including equities, fixed income, currencies, options, and those for other financial instruments. Hedge funds generally index themselves in one of two ways: nominally and relatively. Nominal indexing compares the monetary value of the fund presently to a time in the past (say for example a year). Relative indexing compares the

nominal performance of the fund the nominal of another index to gauge where the fund's performance stands. Common benchmarking indexes are the S&P 500 index, the S&P 500 total return index, the hedge fund aggregate index, the NASDAQ, the DJIA, and a host of many more specialized indexes that can be useful to look at depending on the specific strategy that a hedge fund employs. A good example of nominal versus relative indexing is as follows: a hedge fund has returned 10% over the past year, while the S&P 500 has returned 20%. In this example nominal performance is positive and much higher than the risk-free rates that investors would receive from treasury bills (generally 2-3%). That being said, the fund returned 10% less than the market did, meaning that if an investor put his or her money into the broader market, they would have received a much higher return than by investing in the fund or in treasury bills. The other side of this example has rung true during times of crisis. For example, if the hedge fund returned 0% over the past year, but the S&P 500 returned -10% due to a financial crisis, things would look different. Nominally the fund has provided no return, the same thing one would accomplish by "putting your money under your mattress", and a return lower than the Treasury bill rate. However, the broader market returned -10%, meaning that an investor would have lost money by investing in the market index and would have achieved a return much lower than if they had invested in the hedge fund, not invested at all, or had invested at the risk-free rate. Indexing is clearly an important aspect in assessing hedge fund returns.

While there are many resources available that allow one to learn more about the hedge fund industry, I found that there were not many resources available that detailed the process of how to create a hedge fund, providing simple, step-by-step guidance, and also include information about some of the intricacies that many funds overlook. A very large portion of hedge funds fails within the first few years of inception. While returns often serve as a critical factor for many of these failures, by paying strong attention to detail and efficiency, many funds can avoid some of the other pitfalls that lead to the demise of new funds. I will create a section on how to create a

hedge fund that will be easy to follow and serve as an aggregate for the useful information available from numerous sources, but has not been put together in a clear and efficient manner.

Next, I will look into the topic of hedge fund strategies. In order to achieve positive returns, hedge funds can employ a whole host of strategies. While some funds decide to allocate portions of their money into several different strategies, most funds often choose to focus on one strategy where the fund managers believe that have an expertise, and thus an edge. I will define the different strategies that funds utilize including Long/Short, Event-Driven, Merger Arbitrage, Macro, and Special Situations. Included in this will be a brief overview of the financial asset classes that can be invested in. Hedge funds often choose to focus not just on a singular strategy, but also on a singular asset class in order to develop a strong, specialized knowledge base of the particular space of choice.

Lastly, I will review several studies done on hedge fund returns in comparison to broader market returns and then conduct my own study. There have been numerous studies that have yielded valuable information. Hedge fund returns as well as mutual fund returns have been found in the past to yield returns much lower than expected. These studies have also shown many interesting findings including the prevalence of survivorship bias that often skews hedge fund returns. After reviewing these studies, I will analyze returns from the HFN index versus returns from the S&P 500 Total Returns index. Ultimately, this thesis will serve as a valuable tool for those interested in the hedge fund and will provide insight into the question of hedge fund returns.

Chapter 2

Hedge Fund How-To

In this section, I will detail the process of how to start a hedge fund and the intricacies in ensuring that your hedge fund is operating correctly. There are many initial considerations to think about when first attempting to start a hedge fund. First and foremost, a goal and purpose for starting the hedge fund are necessary. As a sub-consideration of this goal, one needs to think about the type of strategy that they want to employ as well as the type of risk that they will take on in order to employ the strategy. A hedge fund requires investors in order to provide the capital that the fund will utilize and investors are heavily concerned about the risk profile of their investments. Just as investors are concerned about the strategy that the hedge fund employs, the hedge fund should have a good idea of the investors that it hopes to entice. Generally hedge fund investors are divided between friends and family of fund employees and institutional investors and pension funds that are hoping to lock-in market-beating returns.

Legal Set-Up

Once the general goal and vision for the hedge fund have been formed, the first step necessary to create a hedge fund is to contact a lawyer and have the framework of the fund set-up so that the hedge fund can operate as a legal entity. The basic set up for a hedge fund is described as follows: Investors, known as limited partners, wire money to the hedge fund's bank account. The fund managers form a management company (LLC) that is responsible for managing the account. The management company then takes the funds in the bank account and transfers them into a brokerage account from which they can execute necessary trades and transactions. There are generally two types of funds that one can create during the legal set-up process, a 301(c)(1) fund and a 301(c)(7) fund. The major difference between the two is the maximum

number of investors that the two funds can have as well as the types of investors that typically invest. The section 301(c)(1) fund can have a maximum of 99 investors, while a 301(c)(7) fund can have a maximum of 499 investors. The 301(c)(1) fund is open to accredited investors and qualified clients, clients with a net worth of over \$1.5 million (dependent on the state of law), while the 301(c)(7) fund is open to qualified purchasers, people with a net worth of over \$5 million. The term accredited investor refers to a person with over \$1 million in net worth and who has had \$200,000 in income during the previous two years. The general rule of thumb is that hedge funds can have up to 35 non-accredited investors, while the remainder of the investors should be accredited investors.

In order for a hedge fund to function, it has various administrative fees it must payout. Hedge funds utilize a fee structure in order to keep them running efficiently and within legal boundaries. The most common fee structure that hedge funds employ is known as “2 and 20”. This stands for a two percent management fee and a twenty percent profit fee. Thus, an investor must pay two percent of assets invested in the fund annually and the fund will receive twenty percent of the profits it makes from its investments, distributing the remaining eighty percent to its investors. Fee structures can vary based on fund size, historical performance, and investment demand among other factors.

In addition to the fee structure, a hedge fund must layout its withdrawal policies for investors. Withdrawal and contribution periods dictate when and how often investors can remove money from or invest additional money into the fund. Firms can choose from annual, quarterly, at-will, and anything in between for its provisions, but these periods should line up with the goals and visions of the fund. A hedge fund employing a long-term strategy may need to lock-up invested capital for a prolonged period of time in order to successfully exercise its strategy.

Meanwhile, some funds may be flexible in the strategy that they employ and thus may be open up the withdrawal period for investors more frequently without compromising the success of its investments.

Aside from the structural process that goes into building the foundation of a fund, registration with state and the SEC is necessary in order for a hedge fund to operate legally. Hedge funds with less than \$25 million under management must register as an Investment Advisor within the state that the fund will operate out of. Those with \$25 million to \$30 million under management must register with either the SEC or the state and those with over \$30 million under management are required to register with the SEC. In order to have the ability to manage peoples' money and register as an Investment Advisor in the first place, those involved with the fund must be certified investment professionals. One can achieve this distinction by passing the Series 65 Exam provided by the Financial Industry Regulatory Authority (FINRA), which qualifies one to act as an Investment Advisor Representative in various states.

Necessary Services and Fund Infrastructure

After completing the legal set-up and registration of a hedge fund, the next step one must take is to look into the service providers who will provide that support system that keeps the hedge fund operating. Various services ensure that a hedge fund operates smoothly and that the portfolio managers are able to focus on their security selections. A lawyer is the first service provider necessary for a fund. In addition to the legal set-up steps described in the previous section, the lawyer will be responsible for drafting the offering memorandum and other paper work necessary during the capital raising process as well as providing legal advice whenever necessary. Other necessary service providers include an auditor, prime broker, and a

clearinghouse while a fund administrator and consultant (hired on an as-needed basis) can be very helpful, though not necessary.

