

ERASMUS UNIVERSITY ROTTERDAM
ERASMUS SCHOOL OF ECONOMICS
MSc Economics & Business
Master Specialisation Financial Economics



Good things come in small packages?

A research into the performance and persistence of “boutique” mutual funds

Author: M.J.L. Schönfeld
EUR study number: 265729
Thesis supervisor: Mr. S. Van Bakkum
Co supervisor: Prof. Dr. Han T.J. Smit

PREFACE AND ACKNOWLEDGEMENTS

My thesis is the results of long period of research investigation into the mutual funds market and performance of boutique funds specifically. During this process I got a clear understanding of the current literature and views of this interesting fast growing market and research subject. Before reaching the subject of boutique funds for my thesis specifically, I had several ideas brought to me by the director of SNS Fundcoach, Mr. J. Voets. I would like to thank him for the time and direction given me on this subject. I also want to thank SNS Fundcoach and especially Mr. M. Kok for his time, advice and explanations with my thesis and the Bloomberg terminal.

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ABSTRACT

The main objective of this thesis is to research the performance of boutique funds compared to average mutual funds. We did this based on numerous methods of performance using multiple models and methods to show proof of the outperformance of boutique funds. We can clearly state that in performance measurements and models we used, even after compensating for a high survivorship bias and costs we find better performance from boutiques then from average mutual funds. The outperformance is also persistent in the short and long run making these results interesting for future investors. The outperformance of boutiques according to us due to the fact that managers of boutiques have a relatively high focus and due to the fact that boutique fund managers are so highly dedicated to the performance of their funds since they are so heavily invested into it themselves.

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1 Introduction

1.1 Motivation

In recent years, we have seen an enormous rise of invested capital in the market of mutual funds. Mutual fund assets worldwide comprised 26,20 trillion US dollars at the end of the fourth quarter of 2007, a huge market¹. This market of mutual funds has been gradually growing with a staggering 883 billion dollars in newly attracted funds in the year 2007².

In order to create value for the investor, a mutual fund managers needs to pick a diversified portfolio, according to the guidelines set by the mutual fund, that is expected to generate a return which outperforms the benchmark. With the growth and sheer size of the current mutual fund market, it is no surprise the market pays considerable fees to facilitate their mutual funds managers to select these portfolios for their investors. With an average fee of 1.02 percent in 2007³ for stock funds and the enormous amount of money invested in funds, there are multibillion dollars of profits made by the mutual funds companies⁴. The investors who are willing to pay so much in fees for a diversified managed portfolio expect the manager to be able to outperform the market on a regular basis. Persistence and finding underlying characteristics of funds and managers has been a much researched subject in the mutual funds industry with mixed results. What is even more surprising is that most researchers, starting with Jensen (1968), concluded that the active managed mutual funds performance was actually inferior to their benchmark index or a similar index fund.

Where people who want to invest in a mutual fund usually look at the big names in the mutual fund industry, in recent years we have seen a rise in so called “boutique” firms. Boutique firms are mutual funds where managers are (partial) owners and bring a high amount of passion and dedication to their job. The performance for some boutique funds has been excellent. Research found that eleven out of twenty top performers of the UK diversified equity funds are boutique funds⁵. Although this result is highly arbitrary, it gives a hint of possible outperformance of boutique funds in comparison

¹ Worldwide Mutual Fund Assets and Flows, Fourth Quarter 2007, Investment Institute Company

² See also Appendix A

³ Investment company fact book 2008, 48th edition, section 5 mutual fund fees and expenses

⁴ Investment company fact book 2008, 48th edition, section 5 mutual fund fees and expenses

⁵ Braham Lewis, Why boutiques have an edge?, Businessweek June 20, 2005

to the main stream large funds that are so widely available. Investors assume there is more safety in established names and that bigger firms can deliver better analysis, research and performance. But they could all be wrong; another article on boutique funds researched 2000 UK mutual funds. They found that the top performing funds were boutique funds performing relatively much better than their peers.⁶ If we take into account other positive articles in popular magazines and online publications, we have no doubt boutique funds bring something new to the table. Hence, what is the secret behind these boutique funds and is this actually true? This is one of the key elements of this thesis and no scientific research has ever compared boutique funds to other mutual funds.

