A Comparison of Hedge Fund and Mutual Fund Performance

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1. Introduction

Since the foundation of the first hedge fund by Alfred W. Jones in 1949 (Caldwell, 1995), hedge funds have become a widely popular investment instruments for wealthy individuals and institutional investors. Over the last two decades, the number of hedge funds has grown from an estimated 610 hedge funds in 1990 to almost 10.000 at the end of 2007 (Hedge Fund Research Inc., 2008).

Consequently, Dichev and Yu (2011) find that assets under management of hedge funds have climbed from $38 billion in 1990 to a stunning $2.48 trillion in 2007. Stulz (2007) points out that hedge funds made increased headlines because of spectacular losses and spectacular gains. On September 16, 1992, also known as the *Black Wednesday* in Britain, George Soros' hedge fund short-sold over $10 billion in pounds during a time the United Kingdom was reluctant to either raise their interest rate to level other European countries or to float its currency. The UK government had to eventually give in since losses continued to rise and the British government was forced to withdraw the pound sterling from the European Exchange Rate Mechanism due to the fall of the sterling beneath its agreed lower limit. Soros, however, made $1 billion over night. Nowadays, and especially during the financial crisis of the late-2000s, hedge funds have often been highly criticized due to their looser oversight of activities and lenient disclosure requirements[1]. Furthermore, huge debt burdens hedge funds and investment banks could not financially keep up with anymore eventually led to an increasingly fragile economic situation.

Mutual funds, in contrast, have not been subject to such harsh criticism: their losses have not been as humongous as those of hedge funds due to tighter regulations that prevent mutual funds from taking extreme leverage or investing in derivatives (Daníelsson, Taylor, & Zigrand, 2005). Nonetheless, Adams, Mansi, and Nishikawa (2012) state that mutual funds are also not free from criticism and several mutual funds have been taken to court to justify their high fees. They are not as free to invest as hedge funds and cannot take as extreme risks. Nevertheless, both hedge funds and mutual funds have persisted to be well-established investment alternatives in recent years.

Which type of funds yield better performance is an ongoing debate. Hedge funds take on extreme risk and create crises in the financial system which arises the interrogation whether they deliver the returns to warrant these risks. The original purpose of hedge funds and mutual funds is capital

[1] http://www.marketswiki.com/mwiki/Dodd-Frank_Wall_Street_Reform_and_Consumer_Protection_Act

reservation[2]. Even though, as mentioned earlier, they seem to make spectacular profits, studies have shown that they often underperform relative to indices such as the S&P 500 or NASDAQ[3]. Nonetheless, they remain highly interesting investment tools for individuals and institutions. But which investment alternative consistently outperforms the other? For example, Babalos et. al (2012) argue that mutual funds perform well and offer investors unique advantages such as access to professional management with minimum initial capital and efficient risk diversification. However, according to Malkiel (1995) and Bogle (1992 & 1999), mutual funds historically underperform the market mainly due to extra expenses for investing into a mutual fund. Different investments instruments of mutual funds and hedge funds eventually lead to dissimilar returns. This study therefore aims to give an overview and finally compare hedge funds' and mutual funds' performances in terms of an academic literature review and tries to draw a conclusion about which investment opportunity is more lucrative for investors from a historical point of view.

In this bachelor thesis I investigate the performances of hedge funds and mutual funds and eventually compare their performances with each other.

To answer this research question, I will make a comparison between the performances of mutual funds and hedge funds. Two quantitative performance measurements will be used: the rate of return and Jensen's alpha. Data for mutual funds is collected from Vanguard Investment Group whereas the data for hedge funds is gathered from the Dow Jones Credit Suisse Hedge Fund Index (CSHFI). The comparative analysis is based on the annual rate of return during the time period of 2001 and 2011. Examining hedge fund and mutual fund data, I find evidence that hedge funds and mutual funds are highly correlated and that hedge funds outperform mutual funds. Furthermore, both hedge funds and mutual funds outperform the S&P 500.

The thesis is organized as follows. Section 1 of the thesis will be subdivided into 2 sub-sections in which a general overview of the most important characteristics of both mutual funds and hedge funds is given. Finally, a brief summary of differences of hedge funds and mutual funds will be presented. In Section 2, the performance of hedge funds and mutual funds is analyzed in terms of the above mentioned performance measurements and is finally being compared to each other. In Section 3, an empirical analysis is provided presenting the results of the research question. Finally, the bachelor thesis will be rounded up by a general conclusion to the problem statement.

[2] http://www.hedgeco.net/hedgeducation/new-to-hedge-funds.php

[3] http://www.hennesseegroup.com/indices/index.html

2. Mutual Funds and Hedge Funds

2.1. Mutual Funds

Recent trends in personal finance have focused on the popular issue of wealth allocation across asset classes and specific investments. Prather, Bertin, and Henker (2004) state that as a result, mutual fund investment companies have become an increasingly effective conduit for current income generation, capital appreciation, and the benefits derived through diversification. Mutual funds are investment vehicles made up of a pool of securities such as stocks, bonds, money market instruments and similar assets [4].

2.1.1 *Organizational structure*

Mutual funds are usually offered by various sponsors including banks, insurance companies, brokerage houses, and mutual fund complexes and follow diverse investment strategies (Chordia, 1996). Investors, however, can also purchase them directly without the need for an intermediary distribution channel. A mutual fund is usually managed by independent directors. Independent directors are investment adviser firms that seek to serve as outside manager of the fund's assets in exchange of a fee[5]. Inside management in which the fund itself hires employees to operate its funds and provide shareholder service is rare (Lounsbury, 2007). Mutual funds are operated by money managers who are responsible for executing transactions and conducting thorough research on stock market opportunities. Therefore, mutual funds can be seen as financial intermediaries between investors and the capital markets. Berkowitz and Kotowitz (2002) state that mutual fund itself has therefore no employees but all investor services will be provided by its contractual partners.

Over the past years, the number of mutual funds has increased from 55,523 in 2004 to 69,519 in 2010 (Investment Company Institute)[6]. According to the Investment Company Institute, however,

[4] Investopedia (http://www.investopedia.com/terms/m/mutualfund.asp)

[5] http://cyber.law.harvard.edu/rfi/papers/Role.PDF

[6] http://www.ici.org/research/stats/mmf/mm_05_10_12

the worldwide number of mutual funds has stagnated over the last years, having only increased by 2,171 from 2007 to 2010, with a decrease from 69,032 of 2008 to 67,552 in 2009.
The goal of a mutual fund is to make financial profit and income for the fund's investors.