An accountant provides an integral service to the hedge fund as they audit the financial books as well as prepare tax forms that need to be filed. Looking from a higher-level perspective, the accountant helps provide security and credibility to the hedge fund's reported performance for investors. This is significant because if investors cannot trust that the hedge fund's reports and performance are accurate, they are going to pull their money and invest it somewhere else. A prime broker and clearing house are essential to a hedge fund because without them the fund will not be able to execute its trades. Additionally, the prime broker serves as the custodian of the assets. The prime broker executes all of the funds transactions and then the clearinghouse processes these transactions before the cash settles.

A fund administrator focuses on putting together investor reports, tracking the profit and losses of the fund's transactions, calculating fees, and monitoring the Net Asset Value of the fund. Hiring a fund administrator is not necessary, as portfolio managers or other fund employees can perform all of their duties, but one may be recommended depending on the size of the fund. For example, larger funds with more complicated and diverse transactions and fee structures could use fund administrators more than smaller funds with more basic structures. Lastly, consultants can aid in any of the processes that the fund is completing and may want advice in. For example, outside management consultants can aid with the creation of marketing materials, pitch books, websites, and tear sheets during the capital raise portion of the hedge fund creation process. They can also provide guidance on operational activities and special situations that the fund encounters.

Outside of these business services, there are logistical and compliance related needs that all funds need consider. Office space, computers, software and IT support, compliance personnel, telephones, staff, and various other traditional business expenses can be incurred by hedge funds.

Many of these things are necessary in order to service investors and clients as well as to do the support work and research needed to generate investment ideas. These are very variable and dependent on the type, size, strategy, and scope of the fund being created. Many of these items add a form of legitimacy to an investment fund that provides an extra layer of security for potential investors who want to keep their money safe. Overall, this part of setting up a hedge fund ensures that the fund will be able to run efficiently internally.

Raising Capital

Raising capital is arguably the toughest part of getting your hedge fund up-and-running. Without money, the fund cannot execute its strategy or place any trades. In order to begin the capital raise process, the hedge fund must create marketing materials that they can utilize when appealing to potential clients. These marketing materials include tear sheets, pitch books, and other materials that highlight the fund's qualifications to invest the money of other people. People want to put their money into a known, proven entity. Thus, it is often times difficult for new funds just starting up to gain the capital necessary to operate. In order to raise money, hedge funds must operate in alignment with Regulation D.

Regulation D is structured to lessen the costs associated with a capital raise for smaller funds that would otherwise be unable to handle these costs. The regulation provides exemptions for smaller companies so that they can make equity offerings and have access to capital markets. There are three exemptions relevant under Regulation D. Rule 504 provides an exemption for the offering and sale of up to \$1,000,000 of securities over a 12-month period. Companies are able to use this exemption as long as they are not subject to the Exchange Act requirements. Additionally, the company (or hedge fund) must abide by Regulation D in the capital raise, meaning that the general public cannot be solicited or marketed to and the company must be

legally registered according to state guidelines. Rule 505 stipulates an exemption for the offering and sale of up to \$5 million of securities in a 12-month period. Securities may be sold to accredited investors, as defined by the wealth and income standards noted previously, and up to 35 other persons who do not meet these standards. Additionally, all people who purchase securities must do it for investment, not resale, and securities cannot be sold within a year of purchase. Rule 506 is the “safe harbor” rule. It states that if your company follows certain standards, it can raise an unlimited amount of capital. Similar to Rule 505, under Rule 506 a company can sell securities to accredited investors and up to 35 other persons. However, these 35 other persons must be sophisticated, meaning that they have sufficient business and financial knowledge to be capable of assessing the risks and rewards of making an investment. All information that the fund provides to accredited investors must be provided to non-accredited investors as well. Lastly, all of these rules are subject to antifraud laws as well as other securities laws. Under Regulation D a company can make either an equity offering, a sale of company ownership in order to raise capital, or a debt offering, a financial instrument with a maturity date and annual interest rate that basically serves as a loan to the company.

Before a hedge fund can start the capital raise process, it needs to gather and create the materials necessary to garner investors. These marketing materials (i.e. tear sheets, pitch books, etc.) are designed to showcase the competitive advantage that the hedge fund has and give investors a reason to invest. The first thing that investors look for is a strong track record. If you have not been able to generate positive, market-beating returns in the past, why would investors believe that you would be able to do so in the future? Those who have been able to earn strong returns in the past found most successful investment funds. This poses a potential problem for younger people and people who are starting hedge funds without a true track record. The second part of gaining investor attention is pedigree. Investors want to know that the people who are managing their money are the most educated people available. This means that a college degree

from a top world institution is generally a prerequisite. Advanced degrees either in academic fields or from business schools are helpful credentials as well.

Once the necessary marketing materials have been created, the next question that a fund must address is who. Who will the investors be? The two most common sources for starting capital are institutional investors as well as friends and family. Friends and family are easy to get in touch with and pitch yourself to. In addition, friends and family generally have a personal interest in your success and are thus more inclined to invest in your fund. Institutional investors on the other hand are more difficult to impress, but are constantly looking for sources of superior returns. If you can convince these investors that you can provide these returns, then capital will be easy to come by. The marketing materials that the fund creates are an integral part of impressing these types of investors. Lastly, the founders of the fund should be putting some of their own capital into the fund. Not only is one's own personal capital an obvious source of capital, but also by putting your own money into the fund you send a positive signal to both current and potential investors. This not only shows faith in your ability to generate the returns that you have enticed investors with, but it also ties your own well being to the fund and aligns yourself with your investors.