1.2 Problem Definition and Research Objectives

My research will focus on the performance of these boutique funds in comparison to the general mutual funds industry. But to understand what a boutique fund is, we need to set some parameters to define what a boutique firm is. I have come to the following guidelines:

1. A boutique firm is relatively small in assets, less than 1 Billion Euro in the mutual fund.
2. A boutique firm is owner managed, meaning that the manager has a substantial financial stake in the company.
3. There are a limited number of funds under management in the fund company, with a maximum of fifteen.
4. A boutique firm is actively managed.

Now we have set the guidelines for a boutique fund, we can ask our self the main research question:

Do boutique funds outperform average mutual funds and is there persistence in these results?

We will setup our research to come to a general conclusion on boutique funds and in certain mutual funds categories. We will try to get significant results through multiple performance measures as also used by Gruber (1996) and Carhart (1997). If there is outperformance, we will try to explain the outperformance and in this way present a rational why people tend to invest more and more on average in boutique funds. To make a fair comparison, we need to create a representative sample of boutique firms and normal mutual funds in the same category and rate these boutique funds in comparison to their peers. We will then get results of a fund in profits, performance, persistence, the

⁶ Unknown author, 13 june 2007, The best boutique funds to buy and hold, Moneyweek

influence of costs and more. With these results from the individual boutique fund, we compare these to the mutual funds and come to solid conclusions about boutique funds in general.

1.3 Relevance

The size of the mutual funds industry as described in the introduction with assets in 2007 of 26.20 trillion dollars, and the costs (average 1 percent) accompanying this huge market will give enough practical relevance for this thesis. Taking into account the current development of the markets and the fact that millions of investors depend on mutual funds for their retirement. More specifically 91 percent of U.S mutual fund investors are saving for retirement with mutual funds⁷. Add the possible investments made by pension funds and the practical relevance is quite self-explanatory. We can safely say that if our research shows the normal mutual funds are not able to keep up with boutique funds then perhaps investors should invest more wisely in the future. Investing in mutual funds that perform on average inferior than another type of funds can be seen as not efficient and therefore unwanted “assets” to the mutual funds industry.

Although the mutual funds industry recently got enormous attention from researchers, very few researchers focus on boutique funds. The individual characteristics may have been studied for a long time, like Graham and Dodd (1934) did for the value approach. It is the combination of the characteristics of boutique funds we would like to research. We want to investigate how some negative aspects of boutique funds like small size and high costs (Elton et al., 1996) set off to the clear positive aspects of an experienced manager (Chevalier and Elisson, 1999) and low agency costs (Elton et. al.,2003). Also the fact that we will be using data that is very recent and quite extensive, makes this research unique. In addition our sample consists of a bull market (2002-2007) but also at two heavy bear market, the internet bubble crisis of 2001 and the subprime and banking crises of 2008. Enough reasons to investigate boutique funds in today’s market.

1.4 Structure of thesis

In order to answer the research question, this thesis is structured as followed:

Chapter 2 will give an overview of the history and previous research into mutual funds. We will discuss the different characteristics of open-end mutual funds and the impact on performance

⁷ Investment company fact book 2008, 48th edition, section 6

according to previous research. Also costs, the investor, the manager and specifically boutique funds will be discussed.

Chapter 3 In this chapter we will give a description of our data sources and how we constructed our sample.

Chapter 4 We describe the methodology extensively in this chapter and give an explanation of the models we will use and the possible problems that may arise around the survivorship bias and selection bias. Also there is a small section about the influence of costs on our sample

Chapter 5 will set out the main hypothesis and sub-hypothesis to come to a full understanding of the research question and be able to answer it. Each hypothesis will be answered in the conclusion.

Chapter 6 will present the results of our research divided into four different parts. First we will present and compare our results based on raw returns and the factor models. Then we will see the results of persistence. Furthermore we will discuss the influence of the survivorship bias and costs and the results presented earlier.

Chapter 7 will summarize our results into conclusions. In this chapter we will also discuss and answer the hypotheses as formed in chapter 5. Finally we will give recommendations for further study.

2 Theory

This chapter will give an extensive overview of previous research on the subject mutual funds. There are numerous kinds of mutual funds available in today's market. We will portray the different features of mutual funds based on the boutique funds characteristics. Starting with the history of mutual funds, the different types of mutual funds, the manager, the investor and eventually the implications from this theory on the subject we want to research: boutique funds. This research focuses on equity funds and ignores bond, hybrid and other types of funds for simplification reasons. Mainly because open-end funds are easier to track and are traded more freely than closed-end funds. Still equity funds consist 54 percent of invested capital in mutual funds in the United States in 2008⁸. This extensive theoretical research is needed because boutique funds do not actually fall into one specific category and are quite diverse. Therefore, looking at every aspect of mutual funds is required.