2.1.2. *Strategies*

A fund follows a specific strategy focusing on certain asset classes. The most common mutual fund strategies are money market funds, bond funds, stock/equity funds, hybrid funds and index funds. Money market funds invest mostly in fixed income securities with a short
maturity time and high credit quality. These funds strive to maintain a $1 per share net asset value and therefore do not aim for any capital gain or losses. The source of income of these funds are their interest income on these fixed income securities. Bond funds invest in fixed income securities whereas stock/equity funds invest in common stocks. Both fund strategies can be sub-classified into domestic, international, and global funds. According to the investment website Investopedia [7], international funds invest only in foreign securities whereas global funds invest in both international and domestic securities. Hybrid funds are characterized by a portfolio consisting of bonds and common stocks. Index funds, also referred to as passively-managed funds, try to match the performance of stock indices such as the German DAX whereas actively-managed funds are seeking for superior results by outperforming the market.
It is important to mention that these different fund strategies do not mean that these funds invest solely in specific types of securities. For instance, equity funds do not exclusively invest in common stock. Equity funds are only considered to invest the greatest amount of their assets in common stock which does not detain the fund to allocate some parts of their assets in other securities.
Some investors might not feel comfortable with one or the other strategy and therefore decides to only invest in those funds whose strategy the investor feels most familiar with. Nevertheless, all strategies have been proven their merits and disappointments. Investors can inform themselves before investing into a mutual fund what the fund's prospectus is and which securities the fund is aiming to invest in.

[7] http://www.investopedia.com/terms/g/globalfund.asp#axzz1uaexlieY

2.1.3. *Classification*

Investors have the option to invest in four different types of mutual funds, namely open-end, closed-end, unit investment trust, and exchange traded funds (ETFs). Open-end funds are the most common funds and cover almost 50% of all mutual funds offered to the public (Investment Company Institute, 2012). The most important characteristic of an open-end fund is that investors can buy and sell their shares at the end of every business day at the net asset value (Barclay, Pearson, & Weisbach, 1998). By contrast, closed-end funds issue shares to the public only through initial public offerings (Peavy, 1990). Once an investor purchases shares of the mutual fund, he or she can only sell them to other investors in the market and not to the mutual fund itself. Therefore, Eckbo (2009) concludes that it is not uncommon that investors sell their stock at a premium or discount to the net asset value. Unit investment trusts have a portfolio that is not open for change. Shares are issued only once and investors can buy and sell shares directly to the fund or to other participants in the market. ETFs are traded on an exchange throughout the day like closed-ended funds and common stocks and investors usually receive a price that is close to the net asset value like with open-ended funds (Hughen & Mathew, 2009). ETFs are therefore a combination of both and can even be structured as unit investment trusts.

2.1.4. *Fees*

Mutual funds are not taxed on their income by governments as long as they comply with the rules of the Internal Revenue Code that was established in 1986. Furthermore, almost all mutual funds of bigger size offer offshore-mutual funds that are not subject to taxation with the result that these funds do not need to account for taxes no matter in what country they operate. However, running a mutual fund involves costs and these costs are passed along to investors. Investors of a mutual fund must cover the fund's expenses such as distribution charges, shareholder transaction fees, securities transaction fees, and other fund expenses. In addition, the management fee, the profit managers make, has to be covered as well. In general, there are mainly four types of mutual fund fees: expense ratios, management fees, 12b-1 fees and load fees. The expense ratio is the cost of running a mutual fund and represents the fund's assets that go purely toward the expense of running a fund. The expense ratio covers various fund fees such as the management fees, the

administrative costs, the 12b-1 distribution fees, and any other operating expenses incurred. The average expense ratio of actively-managed mutual funds is 1.25% [8] of the fund's assets. However, the expense ratio might be higher or lower depending on the size of the mutual fund.

The management fee, instead, is the money that is needed to pay the managers of the fund. These fees are paid from the fund's asset and usually amount to 0.5% or 1.0% annually.

Another fee that is also covered by the expense ratio is the 12b-1 fee. The 12b-1 distribution fee that mutual fund investors need to pay annually and are often as much as 1.0% of the fund's asset is used for advertisement, marketing or any other distribution services that help promoting the fund and to sell itself better. However, the 12b-1 fee is not charged by every mutual fund and many investors are reluctant to invest in a fund with these extra expenses that must be subtracted from their financial gains.

The last important fees for mutual fund investors is the load fee. The load fee is subdivided into front-end load and back-end load. A load is a sales charge or commission charged to an investor when buying or redeeming shares in a mutual fund. Front-end loads are fees that are charged when shares are purchased. The maximum of this fee is 9% under the Investment Company Act of 1940 with an average of 5% in reality. The front-end load usually goes directly to the broker who purchases the shares. Front-end loads therefore reduce the amount of the investment made. Back-end load, in contrast, is the fee that is charged when shares are sold. As front-end loads, back-end loads are paid to the broker who makes the deal. The amount of the fee can vary drastically depending on how long these shares have been held in the portfolio before. Therefore it can happen that back-end loads run towards the 0% if the shares that are sold have been held for a very long time.

Tufano and Sevick (1997) found evidence that funds whose independent directors are paid relatively higher director's fees approve higher shareholder fees.

2.1.5. *Regulation*

Mutual funds are highly regulated in contrast to hedge funds. They have to comply with certain rules and are monitored by the Securities and Exchange Commission. Mutual funds are subject to the investment company act (ICA) of 1940 whereas Hedge Funds are not. Jackson and Symons (1998) claim that the existing system for regulating mutual funds emerged in the aftermath of a

[8] http://mutualfunds.about.com/od/mutualfundglossary/g/expense_ratio.htm

rash of scandals in the 1930's. Tate (2000) finds that managers would often shift their strategies dramatically within a short time span, leaving investors with more risk exposure than they had anticipated. In addition, he claims that mutual funds adhered closely to any legitimate strategy at all: fraud and theft of investor assets were common during this time period.

The ICA of 1940 was created with the purpose to protect fund investors[9]. First, the act requires individual funds to comply with extensive disclosure requirements on an ongoing basis and imposes penalties for misrepresentation or material nondisclosure. This aims to create an efficient and information-rich market for mutual fund shares. Second, the 1940 Act imposes various portfolio rules designed to limit risk such as that shares of the fund have to be sold at a fixed price based on the fund's net asset value. Third, the Act imposes direct investment duties for fund advisers. Fourth and perhaps the most important feature of the 1940 Act as well as the main difference to hedge funds, mutual funds are inspected by two regulatory monitors, by names the NASD (National Association of Security Dealers) and SEC (Securities and Exchange Commission). The NASD reviews mutual fund advertisements to prevent misstatements or exaggerations of performance whereas the SEC has inspection and investigation powers over all U.S. investment companies. The SEC reviews investment company disclosure materials and has the power to act decisively against breaches of fiduciary duty. Fifth, shareholders are provided with certain rights to vote to protect their interests and prevent any kind of director's abuse. In addition to the ICA of 1940, three other bills apply to operations of mutual funds; the Investment Advisers Act of 1940, the Securities Act of 1933 and Securities Exchange Act of 1934.