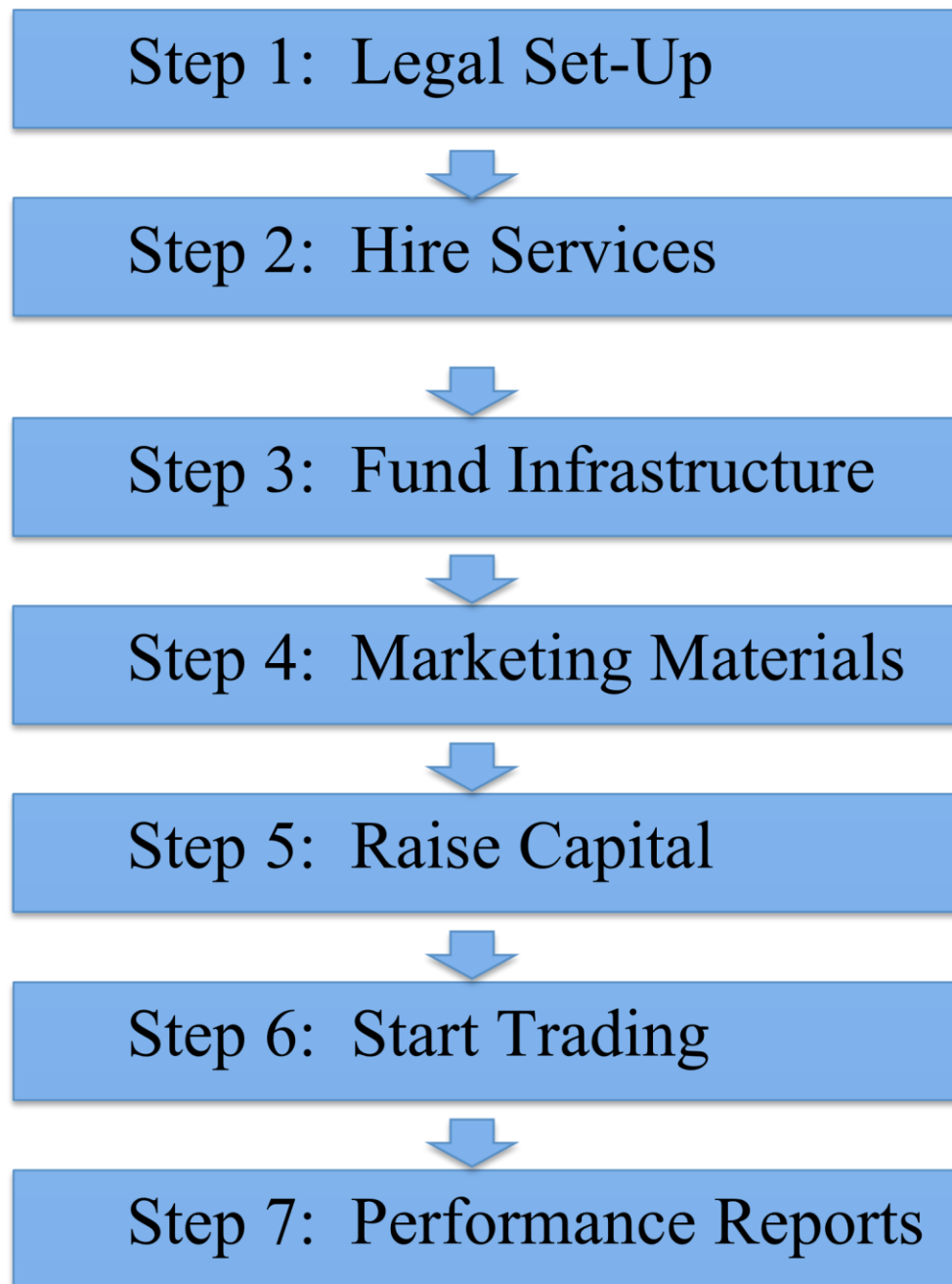
Raising capital can occur in many different stages and hedge funds can open themselves up to additional capital raises and funding rounds as it progresses. Investment funds generally have a base level of capital that is necessary to offset the fees that will be incurred as well as to execute the fund's strategy properly, but beyond that it is at the fund's discretion how much money they want to utilize.

Trading

Once the necessary steps to create the fund have been taken, the infrastructure has been set up, and capital has been raised, the fund can begin to trade. Trading platforms were outlined previously in this section, but in order to trade a hedge fund needs a few services. A broker and a clearinghouse, or custodian, are needed. The broker executes the transactions in the market and can lock in different prices for the financial instruments that are being transacted. The clearinghouse settles the inflows and outflows of cash and ensures that the fund is trading within its financial means.

Once the fund starts trading and executing its strategy it needs to keep its investors updated on its performance. Many larger funds release quarterly performance reports that detail fund performance and pertinent statistics. These statistics usually include beta, Sharpe ratio, alpha, portfolio yield, turnover, and relative numbers that compare performance to the chosen benchmark. Additionally, these reports include a letter to investors that details why the fund performed the way that it did, a market outlook, and how the fund is going to position itself given this outlook. These letters are often written by the portfolio managers and senior strategists that the fund employs. While there is not necessarily a standard on when investment manager's should release these types of reports, most funds release them annually and quarterly, while some choose to utilize monthly and weekly reports at their own discretion. When funds are just starting out and do not have much of a proven track record, investors will want to keep tabs on performance more frequently and may demand more reports.

Once these steps have been taken, the fund is ready to operate and regulate itself. It must make sure to keep up with necessary filings and always make sure that it operates with maximizing shareholder value as its first priority.



Types of Strategies

There are various strategies that hedge funds can employ in order to attempt to achieve positive returns in the financial markets. In this section I will define the different strategies that funds utilize including Long/Short, Event-Driven, Merger Arbitrage, Macro, and Special Situations. As discussed earlier, some funds known as Multi-Strategy funds choose to follow multiple strategies in order to generate returns, but the majority of funds choose to follow one specific strategy in hopes that they will develop a stronger expertise in that strategy. They believe that having a stronger expertise will allow them to gain an edge over other investors, which theoretically will lead to alpha generation.

Long/Short

Long/Short strategies are some of the most common strategies employed by investment managers around the world. Instead of relying purely on long positions in the financial instruments that the funds have conviction, long/short funds are able to make use of short positions, derivative products, and a certain amount of leverage in order to increase buying power and produce optimal returns. These funds operate by taking both long and short positions in financial instruments according to the strength of conviction in those instruments. These types of funds can be broken down depending on the type of markets they trade in. For example, there are Long/Short equity strategies which only focus on stocks as well as Long/Short debt funds which focus on taking positions in different types of debt (commercial paper, treasuries, municipal bonds, etc.). Funds can choose to get even more specialized based on sector (consumer, retail, industrials, energy, real estate, etc.) or time horizon (short-term, medium-term, long-term, etc.).

Event-Driven

Event-Driven funds follow a strategy of exploiting short-term mispricings in the market. This strategy focuses on recent events in the market and their effects on related financial instruments (whether it be equities, fixed income securities, or derivative securities). These events can be broad macroeconomic news, industry-specific news, or company-specific news. Restructurings are a relatively common source of news that can lead to security mispricing. The necessary ingredient for mispricing is change of some sort that affects the company. In addition to restructuring, this could be a shake-up in senior management, natural disasters, regulatory changes, etc. Given that these types of catalysts are needed for event-driven funds to execute their strategy, the recent financial crisis provided a whole host of opportunities for event-driven funds to thrive.

Merger Arbitrage

Merger arbitrage strategies focus on examining potential mergers and acquisitions activities in the market. When one company purchases another company, they pay a control premium over the market price in order to gain a controlling ownership of the company. This occurs because the purchaser needs to provide an incentive to public shareholders to sell the equity shares to them instead of just on the direct market. Control premiums are generally in the range of 20-30% over the current market price, but this is obviously dependent upon the particular situation. Merger arbitrage strategies are based on the probability that a proposed merger will go through and are often dependent upon models and industry expertise to assess these probabilities.

Global Macro

Macro hedge fund strategies focus on taking positions based on macroeconomic views. These views would include broad economic and political views on different countries and the policies that they are going to follow. Because the macro strategy is based on policy views, these funds invest in all of the financial instruments that can be affected by these macroeconomic views. This opens up investment to more or less any financial products including equities, fixed income, currencies, derivative products, and futures products. One of the positive things about macro based funds is that inherent in the strategy is indifference to market fluctuations because the funds take positions based on policies.

Special Situations

Special Situations strategies follow an interesting strategy. They focus on investing in securities based on a special situation as opposed to based on the underlying fundamentals of the security. Special situations thus span across the different financial products as well as across financial markets. Some special situations funds choose to focus only on one market in order to leverage an increased expertise in the area. For example some funds may only focus on special situations that occur in currency markets or some may focus only on Chinese reverse mergers. Rather than focusing on the fundamental valuation of the financial security, the special situations focus on more short-term shocks to stock valuation based on current events. Special situations strategies often focus on mergers and acquisitions, spin-offs and divestitures, distressed situations, and bankruptcy proceedings due to the quick changes in valuation that these segments often entail.