2.1 Mutual Funds

2.1.1 The History of Mutual Funds

There is some discussion where the first form of mutual funds came into existence. With certainty can be said that one of the first ideas for a mutual fund came from Adriaan van Ketwich. His Eendragt Maakt Magt (translates to 'unity creates strength') fund was founded in 1774 in The Netherlands. He most likely theorised as one of the first that diversification would increase the appeal of an investment to smaller investors. 'Van Ketwich's aim was to provide an opportunity to diversify for small investors with limited means. Risk spreading was achieved by investing in Austria, Denmark, Germany, Spain, Sweden, Russia, and a variety of colonial plantations in Central and South America.' (Rouwenhorst, 2003). The first investment trust outside of the Netherlands is the Foreign and Colonial Government Trust, founded in 1868 in London. Similar to Eendracht Maakt Magt, it invested in foreign government bonds. This design was then picked up around Europe in years to follow, in due course spreading to the United States.

"The creation of the Massachusetts Investors' Trust in Boston, heralded the arrival of the modern mutual fund in 1924. 1928 was the year the Wellington Fund was launched, which was the first mutual fund to include stocks and bonds, as opposed to direct merchant bank style of investments. In the beginning of the 1950s the number of open end funds grew to more than 100 funds. In the

⁸ Investment Company Institute, Share of Total Mutual Fund Assets by Category, 2008

1950s the financial markets grew rapidly, the mutual fund industry grew with 50 new funds over the course of the decade. The 1960s saw the rise of aggressive growth funds, with more than 100 new funds established and billions of dollars in new asset inflows. The market kept growing throughout the 1960s until the bear market of 1969 cooled the public desire for mutual funds. Money flowed out of mutual funds as quickly as investors could cash in their shares, but the industry's growth would shortly be resumed.

In 1971, Wells Fargo Bank founded the first index fund. The 1970s also saw the rise of the no-load fund. This novel way of doing business had a vast impact on the way mutual funds were sold and would be a key part to the industry's success. With the 1980s and 1990s came bull market craze and previously obscure fund managers became superstars. More recently, the burst of the tech bubble and a mass of scandals involving big names in the industry took away much of the good reputation of mutual funds.⁹ Shady dealings at major fund companies demonstrated that mutual funds are not always benign investments managed by people who have their shareholders' best interests in mind and who treat all investors equally. Of course, this is part of the agency problem we will discuss in chapter 2. But the scandals did not stop the growth of mutual funds for long as of 2007 the mutual fund assets worldwide comprised of 26.20 trillion dollars at the end of the fourth quarter of 2007, a huge market with substantial salaries and profits for the mutual fund companies.

2.1.2 Closed-End and Open-End Funds

Our research will focus on open-end funds, combined investments where the investors can issue and cash in shares at any point in time. In return for the money they give to the fund when buying shares, shareholders receive an equity position in the fund and, in effect, in each of its underlying securities. For most open-end funds, shareholders are free to sell their shares at any time. The price of the fund is determined by the performance of the underlying stocks held by the fund. Benefits of open-end funds include diversification and specialist money management. Open-end funds offer selection, liquidity, and ease, but charge fees and occasionally involve a minimum investment.¹⁰

With closed-end funds on the other hand, the shares are not in general redeemable for cash or securities until the fund liquidates. Normally an investor can acquire shares in a closed-end fund by buying shares on a secondary market from a broker, as opposed to an open-end fund where all transactions ultimately involve the fund company creating new shares on the fly (in exchange for

⁹ Jim McWhinney, A brief history of the mutual fund, Investopedia 2007

¹⁰ Investopedia, Open end funds, Online source

either cash or securities) or redeeming shares (for cash or securities). The price of a share in a closed-end fund is determined partly by the value of the investments in the fund, and partially by the premium (or discount) placed on it by the market.

According to Edelen (1998) open end funds have a tendency to underperform, which is later confirmed by many other researchers who tend to find that mutual funds in general underperform (e.g. Carhart (1997)). However, Edelen (1998) contributes this underperformance of open-end funds to the costs for the supplied liquidity a diversified portfolio in a mutual fund offers and not to a lack of manager skills.

Closed-end funds also tend to perform poorly due to the possible high agency costs faced by these funds (also a reason for discount trading of closed-end funds). This is later also acknowledged by Gruber (2001). In his research he also states that in general closed-end funds tend to perform slightly better than open-end funds without taking into account risk. If risk is included the funds perform at par level.