In Europe, mutual funds are supervised by the European Commission that sets the rules for all investment funds. As mentioned before, mutual funds are not subject to taxation as long as they comply with the rules of the Internal Revenue Code. Especially investors benefit from these strict rules in terms of more insights to the fund's structure and transparency. Furthermore, mutual funds are obligated to publish their performance track records which ensure that investors can trust the fund's performances and returns. This will also help investors if a mutual fund goes out of business in which case investors know the exact amount they are entitled to claim. Investors will receive the relative share of their investment in the fund.

[9] http://www.sec.gov/about/laws/ica40.pdf

2.2. Hedge Funds

2.2.1. *What Hedge Funds are and how they are structured*

Commonly, a hedge fund is an actively managed portfolio of investments that uses advanced investment strategies such as leverage, short selling and derivative positions in both domestic and international markets with the goal of generating high returns[10]. Hedge funds are generally regarded as private investment vehicles for wealthy individuals or institutional investors (Fung & Hsieh, 1999). They are mostly organized as limited partnerships in which fund managers are general partners and investors are limited partners. As general partners, fund managers normally have to invest a significant portion of their personal wealth into the partnership investment to prevent interest conflicts and ensure credibility between managers and investors. Hedge funds have an eminent impact on global financial markets. Stowell (2010a) states that they account for more than one-third of trading in the largest equity and debt markets. Due to the growing uncertainty about the stability of the financial markets in 2008, the number of hedge funds has lately significantly decreased. Investors have reevaluated the terms of credit they were willing to extend to hedge funds which eventually resulted in liquidations of many portfolios that led to over 900 hedge funds being closed in 2008 reducing the total number of hedge funds to 9,176 the same year (Stowell, 2010a). Although hedge fund indices such as the Credit Suisse/Tremont Hedge Fund Index fell an overwhelming 19.1% in 2008, making it the worst year ever for hedge funds, the decline was still highly favorable compared to the US-based S&P 500 Index that declined with 38.5% over the same time period (Stowell, 2010b). Fortunately, during 2009, the entire hedge fund industry began to recover from the enormous losses they experienced the year before resulting in positive returns forth on.

Investors have the choice to invest in four alternatives when investing in a hedge fund: direct investment in a particular hedge fund, customizing a portfolio of a number of hedge funds, investing in an index fund, or investing in a fund-of-funds (FOF) (Nicholas, 2004).

[10] http://www.investopedia.com/terms/h/hedgefund.asp

2.2.2. *Fees*

Investors of a hedge fund are typically charged a performance-based fee where the potential payout to successful managers can be significantly higher than the fixed management fee (Fung & Hsieh, 1999).

Management fees are usually a percentage of the fund's net asset value. Common fees range between 1-5% of the fund's net asset value and can therefore significantly vary between small and large funds. Management fees are considered to cover operating costs of managers and are paid on a monthly or quarterly basis. Performance fees are typically between 10-40% of the hedge fund's profits during any year. They are considered to represent the manager's profit which creates an incentive for managers to perform well. In the private equity industry, standard amounts of fees are usually 2% management fee and 20% performance fee, also known as the 2, 20 principle.

Following the crisis of 2008, many hedge funds decided to reduce fees or even agreed to not receive any fees until losses would once be recovered. Stowell (2010b) gives an example of Renaissance Technologies, one of the largest and most successful hedge funds, who waived all management fees for 2009 for its Renaissance Institutional Futures fund. In addition, the fund agreed not to receive any performance fees until 2008 losses of 12% were recovered.

Furthermore, almost all hedge funds use a high-water mark, a mechanism that is implemented to make sure that managers do not take a performance fee in the current period when the fund has had negative performance over previous performance fee periods. This helps preventing a manager from taking a performance fee on the same gains more than once (Stowell, 2010b). On the downside, high-water marks may encourage managers to take extra risk to generate returns high enough to deplete the cumulative losses. It is of importance to mention that hedge funds are exclusively actively managed funds and managers trade heavily and frequently to beat the market. Another important aspect of hedge funds is that they are solely return-orientated with the ultimate goal to deliver high returns regardless of how risky their investments are.

2.2.3. *Regulation*

When hedge funds were still unpopular for many investors and remained niche players, only few concerns raised about their special regulation. However, in recent years, assets under management of hedge funds have grown exponentially and so have worries about their impact on

the financial system (Daníelsson, Taylor, & Zigrand, 2005). Hedge funds have been exempt from some security regulations in the United States in many other countries based on the fact that they invite investment from only sophisticated institutional investors and high-net-worth investors (Stowell, 2010a). This is also stated in the ICA of 1940. Investors in a hedge fund have to be lower than 100 and accredited, in terms of sufficiently sophisticated and wealthy. According to the ICA of 1940, an accredited investor are individuals with net worth of at least $1 million or annual income of at least $200,000. Specific regulations differ by national, federal and state jurisdiction. According to Daníelsson, Taylor and Zigrand (2005), arguments in favor of regulating hedge funds focus both on consumer protection and financial stability. Regulation will protect investors because it will force hedge funds to give insights in their trading behavior. They further argue that consumer protection is inevitable due to the expansion to regulated institutions and small investors. However, due to the mainly unregulated nature of hedge funds, they provide substantial benefits for the financial system by improving market efficiency, price discovery and consumer choice. In 2010, due to many criticisms about the light reporting requirements, the European parliament decided to pass a law that seeks to provide greater monitoring of alternative investment fund managers that operate in the European Union[11]. However, traditional regulatory techniques, such as activity restrictions and disclosure, are ineffective for hedge funds due to the fact that hedge funds can move operations offshore. Characteristics of hedge funds such as short-selling and the use of derivatives can therefore not be regulated. The regulatory debate is often very polarized, and numerous proposals have been made but have not been implemented yet.