Commodities

Commodities funds follow a strategy that focuses on the various commodities that are traded on markets around the world. Some funds choose to specialize in one specific commodity, while others span across a scope of different commodities. There are numerous commodities that are traded on public markets including oil, natural gas, heating oil, wheat, corn, jet fuel, sugar, coffee beans, orange juice, live cattle, cocoa, and many others. Commodities funds are very specialized because their focus is very specific and the financial products that are relevant to commodities are generally limited to futures contracts and ETFs (though there are other select financial instruments available for investment).

Multi-Strategy

Multi-Strategy strategy funds are interesting because they follow multiple of the strategies laid out above simultaneously. Often these funds hire multiple portfolio managers who are each assigned to specialize in one strategy. By following multiple strategies, these funds are able to diversify away some of the market fluctuations that can affect certain strategies. For example a merger arbitrage fund generally performs better when the market is doing well and merger activity is high. Meanwhile, when the market is doing poorly and there are a lot of distressed situations a strategy that focuses on special situations and distressed products is going to fare well. Thus, a multi-strategy fund that houses both merger arbitrage and distressed product strategies will be able to diversify out some of the market fluctuations that could cause problems for funds that only follow a singular strategy.

Chapter 4

Previous Studies

Previous studies have looked into the returns provided by the hedge fund industry and whether these returns are greater than those provided by the broader market (S&P 500 or other hedge fund indices in most instances). Most studies take slightly different angles and explore topics such as whether hedge funds offer superior risk-adjusted returns, whether hedge funds add true value, and whether hedge funds are overall worthwhile investments. Past studies have been done on similar topics in regards to mutual fund performance compared to broader market performance and many have found that mutual funds do not typically offer better risk-adjusted returns than the market index. In this section, I am going to review a few past studies on hedge fund performance and discuss the findings so that I will have a solid basis of comparison for my own study.

Hedge Fund Performance 1990–2000 Do the ‘Money Machines’ Really Add Value?

In this study Guarav Amin and Harry Kat (2001) explore whether hedge funds are able to indeed offer returns higher than the several percentage points higher than tradition equity funds as boldly asserted by a KPMG Consulting study performed in 1998. They noted that several studies of this type have been performed in the past utilizing metrics such as Jensen’s Alpha, Sharpe Ratio, and asset class factor models and these studies found that hedge funds offered better riskreturn profiles than the broader equity market. Amin and Kat state that the problem with these past studies was that they made the assumption that hedge fund returns follow a normal

distribution. The issue with this assumption is that because hedge funds by nature follow nontraditional returns and thus offer a nontraditional (i.e. non-normal) distribution of returns. In order to conduct their analysis, the two decided to analyze hedge fund returns from a stand-alone perspective (meaning all money invested would be invested into the hedge funds) in order to assess hedge fund returns from purely, as well as from a portfolio perspective (meaning that money invested would be invested into hedge funds as well as equity) in order to assess whether portfolios that utilize hedge fund investments offer stronger returns than traditional equity portfolios.

Next, Amin and Kat review the theories behind Jensen's Alpha and the Sharpe Ratio as well as define the different types of strategies that hedge funds employ. When they delve into Jensen's Alpha and the Sharpe Ratio they demonstrate how in certain instances they can yield wrong conclusions when dealing with non-normal distributions. The hedge fund data that they utilize in order to assess hedge fund performance comes from the Zurich Capital Markets database and tracks the monthly returns of 77 funds over a ten-year period from 1990 to 2000. In order to assess hedge fund performance using a portfolio perspective, the authors constructed a payout distribution from these funds and portfolios using the lowest-cost Black Scholes assumptions. In order to assess hedge fund performance from a stand-alone perspective, the authors use an efficiency test in order to avoid some of the biases observed due to the non-normal distribution of hedge fund returns.

Amin and Kat came to conflicting conclusions based on the two separate perspectives. From a stand-alone investment perspective hedge funds offer lower efficiency than equity indices both in terms of actual hedge fund returns as well as from hedge fund index returns. However, many of the inefficiencies that are assumed by investing in individual hedge funds can be diversified away by investing using the portfolio perspective. Many of the funds seen as inefficient when invested in individually produce efficient results when invested in as a part of a

portfolio. The authors found that the optimal investment of a hedge fund in the portfolio was 1020%. The conclusion that they were able to derive from this was the hedge funds provided portfolios with efficient returns due to the weak link between hedge fund returns and the returns of asset classes, meaning that hedge funds introduced further diversification into portfolios. The question ultimately boils down whether investors should pay the high fees that hedge funds require of investors and that is the individual's choice.

Hedge Fund Performance

In this study Walter Géhin (2003) studies the performance measurements typically utilized on hedge funds and notes how the measurements that are often used on mutual funds are not applicable to hedge funds because of the atypical investments that hedge funds make use of. Because of the wide range of asset classes, leverage, lock-up structures, fees, strategies, and other variations that hedge funds can take on they offer a non-normal distribution of returns (a conclusion noted in the previous study as well). The aim of his paper is to examine different characteristics of hedge funds and biases how they affect performance measurement. Géhin notes that past studies have found conflicting reports in terms of whether hedge fund performance outpaces broader equity indices. The four biases that the study examines are survivorship bias, instant history bias, selection bias, and stale price bias. The three fund characteristics that this study explores are fund size, age, and performance fees.

The Sharpe Ratio, Treynor Ratio, Jensen's Alpha, and Sortino Ratio are typically used as performance measurements for hedge funds. The Sharpe Ratio calculates risk-adjusted returns by subtracting expected returns from actual returns and putting them over the standard deviation of returns to adjust out the risk utilized to achieve those returns. The Treynor Ratio calculates riskadjusted returns by subtracting expected returns from actual returns and putting them over the

Beta of the portfolio of investments. Jensen's Alpha calculates the excess returns achieved by a portfolio or fund by subtracting the risk-free rate from the return on the portfolio and comparing it to the Beta of the investments multiplied by the market risk-premium. The returns achieved that are greater than the Beta multiplied by the market risk-premium represent the Alpha of the portfolio as well as any Error or white noise. As already noted, the issues that arise with these three measurements are that hedge fund returns are hyperbolic and thus non-normal. The Sortino Ratio helps to correct for this issue by taking into account downside deviation instead of the standard deviation utilized in the Sharpe Ratio. However, this metric does not solve for the issue of higher moments of overestimation and underestimation of expected returns.

Sharpe Ratio:

$$Sp = \frac{E(Rp) - Rf}{\sigma(Rp)}$$

Treynor Ratio:

$$Tp = \frac{E(Rp) - Rf}{\beta p}$$

Jensen's Alpha:

$$R_{Pt} - R_{Ft} = \alpha_p + \beta_p (R_{Mt} - R_{Ft}) + \epsilon_{Pt}$$

Sortino Ratio:

$$\text{Sortino ratio} = \frac{E(R_p) - MAR}{\sqrt{\frac{1}{T} \sum_{\substack{t=0 \\ R_{P_t} < MAR}}^T (R_{P_t} - MAR)^2}}$$

Géhin concluded a few things when he finished his studies. First off, he found that hedge funds were able to realize short-term persistence for periods of up to six months. However, when this time horizon is expanded, persistency tends to decrease. Examining the persistence of hedge funds is important for hedge funds with lock-up periods because if the lock-up period is longer than the period where persistence is significant because it means that hedge fund may not be able to offer as consistent returns as expected. In regards to the hedge fund data that studies are able to utilize, Géhin found that the data often needs to be adjusted for biases in order to make the results more significant. While traditional performance metrics have their issues as outlined above, alternative performance metrics (such as Omega among others) have not provided enough data to be shown conclusively superior.