2.3. Differences between Mutual Funds and Hedge Funds

Mutual funds and hedge funds are both pools of investment capital and are seeking to out-dual the capital markets (Stowell, 2010a). However, as mentioned earlier on, hedge funds and mutual funds have several differences. The first important difference between these funds is that mutual funds are heavily regulated by federal agencies. For instance, in the United States mutual funds are being controlled by the SEC, the Securities and Exchange Commission. By contrast, hedge funds have, although subject to change, the privilege to only very limited trading restrictions. Second, mutual funds are open to all investors whereas hedge funds are restricted to investments from accredited investors. The SEC states in its *Rule 501 of Regulation D* that accredited investors must

[11] http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/211&format=HTML&aged=0&language=EN&guiLanguage=en

be corporations with assets exceeding $5 million or a natural person who has individual net worth exceeding $1 million at the time of the purchase. Third, compensation structures differ significantly: hedge fund manager receive management fees that are substantially higher than fees paid to mutual funds. Furthermore, hedge fund managers realize performance fees while mutual fund manager do not obtain such fees. Fourth, and perhaps the most important difference between hedge funds and mutual funds is that hedge funds engage in a much broader array of trading strategies (Stowell, 2010a). Through creating long and short investment positions, utilizing derivatives, and making use of leverage, hedge funds can explore a wide range of investment strategies whereas mutual funds are bounded to less investment flexibility as they are prohibited to engage in short selling positions. The main advantage of a mutual fund compared to the alternative of investing into a hedge fund is that small investors gain access to professionally managed, diversified portfolios.

3. Performances of Mutual Funds and Hedge Funds

3.1. Mutual Funds Performance

Traditional mutual funds are probably the most preferred investment choice by investors in nowadays financial markets. Babalos et. al (2012) argue that their large scale success is due to the unique advantages that they offer to investors such as access to professional management with minimum initial capital and efficient risk diversification. Among studies finding superior mutual funds performance, numerous papers investigate further its persistence. On the one hand, Hendricks et al. (1993), Goetzmann and Ibbotson (1994), and Brown and Goetzmann (1995) show persistence in mutual funds performance for a short period (1–3 years), and attribute it to hot hands, meaning that the securities held by funds that had better performance during one year realize superior returns than other funds the following year, or to common investment strategies. Capocci and Hübner (2004) note that Carhart (1997) and Daniel et al. (1997) demonstrate that the momentum effect in the share's returns explain the hot hands effect detected by Hendricks et al. (1993). On the other hand, Ippolito (1989), [Grinblatt and Titman, 1989] , [Elton et al.,

1993] and [Elton et al., 1996], Sirri and Tufano (1998), and Zheng (1999) report some predictability in the mutual funds returns over a longer period of time (Capocci & Hübner, 2004).

Carhart (1997) examines US mutual fund strategies and reports that managers prefer smaller stocks as well as growth stocks. The main part of this section will also use Carhart's study on Persistence of Mutual Fund Performance (1997) as the main source of mutual fund performance information. The paper analyses mutual fund data on a monthly base from 1962 to 1993. Malkiel's annual mean mutual fund return estimate from 1982 to 1990, 12.9 percent, is very close to the 13 percent that Carhart (1997) finds. Over the 1976 to 1988 period, Brown and Goetzmann (1995) report a mean annual return estimate of 14.5 percent. Carhart (1997) also finds that expense ratios, portfolio turnover, and load fees are significantly and negatively related to performance.

The evidence is consistent with the top mutual funds earning back their investment expenses with higher gross returns. Overall, the evidence is consistent with market efficiency, interpretations of the size, book-to-market, and momentum factors notwithstanding. Although the top-decile mutual funds earn back their investment costs, most funds underperform by about the magnitude of their investment expenses. The bottom-decile funds, however, underperform by about twice their reported investment costs. These results are not confined to mutual funds: Christopherson, Ferson, and Glassman (1995) reach qualitatively similar conclusions about pension fund performance. However, the severe underperformance by the bottom-decile mutual funds may not have practical significance, since they are always the smallest of the funds, averaging only $50 to $80 million in assets, and because the availability of these funds for short positions is doubtful. Chen et al. (2004) state that the average total net assets of mutual funds is $282.5 million. The evidence of Carhart's article (1997) suggests three important rules-of-thumb for wealth-maximizing mutual fund investors: first, avoid funds with persistently poor performance. Second, funds with high returns last year have higher-than-average expected returns next year, but not in years thereafter. Third, the investment costs of expense ratios, transaction costs, and load fees all have a direct, negative impact on performance. While the popular press will no doubt continue to glamorize the best-performing mutual fund managers, the mundane explanations of strategy and investment costs account for almost all of the important predictability in mutual fund returns. Malkiel (1995) and Bogle (1992 & 1999) advice investors to invest on low expense index funds since mutual funds underperform the market, especially when fees are taken into account. Therefore, Elton et al. (1996) and Carhart (1997) draw the conclusion that funds heavily underperforming have very high expense ratios, while funds that are successful do not increase revenues by raising their fees but benefit from the increased size of their fund. Hooks (1996)

concludes that low expense load funds sufficiently outperform average expense no-load funds. Fama and French (1992) and many others find that size and value/growth are associated with average returns and return covariances. Thus the extant mutual fund literature frequently reaches conflicting conclusions regarding the ability of fund managers to beat the market and the impact of turnover and expenses on fund performance. Although problems with survivor bias and benchmark error have been cited as a possible cause of the conflict, it should also be noted that most prior studies typically focus on a small set of fund-specific factors in attempting to explain performance. In the aggregate, these studies address the relevant explanatory factors; however, individually their relatively narrow focus may contribute to the contradictory findings (Prather, Bertin, & Henker, 2004).

3.2. Hedge Fund Performance:

Hedge funds operate in a regulation-free environment and hedge fund managers are not obligated to report any performance data for the public. Fund level data for hedge funds are therefore very difficult to obtain (Abugri & Dutta, 2009). Institutional investors and high-net-worth individuals have put significant amounts of money into hedge funds, seeking high returns as well as diversification benefits promised by hedge fund managers (Fung et al., 2008). Eling and Faust (2010) state that due to the absence of reliable data, academic literature on hedge funds in the 1990s was restricted to descriptive analysis and relatively simple performance metrics.

Despite the increasing interest that hedge funds have originated due to their recent development, few performance studies have been carried out on hedge funds compared to other investment tools like mutual funds (Capocci & Hübner, 2004). Capocci and Hübner (2004) argue that this can partly be explained by their private characteristics and the difficulties encountered to have access to individual funds data. The aim of this section is to determine whether hedge funds have outperformed the market. Currently, about 90% of hedge fund managers are based in the US, 9% in Europe, and 1% in Asia and elsewhere (Capocci & Hübner, 2004). The main part of this section is based on the study of Capocci and Hübner (2004) who evaluated hedge funds performance in the time span of 1984 until 2000. Capocci and Hübner (2004) found some insight into the preferences of hedge funds managers depending the strategies they followed. They argue that almost all managers seem to prefer smaller stocks and more than half of the managers invest in emerging bond markets.