Offshore Hedge Funds: Survival and Performance 1989-1995

In this study Stephen Brown, William Goetzmann, and Roger Ibbotson (1997) study the performance of offshore hedge funds during the timer period between 1989 and 1995. They claim that the offshore hedge fund industry is home to high attrition rates and very little evidence of differentiating managerial skill. The authors note that hedge funds are though of a “bets” on the selection skill of the fund managers. The attrition rate of hedge funds is very high and very few hedge funds are able to survive more than three years. Most U.S. hedge funds have offshore investment vehicles set-up, which allow for foreign investors to avoid taxation. While the

offshore industry is a bit smaller than the U.S. hedge fund industry, it does contain most of the major funds out there and thus provides a very representative pool of the entire industry itself. The authors saw that offshore funds provided an average annual return of roughly 3% lower than the S&P benchmark during the same time period, but did so using much less risk, meaning that offshore hedge funds actually performed relatively well on a risk-adjusted basis. In order to gauge whether certain funds exhibit managerial skill much higher or lower than other hedge funds, the authors examine funds of funds, which allocate money to various hedge funds based on past track records among other things. They found no persistence in hedge fund performance based on returns meaning that very few managers were able to offer consistently superior returns over any extended period of time (i.e. very few fund managers have superior selection ability than the mean). Additionally, they found that very few funds exhibit evidence of past performance being indicative of future performance.

Brown, Goetzmann, and Ibbotson utilized annual return data from *The U.S. Offshore Funds Directory* in order to gauge hedge fund performance. Annual numbers were the only numbers that the authors were able to procure, but quarterly numbers may have served them better due to the incentive fee structure for many funds being quarterly. That being said, annual returns do allow for annual fees to be accounted for meaning that fee-adjusted returns can be observed as well. The authors noted that there was an attrition rate of about 20% per year, meaning that there is a survivorship bias that is prevalent in the annual returns listed because funds that are not providing superior returns die out so the average returns are skewed upwards. When reviewing fund performance, the authors noted that past studies have found persistence in the performance of mutual funds (this indicates varying levels of skill being shown by different money managers). However, they note that because hedge fund managers are pursuing asset mispricing as opposed to pure benchmark outperformance, it is much more difficult to view varying skill (identifiable persistence over any extended period of time) by hedge fund managers

(a conclusion that was reached in the previous study as well). The raw fund return data shows that there are patterns of successful funds for 2-3 year periods, but following that period gains are reversed. This means that over a longer horizon, most funds revert to the mean as well as the fact that funds are subject to “style effect”. Style effect refers to the idea that certain strategies outperform during certain time periods but then do not perform as well following those periods. For example a merger arbitrage fund may perform well during a financial boom period when merger activity is strong, but may fall off once merger activity cools down, meaning that opportunities would not be as fruitful during this period. The study additionally found that larger fund are no more likely to outperform than smaller funds, so fund size is not a good predictor of future returns. Ultimately the authors concluded that there was not much evidence of differing fund manager skill either on the basis of raw returns or on the basis of using a style-adjusted benchmark.

Hedge Funds: Risk and Return

In 2005 Burton Malkiel and Atanu Saha (2005) conducted a study on hedge fund returns due to the tremendous growth of hedge funds as an asset class during the 1990s. They utilized a comprehensive database of returns data and investigated the biases that affected the nonnormal returns that hedge funds provide. Malkiel and Saha used the TASS database of returns, which covers between one-third and one-half of the hedge funds that exist and includes data from all varieties of hedge funds (meaning that it is a good representation of the hedge fund universe). The pair mentions the backfill bias that is included in their data because fund managers often begin reporting their results at a later date after inception and often only if their results are favorable. Hedge funds prefer to report data that it would like potential investors to see. TASS notes when a hedge funds begins reporting data, so those viewing the data are able to examine the

backfilled returns and compare them with the returns that were directly reported to TASS. The use of backfilled returns tends to skew the returns data upwards.

Survivorship bias is another important bias that hedge fund returns indices include.

Databases generally only reflect data available on funds currently in existence and do not include returns of funds that are defunct. Additionally, some funds choose not to report returns when they are not seeking to attract new investors to the fund. Still, survivorship bias typically skews returns data to the upside. After running an analysis that compared returns of all funds to those of just the “live” funds, Malkiel estimated that the survivorship bias averaged 442 basis points. This was a sizably larger amount than previous studies had found.

Ultimately, Malkiel and Saha concluded that hedge fund returns after corrected for the biases addressed above are actually lower than generally thought. However, because they are generally not very correlated with broader equity indexes, hedge funds as an asset class provide great diversification to investment portfolios. However, there is significant risk in attempting to invest in a single hedge fund due to the risk of poor performance or even failure.

Chapter 5

Analysis

After reviewing past studies that analyzed hedge fund performance, I chose to analyze the performance of hedge funds myself. Previous studies yielded differing conclusions in regards to whether hedge funds offered superior returns to a traditional equity benchmark, although they did have many common factors. First off, it was clear that traditional performance metrics used to analyze mutual fund performance such as Sharpe Ratio, Treynor Ratio, and Jensen's Alpha are not useful in gauging hedge fund performance due to a non-normal distribution of returns. Mutual funds follow a normal distribution of returns, but due to the abnormal, often risky strategies that hedge funds employ, returns are often asymmetrical. This non-normal distribution of returns causes the previously stated performance metrics to yield misleading and skewed results, meaning that they are not very efficient. In order to properly gauge performance given the non-normal distribution, it is necessary for alternative performance metrics to be utilized (such as the Sortino Ratio as used in the *Hedge Fund Performance* study performed by Walter Géhin). Alternative performance metrics are useful in dealing with the statistical variances and weirdness for lack of a better word that the hedge fund industry provides. The other major finding that seemed to be generally agreed upon is that there was little persistence seen in hedge fund returns. This means that funds are not able to provide superior returns on a consistent basis for an extended period of time. This leads to the conclusion that there is very little differential manager skill meaning that very few hedge fund managers are able to provide superior financial selection ability.

HFN Index

The HFN Index is the flagship HFN index and is an equally weighted average of the hedge funds and managed future products that report to the HFN database. The HFN in general provides equally weighted averages of monthly hedge fund returns. U.S. and International investment managers directly report their returns data to the eVestment HFN database. The database collects data from hedge funds, funds-of-funds, and commodity/future managed account composites and then group them together based on their primary strategy. In order to be eligible to be a part of the HFN index, a hedge fund must manage a minimum of \$1 million and have at least two months of performance history.

HFN Index and Terminations

The HFN hedge fund index is the benchmark that I utilized in this study and is described above. However, one important aspect of the index that needs to be addressed is how it deals with hedge fund terminations. Many hedge fund studies have run into the issue of survivorship bias (as seen in the review of previous studies done on the subject in the previous section). When a hedge fund fails, it no longer has any returns to report. Thus, hedge funds that offer lower returns tend to die out, which skews the aggregate returns of a hedge fund index higher because the lower returns of poorly performing funds are no longer being accounted for.