Capocci and Hübner (2004) conclude that overall, two thirds of the strategies produce significantly positive alphas. Alpha is defined as the return in excess of the compensation for the risk borne and is therefore commonly used to access manager's performance. The All Funds category in their performance table (appendix) also significantly outperforms the market at the 1% level. In addition, in almost all outperforming strategies, more than 30% of the alphas are significant. Furthermore, Capocci and Hübner (2004) find that 27% of the hedge funds show significant excess return, matching the 27% Mitchell and Pulvino (2001) found. Furthermore, comparing the alpha distribution of hedge funds performance show that when taking more factors into account such as management fees or other occurring fees that fewer individual funds significantly outperformed the market, and more funds have insignificant or even negative excess return. Capocci and Hübner (2004) conclude that the excess returns for Event Drive, Global, Long only Leveraged, Equity non-Hedge, and Foreign Exchange strategies are insignificant at a 5% level whereas the alpha for the Fund of Funds strategy is negative and significant. By contrast, all other categories display positive and significant alphas. In addition, more than 25% of the individual alpha's are significantly positive at the 5% level.

In conclusion, Fung and Hsieh (1997) and Schneeweis and Spurgin (1997) prove that the insertion of hedge funds in a portfolio can significantly improve its risk-return profile, thanks to their weak correlation with other financial securities. Amin and Kat (2001) find that stand-alone investment hedge funds do not offer a superior risk-return profile, but that a great majority of funds classified as inefficient on a stand-alone basis are able to produce an efficient payoff profile when mixed with the S&P500. They obtain the best results when 10–20% of the portfolio value is invested in hedge funds. Taking all these results into account, hedge funds seem a good investment tool (Capocci & Hübner, 2004).

Finally, considering hedge funds performance as a whole, the following observation are made by Capocci and Hübner (2004): first, all hedge funds deliver significant excess return with one fourth of the individual funds giving significant positive excess return. Second, hedge funds prefer to invest in smaller stocks. Third, most hedge funds invest in emerging market bonds and suffer from the US bond market.

3.3. Comparison of Mutual Funds and Hedge Funds Performance

Ackermann et al. (1999) and Liang (1999) who compare the performance of hedge funds to mutual funds and several indices find that hedge funds constantly obtain better performance than mutual funds, although lower than the market indices considered. They also indicate that the returns in hedge funds are more volatile than both the returns of mutual funds and those of market indices. Ackermann and Ravenscraft (1998) emphasize that the stronger legal limitations for mutual funds than for hedge funds hinder their performance. According to [Brown et al., (2001)] hedge funds showing good performance in the first part of the year reduce the volatility of their portfolio in the second half of the year (Capocci & Hübner, 2004). Furthermore, some hedge funds outperform traditional benchmarks, whereas most mutual funds tend to underperform traditional benchmarks (Eling & Faust, 2010).

Fung and Hsieh (1999) believe the difference in return characteristics between hedge funds and mutual funds is primarily due to differences in trading strategies. One fundamental difference is that hedge funds deploy dynamic trading strategies whereas most mutual funds employ a static buy-and-hold strategy. Another fundamental difference is the use of leverage. Hedge funds typically leverage their bets by margining their positions and through the use of short sales. In contrast, the use of leverage is often limited if not restricted for mutual funds. It is important to explore these differences in order to provide a rationale for the way hedge fund partnerships are organized (Fung & Hsieh, 1999).

4. Empirical Analysis

4.1. Data

Data for mutual funds is collected from Vanguard Investment Group, an advisory and investment company offering a broad range of investment tools. Vanguard offers mutual funds that focus on different sectors and is therefore representative of the entire mutual fund industry. In this study, I included data of mutual funds of all different sectors that Vanguard offers to its investors: mutual funds of large capitalization stock, a money market fund, short-term bonds, intermediate-term bond index, a long-term investment-grade fund, a balanced fund that invest in different

investment vehicles such as stocks and bonds, an equity income fund, a capital value fund that focuses on currently under-appreciated companies by the market, a fund that tries to identify small companies with growth potential and a fund that invests in companies of various sizes from all over the globe. All mutual funds that are considered in this study have at least $1 billion under management with the exception of Vanguard Capital Value Fund that has $784.7 million under management. The collected data of these mutual funds start from 31/12/2001 and run until 31/12/2011. The total return of all mutual funds is recalculated at the end of every year.

Data for hedge funds is collected from the Dow Jones Credit Suisse Hedge Fund Index, formerly known as Credit Suisse/Tremont Hedge Fund Index. This hedge fund index is broadly diversified, encompassing 490 funds across ten style-based sectors, and representative of the entire hedge fund industry. The CSHFI is the largest asset-weighted hedge fund index. In addition, it does not underweight top performers and overweight decliners and considers only funds of at least $50 million under management. The collected data of the CSHFI starts from 31/12/1993 and runs until 29/02/2012. The index started at a net asset value (NAV) of 100 and is recalculated at the end of every month.

	Mutual Funds	**Hedge Funds**
Data Source	Vanguard Investment Group	Dow Jones Credit Suisse Hedge Fund Index
Time Span of Data	31/12/2001 - 31/12/2011	31/12/1993 - 29/02/2012
Time Span of Data for own Analysis	31/12/2001 - 31/12/2011	31/12/2001 - 31/12/2011
Minimum amount of assets under management	$1 billion	$50 million

4.2. Methodology

Since the interest lies in the relationship between two variables, by names the ROR of mutual funds and the ROR of hedge funds, a descriptive research will be conducted. Both the data for mutual funds and hedge funds will be based on an index starting with a NAV of 100. Returns were calculated on a yearly basis from 2001 until 2011. Second, a regression analysis will be performed with the annual returns of hedge funds and mutual funds as dependent variables and the annual return of the S&P 500 as the independent variable.