While there are no clear statistics on the matter due to the private nature of hedge fund investments, it is generally stated that 10 – 20% of hedge funds fail every year. There are a ton of caveats to this number though. Instead of a “failure rate” hedge fund investors tend to utilize more of an “attrition rate” when examining composite indexes. This occurs because composite indexes receive the hedge fund return figures from hedge funds themselves, meaning that these returns are self-reported. Thus while survivorship bias can be the result of poor performance, we

can also see a drop-off in reporting by hedge funds who are performing very well. The reason for this is that hedge funds that are doing very well, they receive an influx of investors and reach capacity, meaning that they have no need to attract new investors. Because they do not need to attract new investors, these funds lose the incentive to report their returns because they do not receive and benefit from doing so.

Another aspect of hedge fund failures to note is that failures are often skewed based on the size of the hedge funds or investment fund. Smaller funds are much more likely to fail or underperform than larger funds. Intuitively, we can see that regardless of performance, fees are going to cut into the returns of smaller funds more than they would for larger funds. This immediately puts smaller funds at a disadvantage from the onset.

After taking these things into consideration, I am now going to examine how the HFN composite index specifically handles hedge fund terminations in its data. According to the eVestment website, "Once a fund's performance is incorporated into an HFN index it is not removed regardless of liquidation or discontinuation of reporting by the fund to the eVestment (HFN) database". As such, because the funds continue to be a part of the index even after their termination, they are recorded as 100% losses in the index instead of being replaced. This means that the HFN is not subject to as much survivorship bias as other hedge fund indexes meaning it may be slightly better representative of the industry as a whole. However, this does not mean that the index is without its flaws.

S&P 500 Total Return Index

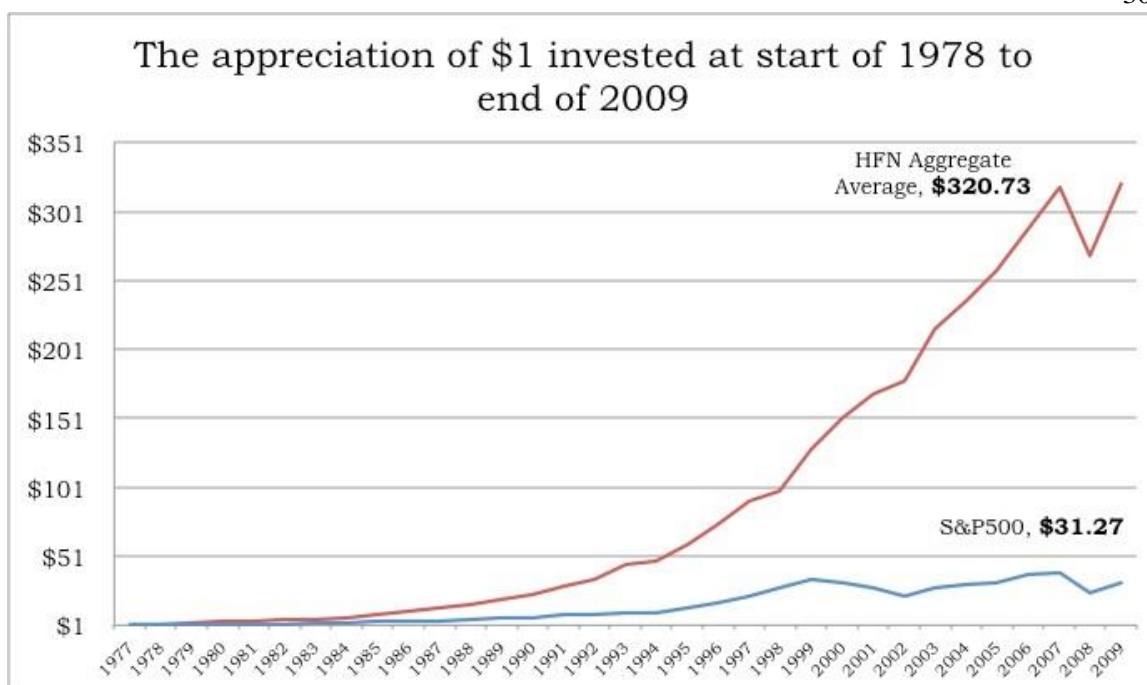
The S&P 500 Total Return Index is an index that contains the 500 companies that compose the S&P 500. The returns of the index mirror the S&P 500 index but assume that any cash paid out (dividends, cash payouts, etc.) are automatically reinvested back into the fund itself.

This gives us a better picture of how the index performed because it smoothens out the fact that some companies do not issue dividends and instead choose to reinvest their earnings into the company. We use this index because hedge funds reinvest the cash payouts of their investments and only release money from the fund when investors decide to withdraw their money (subject to relevant lock-up periods).

Analysis

In order to perform my analysis, I monthly data of the HFN Aggregate Average hedge fund index from 1978-2009. Using the monthly returns, I was able to calculate annual returns during this time period. I compared the total returns from the HFN Aggregate Average index to the returns of the S&P Total Return index in order to gauge annual underperformance and outperformance using a benchmark. My study made it clear that hedge fund returns did indeed outperform broader equity market returns. Given the returns shown in the data section of this study, \$1.00 invested at the start of 1978 would yield \$320.73 if invested in the HFN Aggregate Average index, but only \$31.27 if invested in the S&P 500 Total Return index.

Chart



Potential reasons why my study may conflict with other studies

While it should be noted that different studies have yielded different answers to the questions of whether hedge fund returns outpace the returns of broader equity indices (as seen in the previous studies section), there is a relatively considerable difference between my findings and the conclusions found in some other studies, most notably the study conducted by Malkiel. I think that there are a few different reasons why my results differed from these other studies. First off, all of the studies on hedge fund returns utilize data from different sources. Inherent in utilizing different data from different databases is going to be different conclusions purely from the fact that the data used is different. Specifically, Malkiel's study contains data from a very significant portion of the hedge fund community (one-third to one-half). On the other hand, because the HFN is self-reported, the data that the HFN aggregate index receives is not nearly as comprehensive.

Another reason for the disparity for the results of my study and some of the other studies could be the time horizon that the study took place during. Malkiel's study included hedge fund returns data from 1995 to 2003. My study included a much larger timeline and includes data from 1978 to 2009. While my study entails a longer time horizon, Malkiel's study includes more comprehensive data (as addressed in the previous paragraph). The data that I utilized between 1978 and 1995 shows that the HFN index heavily outperformed the S&P 500 Total Return index, which is one of the reasons that my conclusion about hedge fund returns are more inflated than in Malkiel's study. The hedge fund returns data during the early periods that hedge funds existed were very high. The growth of hedge funds as an asset class during the late 1900's and early 2000's led to the crowding out of investment opportunities due to heightened competition between hedge funds. This made it even more difficult for hedge funds to achieve returns that outpace the S&P 500 Total Return index or other comparable benchmark.

Lastly, I think that the biases that Malkiel discussed in his article are a factor in the difference between the conclusions that my data led to and the conclusions that other studies have reached in the past. Malkiel notes that survivorship bias skews the returns data that he utilizes in his study to the upside. However, the HFN data that I use in my analysis includes defunct hedge funds as well, meaning that there is less survivorship bias prevalent. Additionally, the backfill bias that Malkiel notes could skew his returns data upwards could also be prevalent in my data due to the way that hedge fund report returns (as noted in the previous studies section).

Ultimately, there are many reasons why the results of my study conflict with the results of other studies. While data, time horizons, and biases stand out as larger drivers of differences between my conclusions and other conclusions, it should be noted that no two studies are going to be the same. However, because my data and analysis was not nearly as comprehensive as other studies (due to the private nature of hedge fund returns and the expense of obtaining hedge fund

returns data from databases), specifically Malkiel's study, I believe that my results yield hedge fund returns that are skewed to the upside.

Potential issues with Analysis

I thought that the analysis that I ran was fruitful overall, but it did contain a few issues that may have led to results that were not as useful as they could be. First off, I would have liked to use more hedge fund indexes in order to gauge returns. While each index has its individual issues (biases, different ways of handling terminations, various sources of hedge fund return data, etc.) having a larger base of indices and data to analyze could have made my analysis more holistic and comprehensive. Although all of the various indices that could have been used all have separate issues, taken in aggregate, they should provide a whole picture about how hedge funds perform on average. In terms of the time horizon that I analyzed (1978 – 2009), I was comfortable with the length of time as it provided a good scope of economic events and illustrated a balanced picture of the economy.

Due to the private nature of hedge funds and the short life-span that a large portion of hedge funds, gathering data on hedge funds is difficult. Moreover, while there are various databases that aggregate hedge fund returns data (such as the HFN index that I utilized), most of these databases charge large sums of money in order to access this data. If possible, I would have like to gather more hedge fund return data when I ran my analysis.

My analysis provided a good view of the hedge fund industry but in order to be more comprehensive, I think it is necessary to take things more into perspective. The positive hedge fund return data needs to be adjusted downwards for survivorship bias as well as for the fact that more hedge fund returns data would likely have lowered the average returns seen in my study. I believe that the results of my study are valid but need to be taken with a grain of salt and viewed

in the scope of the returns that other studies have found. In conclusion, I would have liked to use more comprehensive in order to yield a more complete picture of the hedge fund industry landscape.

Chapter 6

Conclusion

The hedge fund industry has seen immense growth as an asset class during the past several decades. Hedge funds control significant sums of money and make up a large portion of the increasingly competitive hedge fund community. This thesis attempted to demystify the process of starting a hedge fund, provide background information on the hedge fund industry, and provide insight into hedge fund returns compared to broader equity market returns. Before my analysis, I read and summarized several previous studies on the industry and the profitability of hedge funds in order to ascertain where my conclusions stood compared to the results realized by these other studies.

In the first section, I was able to detail the process of starting a hedge fund. This process involves a lot of legal, capital raising, and administrative work before portfolio managers are able to start investing client money. I was successfully able to combine information from various sources in order to create a comprehensive guide that provides a step-by-step process about to approach this daunting task.

In the second section of this paper, I provided background on the hedge fund industry and the types of strategies that hedge funds can employ. In addition to investing in different asset classes, hedge funds can chose to specialize in different industries or in certain unique situations (i.e. special situations). The success of various strategies tends to fluctuate over time with market conditions and the returns of successful strategies can be crowded out over time. Hedge funds can choose to employ a wide range of strategies.

Next I reviewed four different studies on hedge funds and hedge funds returns versus broader market returns. While all of these studies reached slightly different conclusions, there were a few similarities prevalent in all of the studies. These include the significant rate of hedge fund attrition, the non-normal skew of hedge fund returns, and the issue of survivorship bias that is apparent in hedge fund return data.

I utilized hedge fund returns data from the HFN database and the S&P Total Return Index to measure equity market returns. During my analysis, I found that hedge fund returns did indeed exceed equity market returns. However, it must be noted that these results conflicted with some of the previous studies for a few reasons. I think the biggest issue that I ran into in my analysis was not utilizing hedge fund returns data from enough databases or indices in order to obtain more comprehensive results. Hedge fund returns are a very interesting topic. Based on the HFN returns data and the S&P Total Returns index from 1978 – 2009, hedge funds on average outperform broader equity indexes.

Appendix A

Data

Below I have included the data that I gathered in order to perform my analysis. I utilized hedge fund return data from the HFN Aggregate Average index as well as S&P 500 Total Return data.

HFN and S&P 500 Annual Return Data between 1978 and 2009

Year	S&P500	HFN
1978	6.41	32.29%
1979	18.69	64.94%
1980	32.76	49.68%
1981	---5.33	12.95%
1982	21.22	23.40%
1983	23.13	19.30%
1984	5.96	19.04%
1985	32.24	36.28%
1986	19.06	19.60%
1987	5.69	25.59%
1988	16.64	18.99%
1989	32	22.73%

1990	---3.42	17.28%
1991	30.95	29.39%
1992	7.6	18.07%
1993	10.17	29.39%
1994	1.19	4.94%
1995	38.02	25.33%
1996	23.06	25.97%
1997	33.67	23.28%
1998	28.73	7.94%
1999	21.11	30.20%
2000	---9.11	17.52%
2001	---11.98	11.39%
2002	---22.27	5.74%

Year	S&P500	HFN
2003	28.72	21.19%
2004	10.82	9.51%
2005	4.79	8.98%
2006	15.74	11.99%
2007	5.46	10.53%
2008	---37.22	-15.74%
2009	27.11	19.44%

HFN Monthly Return Data between 1978 and 2009

HFN Aggregate		1978	1979	1980	1981	1982	1983
Jan		5.86%	---2.34%	11.58%	2.59%	---1.82%	4.95%
Feb		4.34%	5.63%	1.74%	4.10%	0.97%	---1.81%
Mar		15.29%	1.16%	---2.88%	4.87%	1.62%	1.28%
Apr		---13.53%	5.37%	4.26%	1.16%	3.06%	3.68%
May		10.35%	4.39%	4.78%	2.70%	---1.11%	11.93%
Jun		---1.47%	7.15%	5.36%	3.00%	1.11%	---3.24%
Jul		7.18%	---1.35%	3.33%	---0.01%	---0.70%	---3.55%
Aug		2.44%	2.01%	3.09%	---3.99%	5.82%	3.88%
Sep		6.60%	13.79%	1.81%	---7.18%	3.76%	---0.64%
Oct		11.36%	0.67%	3.50%	3.68%	5.34%	2.01%
Nov		---11.70%	7.89%	7.16%	4.26%	---0.11%	---2.50%
Dec		---3.99%	7.83%	---1.93%	---2.16%	3.64%	2.81%
YTD		32.29%	64.94%	49.68%	12.95%	23.40%	19.30%

HFN Aggregate		1984	1985	1986	1987	1988	1989
Jan		1.51%	5.67%	1.71%	8.81%	---1.08%	4.97%
Feb		---0.63%	4.62%	11.03%	3.79%	3.73%	---2.15%
Mar		---0.65%	---0.34%	4.64%	3.73%	0.91%	3.60%
Apr		---2.89%	---2.19%	---0.10%	4.93%	---0.61%	1.51%
May		0.81%	3.93%	---0.89%	---0.96%	3.12%	9.06%
Jun		---2.68%	---0.60%	0.23%	0.59%	9.72%	---0.07%
Jul		13.45%	8.60%	1.06%	3.67%	---2.24%	3.09%
Aug			---0.60%	4.31%	---0.14%		---2.04%
Sep							

Oct	---2.16%	---4.68%	---3.85%	---2.48%	0.90%	---	---0.86%
	5.06%	5.07%	1.21%	---8.61%	1.33%	---	---3.45%
	---0.32%				1.48%		
Nov	0.55%	6.66%	---1.01%	4.32%	1.27%	---	3.42%
Dec	6.66%	6.16%	0.42%	6.58%	0.51%		4.28%
YTD	19.04%	36.28%	19.60%	25.59%	18.99%		22.73%