The regression equations are as follows:

1.) $R_{HF} = \alpha + \beta * R_{S\&P500} + \varepsilon$

2.) $R_{MF} = \alpha + \beta * R_{S\&P500} + \varepsilon$

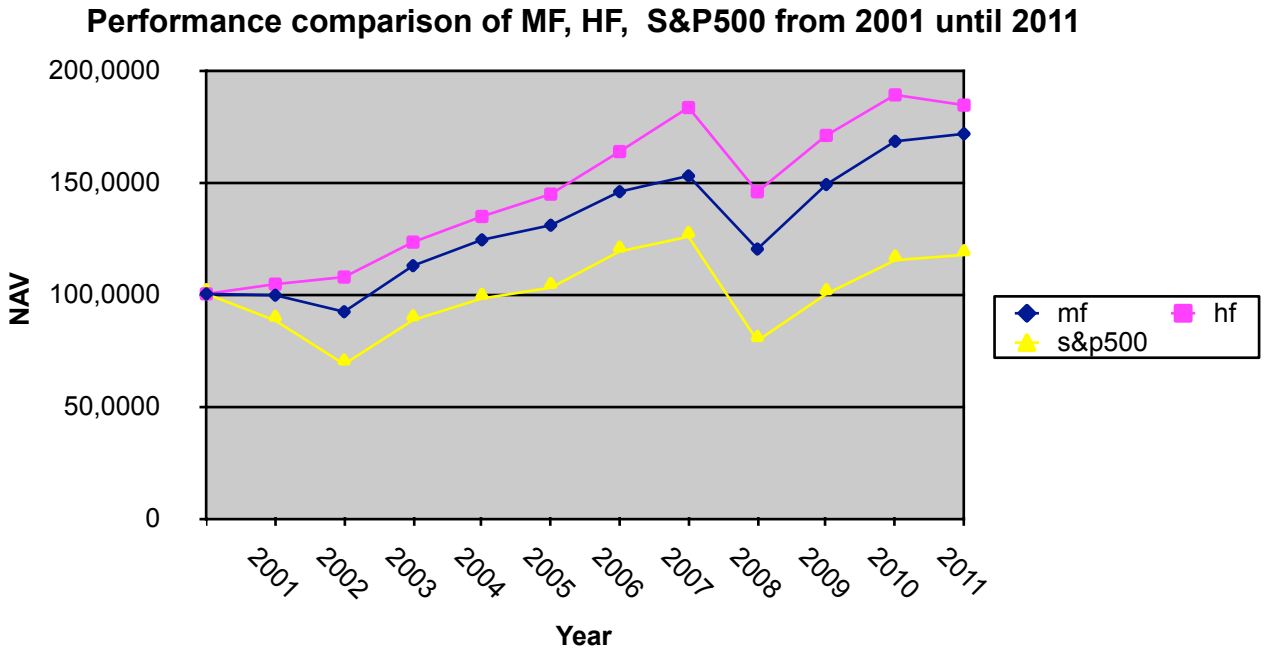
A third regression analysis is performed in order to support the result of equation 1.). Since monthly data is only available for hedge funds no analysis is made for mutual funds. The corresponding analysis for hedge funds is based on monthly returns of hedge funds and the S&P 500 from 31/1/1994 until 29/2/2012. The regression equation is as follows:

3.) $R_{HF(1994\text{-}2012)} = \alpha + \beta * R_{S\&P500} + \varepsilon$

Alpha (α) measures the excess return relative to a benchmark index, in this case the $R_{S\&P500}$. Beta (β) explains the volatility in comparison to the market as a whole. The standard error (ε) stands for the deviations of the measurements but cannot be calculated ahead.

4.3. Results

4.3.1. *Mutual Fund Performance*



This study empirically investigates the performance of mutual funds. The graph shows that mutual funds have performed well over the last ten years, resulting in an annual increase of 5.79% on average. The overall return of mutual funds over the time span from 2001 until 2011 has been 63.64%. For example, an investment of $10,000 in a mutual fund at the beginning of 2001 would have paid the investor $16,364 on average ten years later. The standard deviation of mutual funds, represented by σ, is 26.416 during this ten year period.

	Mutual Funds	**Hedge Funds**	**S&P 500**
Standard deviation, σ	26.416	30.478	18.030
% increase from 2001 until 2011	63.64	68.67	38.34

Nonetheless, not every year has been proved successful for mutual funds. Both 2001 and 2002 showed a negative return on mutual funds. Reasons for the decrease in mutual fund positions might be the aftermath of the dot-com bubble that had its climax in 2000 when stock markets started to collapse in March and had troubles to recover from this meltdown over the next two years. The total loss has accumulated to 8.10% in two years. However, during the next years, the performance of mutual funds showed a positive return with only little fluctuations. The overall return of mutual funds in the time span of 2003 and 2007 was 54.12%. This performance of mutual funds is positive, however, when comparing the performance of mutual funds with the S&P 500, which increased by 65.76% during the same time period, it can be concluded that mutual funds have performed worse than the financial market. In 2008, mutual funds did not perform well finishing the year with a 21.38% loss compared to one year before. At this point It is of interest to mention that the S&P 500 performed worse during the crisis of 2008 and lost 37.00% of its original value. Markets began to recover afterwards as did mutual funds. This lead to a continuous increase of mutual fund performances in the following years of 2009 (23.97%), 2010 (12.97%), and 2011 (1.98%) giving mutual funds an overall increase in returns of 38.92%.

The performance of mutual funds is closely correlated to the S&P 500 index. The S&P 500 index and the collected data of mutual fund performance show similar movement trends. The years 2001, 2002 and 2008 have given investors a negative yearly return whereas all other years in the time span of 2001 and 2011 have had positive returns. When comparing the overall performance of mutual funds with the S&P 500, it can be concluded that mutual funds have outperformed the market. Mutual funds had an overall increase of 63.64% over ten years whereas

the S&P 500 ended with a 38.34% increase. In general, mutual funds are not as volatile as the S&P 500 meaning that both incurred losses and gains have been less compared to the market. In addition, losses have been substantially higher for the S&P 500 during negative return years which might explain the difference of the overall performance of mutual funds and the S&P 500.

4.3.2. *Hedge Fund Performance*

Hedge funds are widely seen as obscure investment tools that are hard to understand or to follow. Many expect hedge funds to outperform the market and other investment vehicles due to the legal use of techniques such as short-selling. Furthermore, hedge funds are not as heavy regulated as are other funds and it is often hard for society to see the benefit of them. In the following section the results of hedge fund performance will be presented.

This study empirically investigates the performance of hedge funds. The performance chart (see page 19) clearly shows that hedge funds performed well and increased from 100 to 468.17 in over 18 years. As overwhelming as these numbers sound, hedge funds have experienced several break downs over the last two decades. For example, at the beginning of 1994, the index declined from the original 100 to 91.91 at the end of April 1994 and did not pass the 100 mark until the end of June 1995. The main reason for this decline has been the great bond market meltdown that has also inflicted heavy damage on financial companies such as hedge funds and mutual funds. Fortune estimated that the rise in 30-year Treasury rates from 6.2% at the start of the year to 7.75% in mid-September has knocked more than $600 billion off the value of U.S. bonds[12]. Not only were long-term rates rising in the United States but also in every major country around the world. Ultimately, the decline in bond values in 1994 figured to be on the order of $1.5 trillion. During the next years, the performance of hedge funds steadily increased and had only little fluctuations. One of them has been in 1998 when hedge fund performance dropped from 198.30 to 170.91, or 14.43%, in only three months. This short-duration meltdown was the aftermath of the 1997 crisis that started in Thailand with the financial collapse of the Thai baht after the Thai government was forced to float the baht due to lack of foreign currency to support its fixed exchange rate. At that time, Thailand had acquired a burden of foreign debt that made the country effectively bankrupt and as the crisis spread, most of Southeast Asian countries as well as Japan saw slumping currencies and devalued stock markets. Through the Asian crisis, investors became reluctant to lend money to developing countries which eventually led to an economic slowdown in

[12] http://money.cnn.com/magazines/fortune/fortune_archive/1994/10/17/79850/ index.htm

developing countries. As a result of the Asian crisis, oil revenues began to reduce sharply and OPEC and other oil exporters such as Russia had massive reductions in oil revenues. This 1998 Russian financial crisis triggered the collapse of Long-Term Capital Management (LTCM) in the United States, a speculative hedge fund based in Greenwich, Connecticut, that lost over $4.6 billion in just four months. A wider collapse was avoided when the FED organized a $3.625 billion bailout. Therefore, capital markets soon began to rebound after LTCM had closed down its hedge fund leading to a continuous increase of the NAV of the CSHFI. In less than one and a half years, on 30/11/1999, the CSHFI passed the original value from before the crisis and was recorded at 202.98. The CSHFI continued to increase to 234.35 at the end of February 2000 when the Internet bubble hit the global financial markets. The impact, however, has not been as immense as the Asian and Russian financial crisis from two years before, resulting only in a 7.92% decrease within three months. Nevertheless, markets recovered only slowly afterwards and the CSHFI needed almost two years to pass the mark of 240, in detail 241.17, at the end of 2001.

During the following years, the CSHFI has increased from 242.47 in the beginning of 2002 to 436.05 at 30/06/2008, making it a 79.8% increase in six and a half years without any more serious crises. In June 2008, the CSHFI has reached an all-time high. However, due to the financial crises that was mainly caused by securities that were tide to U.S. subprime mortgages that resulted in the collapse of large financial institutions in the United States and eventually led to one of the worst meltdowns in history, the CSHFI declined in net asset value as well. In the following six months of June 2008, and through the on-going global financial crisis, often regarded as the biggest meltdown since the Great Depression, the CSHFI decreased to 351.78 on 28/02/2009, or 19.4%, almost 80 points less than only half a year before. One problem for many hedge funds was the amount they hold of hard-to-trade assets, such as loans, real-estate holdings, and stakes in small, private companies (Stowell, 2010b). In the meantime, the stock market started to slowly recover from its losses, as did the CSHFI. In the time period from March 2009 until April 2011, the CSHFI increased by 36.6% to 480.56, a new all-time high. Unfortunately, bad labor market numbers as well as liquidity problems of many European countries that almost faced bankruptcy such as Greece, Ireland, Spain, or Portugal slowed down the global financial markets. Huge bailouts had to be made by the European Central Bank to rescue these countries and prevent an even more dangerous financial crisis and another fall of the global stock markets. The continuing fear of investors of a collapse of the European Union slowed down the growth of stock markets. Since the end of April 2011, the CSHFI has had its small ups and downs, resulting in a negative rate of return (ROR) of 2.57%, or a net asset value of 468.17, at the end of February 2012.

Average hedge fund returns have been positive during every year except 1998 and 2008 over the period 1995-2008. Stowell (2010b) states that the overall performance has been especially strong during bull markets. A bull market is a market trend that is associated with increasing investor confidence and increased investing in anticipation of future capital gains.

As the hedge fund industry still continues to mature, increasing amount of data will become publicly available to further assess the performance of hedge funds.

Unfortunately, because hedge funds are not required to follow any prescribed reporting protocol by regulators, hedge fund databases have a number of biases that can skew returns (Stowell, 2010b).

4.3.3. *Comparison of Mutual Fund and Hedge Fund Performance*

After having analyzed the overall performances of mutual funds and hedge funds, this study will further compare the results with each other and tries to draw an answer to the question if hedge funds or mutual funds have performed better over the past years. Since data for the performance of mutual funds is available only from 2001 and onwards, the comparison will be based on the time span from 2001 until 2011. This section will use a NAV of 100 for both mutual funds and hedge funds as basis, starting with 2001 as the first year being analyzed. This method will have the advantage that the performances can be directly compared with each other as well that both are measured with means of the same evaluation criteria, the ROR.

Year	Annual % change of HF (ROR)	HF NAV	Annual % change of MF (ROR)	MF NAV	% difference HF/MF NAV	Annual % change of S & P 500 (ROR)
2011	-2.42	184.23	1.98	171.42	7.48	2.05
2010	10.60	188.80	12.97	168.09	12.32	15.06
2009	17.26	170.71	23.97	148.79	14.73	26.46
2008	-20.52	145.58	-21.38	120.02	21.29	-37.00
2007	12.02	183.17	4.84	152.66	19.98	5.49
2006	13.14	163.51	11.46	145.61	12.29	15.79
2005	7.42	144.52	5.26	130.64	10.62	4.91
2004	9.29	134.54	10.24	124.11	8.40	10.88
2003	14.49	123.10	22.33	112.58	9.34	28.69
2002	3.04	107.52	-7.42	92.03	16.83	-22.10
2001	4.35	104.35	-0.59	99.41	4.97	-11.89
Base		100		100	0	

The table above shows the NAV of mutual funds and hedge funds during the time period of 2001 until 2011 with a base NAV of 100. Furthermore, the annual rate of return (ROR) is stated next to hedge fund NAV and mutual fund NAV, respectively. The second last column on the right hand side displays the percentaged difference of the NAV's of hedge funds relative to mutual funds. A positive percentage means that the NAV of hedge funds is greater than the NAV of mutual funds, and vice versa. It can be seen that the overall performance of hedge funds (NAV of 184.23) has been better that the overall performance of mutual funds (171.42) during the last ten years.