HFN Aggregate						
	1990	1991	1992	1993	1994	1995
Jan	---0.08%	0.14%	0.34%	2.33%	1.06%	---0.18%
Feb	2.03%	3.03%	0.75%	2.67%	---0.76%	2.61%
Mar	3.70%	6.58%	0.79%	2.25%	---0.06%	4.24%
Apr	1.14%	1.18%	---0.23%	1.62%	---0.11%	2.52%
May	0.90%	1.29%	0.97%	2.80%	1.32%	1.90%
Jun	2.00%	0.62%	1.65%	2.57%	1.26%	1.78%
Jul	3.22%	0.85%	3.93%	2.63%	0.55%	1.84%
Aug	0.98%	1.01%	1.37%	2.36%	0.61%	2.28%
Sep	0.33%	2.86%	0.81%	1.28%	1.08%	1.43%
Oct	---0.14%	1.69%	1.41%	1.69%	0.32%	---0.31%
Nov	1.72%	---0.28%	3.15%	0.15%	---0.76%	2.02%
Dec	0.34%	7.40%	1.88%	3.74%	0.34%	2.75%
YTD	17.28%	29.39%	18.07%	29.39%	4.94%	25.33%

HFN Aggregate						
	1996	1997	1998	1999	2000	2001
Jan	3.13%	3.98%	---0.02%	1.60%	1.67%	3.03%
Feb	0.38%	1.99%	2.58%	0.54%	5.60%	---0.30%
Mar	1.99%	---0.44%	3.39%	2.50%	1.66%	0.53%
Apr						

May	4.03%	0.24%	0.69%	4.57%	---0.90%	1.23%
Jun	1.83%	2.89%	---0.84%	0.85%	---0.11%	1.85%
	1.14%	2.78%	---0.10%	3.72%	2.26%	0.74%
Jul	---1.22%	4.90%	---0.40%	0.61%	0.40%	---0.30%
Aug	2.10%	0.01%	---4.63%	0.34%	3.75%	0.57%
Sep	2.87%	3.80%	0.95%	0.35%	---0.23%	---1.42%
Oct	3.13%	---0.79%	1.36%	0.71%	---0.09%	2.12%
Nov	3.14%	0.23%	2.65%	4.82%	---0.70%	1.06%
Dec	0.92%	1.73%	2.29%	6.31%	3.17%	1.83%
YTD	25.97%	23.28%	7.94%	30.20%	17.52%	11.39%

HFN Aggregate						
	2002	2003	2004	2005	2006	2007
Jan	0.79%	1.34%	1.94%	---0.27%	3.25%	1.14%
Feb	---0.37%	0.70%	1.67%	1.57%	0.33%	0.59%
Mar	1.80%	---0.13%	0.62%	---0.68%	1.93%	0.73%
Apr	0.63%	2.54%	---1.52%	---1.49%	1.92%	1.83%
May	0.77%	3.81%	---0.37%	1.00%	---1.46%	1.93%
Jun	---0.35%	1.24%	0.39%	1.53%	---0.35%	0.92%
Jul	---1.36%	1.06%	---0.76%	1.85%	---0.18%	0.27%
Aug	0.98%	1.82%	0.03%	0.88%	0.91%	---1.56%
Sep	---0.45%	1.34%	1.68%	1.84%	0.05%	2.66%
Oct	0.32%	2.44%	1.08%	---1.19%	1.67%	2.69%
Nov	1.86%	1.09%	2.97%	1.91%	1.82%	---1.70%
Dec	1.02%	2.17%	1.48%	1.78%	1.58%	0.68%
YTD	5.74%	21.19%	9.51%	8.98%	11.99%	10.53%

HFN Aggregate	
2008	2009

Jan	---2.60%	---0.08%
Feb	1.84%	---1.24%
Mar	---2.04%	1.49%
Apr	1.69%	3.52%
May	1.80%	5.14%
Jun	---1.02%	0.21%
Jul	---2.11%	2.47%
Aug	---1.09%	1.49%
Sep	---5.56%	2.71%
Oct	---6.01%	---0.35%
Nov	---2.03%	1.34%
Dec	0.50%	1.37%
YTD	---15.74%	19.44%

Bibliography

- Amin, Guarav S., and Harry M. Kat. "Hedge Fund Performance 1990-2000 Do the 'Money Machines' Really Add Value?" N.p., 6 Sept. 2001. Web.
 <<http://www.icmacentre.ac.uk/files/discussion-papers/DP2001-05.pdf>>.

Brown, Stephen J., William N. Goetzmann, and Roger G. Ibbotson. "'Offshore Hedge Funds:

Survival and Performance 1989-1995." N.p., Jan. 1997. Web.

<http://www.nber.org/papers/w5909.pdf?new_window=1>.

Easterling, Ed. "'Hedge Funds: Myths & Facts'" N.p., 10 Apr. 2007. Web.

<<http://www.crestmontresearch.com/docs/HF-Myths-Facts.pdf>>.

"Event Driven Strategy." *Definition*. N.p., n.d. Web.

<<http://www.investopedia.com/terms/e/eventdriven.asp>>.

Géhin, Walter. "Hedge Fund Performance." N.p., Aug. 2003. Web.

<<http://www.hedgefundprofler.com/Documents/28.pdf>>.

"Global Macro Strategy." *Definition*. N.p., n.d. Web.

<<http://www.investopedia.com/terms/g/globalmacro.asp>>.

"HFN Indices Methodology and Description." *EVestment.com*. N.p., n.d. Web.

<<https://www.evestment.com/resources/indices/hfn-indices-methodology-anddescription>>.

"Long/Short Fund." *Definition*. Investopedia, n.d. Web.

<<http://www.investopedia.com/terms/l/longshortfund.asp>>.

Malkiel, Burton G., and Atanu Saha. "'Hedge Funds: Risk and Return'" N.p., 2005. Web.

<<http://www.cfapubs.org/doi/pdf/10.2469/faj.v61.n6.2775>>.

Mallon, Bart. "How to Start a Hedge Fund in 2009." *Hedge Fund Law Blog*. N.p., 6 Feb. 2009.

Web. <<http://www.hedgefundlawblog.com/hedge-fund-start-up-presentation.html>>.

"Regulation D – Definition and Other Information." *Regulation D – Definition and Other*

Information. N.p., n.d. Web. <http://www.hedgefund-index.com/d_regd.asp>.

"Special Situation." *Definition*. N.p., n.d. Web.

<http://www.investopedia.com/terms/s/special_situation.asp>.

"Total Return Index." *Definition*. N.p., n.d. Web.

<http://www.investopedia.com/terms/t/total_return_index.asp>.

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Professional Experience

Investment Banking Analyst at Deutsche Bank AG, June 2012 – August 2012
Director of Portfolio Analytics of Nittany Lion Fund, LLC, January 2012 – December 2012
Financial Sector Fund Manager of Nittany Lion Fund, LLC, May 2011 – December 2011
Global Wealth Management Intern at Bank of America Merrill Lynch, June 2010 – August 2010
Intern at Phileo Securities, LLC, June 2009 – August 2009

Honors and Awards

Society of Distinguished Alumni Scholarship
Dean's List

Activities

Organization Liaison for Penn State Dance MaraTHON, September 2012 – February 2013
Independent Research for Dr. Randall Woolridge, July 2011 – September 2011
Marketing Captain for Greek Sing 2011, August 2011 – October 2011
Market Captain for Greek Week 2011, October 2010 – April 2011
Member of Alpha Tau Omega Fraternity, February 2010 – May 2013
Member of Sapphire Leadership Program, August 2009 – May 2013