In 2001 and 2002, hedge funds performed well with positive returns in both years whereas mutual funds ended these years with a negative return. One of the possible reasons why mutual funds had a negative return in these years could be its greater correlation with the S&P 500. The S&P 500 performed even worse with annual returns of -11.89% in 2001 and -22.10% in 2002. In addition, hedge funds are legally entitled to short-sell securities and can profit from falling stock exchange markets. Furthermore, hedge funds use derivatives to hedge against risk and eliminate all systematic risk. During the time span of 2003 and 2007, both mutual funds and hedge funds performed well. Their annual increase in NAV are closely correlated with hedge funds performing two out of four years better than mutual funds, and vice versa. Most interestingly, the performance of mutual funds in 2003 with 22.33% compared to a gain of 14.49% of hedge funds is the largest difference in performances. Nevertheless, hedge funds achieved positive returns in nine out of eleven years whereas mutual funds had eight out of eleven years positive return. It is of interest to mention that there have been three years in which either mutual funds had a positive return and hedge funds a negative return (one time), and vice versa. In 2008, the year in which the housing mortgage market collapsed, both mutual funds and hedge funds finished the year with an unsatisfying return: hedge funds had an annual minus of 20.52% whereas mutual funds had a negative return of even 21.38%. At the end of the following year 2009, however, mutual funds and hedge funds started to recover strongly from their previous losses. It is notable to state that mutual funds recovered stronger than hedge funds meaning that their annual return during the years of 2009, 2010, and 2011 had been greater than those of hedge funds. In 2011, the return of hedge funds has even been negative whereas mutual funds were able to finish the year with a positive return. Nevertheless, when evaluating the performances of mutual funds and hedge funds over the entire time span, hedge funds still performed better. Through the positive trend of mutual funds performance in regard with the performance of hedge funds, it can be speculated that

mutual funds will pass overall performance of hedge funds soon when considering the time span from 2001 and onwards.

Nevertheless, when considering the correlation between mutual funds, hedge funds, and the S&P 500 over the last ten years, it can be expected that mutual funds and hedge funds will continue to perform almost synchronically due to a very high correlation of 0.9758. Furthermore, both mutual funds and hedge funds are highly correlated with the S&P 500 with hedge funds and S&P 500 having a correlation of 0.8335 and mutual funds and S&P 500 having a correlation of 0.8699.

Correlation	Mutual Funds	Hedge Funds	S&P 500
Mutual Funds		0.9758	0.8699
Hedge Funds	0.9758		0.8335
S&P 500	0.8699	0.8335	

By performing a regression analysis as indicated in section 4.2., the following results can be observed (see Appendix for detailed data):

Variable	R_{HF}	$R_{HF(1994-2012)}$	R_{MF}
$Return_{S\&P500}$	0.455*** (0.086)	0.273*** (0.027)	0.633*** (0.039)
N	10	218	10
R^2	0.757	0.316	0.967

Table: Variables in row 1 are dependent, variable in column 1 ($Return_{S\&P500}$) is independent. Standard errors are in parentheses. The symbols *,**, and *** denote significance at 10%,5%, and 1%, respectively. N represents the number of observations. R^2 denotes how well the individual variable explicate the variations in the data in relation to the dependent variable.

The result of the regression equation are as follows:

1.) $R_{HF} = 4.657 + 0.455 * R_{S\&P500} + \varepsilon$

2.) $R_{MF} = 3.580 + 0.633 * R_{S\&P500} + \varepsilon$

When comparing the values of α of hedge funds and mutual funds, 4.657 and 3.580 respectively, it can be concluded that hedge funds achieve a higher excess return in comparison to mutual funds. Furthermore, the corresponding values of β indicate that mutual funds are closer correlated to the S&P 500 than hedge funds are since the β of mutual funds exceeds the β of hedge funds. This result is also derived when calculating the correlation (see table above). Both regression equations are significant when considering a 5% confidence level (0.001 for mutual funds and 0.021 for hedge funds).

As mentioned above, data for mutual funds is only available on an annual basis from 2001 until 2011, therefore a monthly regression analysis is only performed for hedge funds from 31/1/1994 until 29/2/2012. The regression equation is as follows (see Appendix for detailed data):

3.) $R_{HF(1994\text{-}2012)} = 6.984 + 0.273 * R_{S\&P500} + \varepsilon$

The value of α has to be multiplied by the factor of 12 as this analysis is based on monthly returns (0.582*12 = 6.984). This result supports the regression equation that is derived earlier (1.)) as both α and β have the same tendency as the previously stated measures. The measurements are all significant when considering a 5% confidence level. α is also larger than the value of the α of mutual funds. In terms of this regression analysis it can therefore be concluded that hedge funds outperform mutual funds.

5. Conclusion

In this study I examine the performance of mutual funds and hedge funds and draw a conclusion of whether mutual funds or hedge funds performed better. After analyzing the literature which was mainly based on the time period of before 2000, the conclusion was drawn that hedge funds seemingly outperformed mutual funds which often were also outperformed by stock markets. Further on, I conducted research myself and examined the performances of mutual funds and hedge funds on the basis of recent data. The research has shown that hedge funds outperformed mutual funds over the last ten years, being in line with the results of previously conducted studies. The results of the regression analysis are in line with the results of the NAV-analysis concluding that hedge funds outperform mutual funds. Both mutual funds and hedge funds have proven to be successful investment tools for investors over the previous years. Nevertheless, it is almost impossible to give a good forecast of how they will perform in the nearby future. They are both highly correlated to the S&P 500 and have outperformed it in the last ten years which makes them a favorable investment instrument in comparison with the market portfolio.

6. Appendix

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,983[a]	,967	,963	2,49578

a. Predictors: (Constant), VAR00003

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1620,644	1	1620,644	260,181	,000[a]
	Residual	56,060	9	6,229		
	Total	1676,705	10			

a. Predictors: (Constant), VAR00003
b. Dependent Variable: VAR00001

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,580	,765		4,681	,001
	VAR00003	,633	,039	,983	16,130	,000

a. Dependent Variable: VAR00001

This table shows the output of the regression analysis of mutual funds as dependent variable and S&P 500 as independent variable on a yearly basis from 2001 until 2011 in SPSS.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,870[a]	,757	,730	5,45943

a. Predictors: (Constant), VAR00003

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	836,883	1	836,883	28,078	,000[a]
	Residual	268,248	9	29,805		
	Total	1105,131	10			

a. Predictors: (Constant), VAR00003
b. Dependent Variable: VAR00002

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,657	1,673		2,783	,021
	VAR00003	,455	,086	,870	5,299	,000

a. Dependent Variable: VAR00002

This table shows the output of the regression analysis of hedge funds as dependent variable and S&P 500 as independent variable on a yearly basis from 2001 until 2011 in SPSS.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,562[a]	,316	,313	1,81649

a. Predictors: (Constant), V18

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	329,265	1	329,265	99,789	,000[a]
	Residual	712,720	216	3,300		
	Total	1041,985	217			

a. Predictors: (Constant), V18
b. Dependent Variable: VAR00004

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,582	,124		4,689	,000
	V18	,273	,027	,562	9,989	,000

a. Dependent Variable: VAR00004

This table shows the output of the regression analysis of hedge funds as dependent variable and S&P 500 as independent variable on a monthly basis from 31/1/1994 until 29/2/2012 in SPSS.

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