The reason that closed-end funds often trade at a discount is explained previously by many researchers. Gruber (1996), Lee et. al. (1990) and Malkiel (1977) all provide similar explanations why closed-end funds trade at a discount and not at par value. One reason that might explain the discount are agency costs. The fact that a closed-end fund manager is not controlled by daily market mechanisms. Lee et. al. (1990) see no valid argument in this case. They argue there is no rational behind the fact that closed-end funds even exist when there are similar open-end no-load funds with no agency costs. The other two explanations are more valuable according to Lee et. al (1990).

First the effect that the lower liquidity offered by closed-end funds makes them trade at a discount. Investors prefer more liquid investments which they can sell at any time without restrictions. Secondly, closed-end funds trading at a discount are beneficiary for the investors due to tax liabilities. The taxpayer has to pay for the unrealised gains even when the investor has not sold any of his assets yet due to restrictions.

2.1.3 Growth versus Value

Another distinction is made between growth funds, which invest in stocks of companies that have the potential for big capital gains, and value funds, which focus on stocks that are undervalued. Common characteristics of value stocks are low market prices in relation to earnings per share, to cash flow per share, to book value per share, or to dividends per share. They are usually less popular

stocks that have recently experienced low or negative growth rates in corporate earnings (Bauman & Miller, 1997). Growth funds have opposite characteristics and do not pay regular dividends. There is also a combination of the two funds called a 'blend' fund, they may use any combination of growth and value stock.

The research done in this area focuses mainly on the underlying stock and companies. Much research on this subject has been done by Bauman & Miller (1997) and Fama & French (1993, 1995, 1998). The general conclusion is that the "value stock style" is the most profitable of the both types.

Pawley (2004) reports of a study in the U.S. by Heartland Advisors covering the period 1976 – 1996, where a value strategy outperformed an index strategy 'over 97 percent of the time', and outperformed a growth strategy 'almost 91 percent of the time'.

Graham and Dodd (1934) already showed the benefits of the value approach in the early 1930's. Graham's understudy became the most well known benefactor of the value approach, Warren Buffet. Basu (1977) showed the profitability of a low price-earnings ratio and the positive risk adjusted returns coming from such an investment approach. Fama and French (1995) found substantial influence of the book to market factors in earnings and returns and found that value stocks were the most profitable. Fama and French (1998) published a research where was shown that the difference between value stocks (high book to market) and growth stocks (low book to market) is 7.68 percent a year and that value stocks outperform growth stocks in twelve out of thirteen main markets.

Daniel et. al. (1997) performed an extensive research based on the performance of mutual funds with certain characteristics. They found that an average active mutual fund outperformed their non active managed fund by around 100 basis points (1 percent), but this did not include the costs made for active management. They showed that the underlying characteristics were decisive for the funds' performance. Daniel et al. (1997) found that the best results would be achieved by 'momentum investing' and picking companies with high book to market stock (value stock).

Daniel et al. (1997) found that growth funds used the most out of the momentum strategy and performed best before transaction costs although the value approach was still more profitable. Chen, Jegadeesh and Wermers (2000) showed that growth funds have managers with better growth stock picking talent than the managers of a value funds. However, this does not lead to significant better performance for these funds.

Concluding, we can state that research has shown that the value strategy is the most profitable strategy in the current and past markets. Boutique funds do not have a set strategy, so they can invest both in value or growth funds.

2.1.4 Active versus Passive Funds

'An index fund (passive fund) maintains investments in companies that are part of major stock indices, such as the S&P 500 or the AEX index, while an actively managed fund attempts to outperform a relevant index through advanced stock-picking techniques. The assets of an index fund are managed to closely approximate the performance of a particular index. Since the composition of an index changes infrequently, an index fund manager makes fewer trades, on average, than an active fund manager does. For this reason, index funds generally have lower trading expenses than actively managed funds and typically incur fewer short-term capital gains which must be passed on to shareholders. Additionally, index funds do not incur expenses to pay for selection of individual stocks (selection techniques, research etc.) and deciding when to buy, hold or sell individual holdings. Instead, a fairly simple computer model can identify whatever changes are needed to bring the fund back into agreement with its target index.'¹¹

Research often shows that mutual funds do not beat the market and actively managed mutual funds underperform other broad-based portfolios with similar characteristics. Jensen (1968) concluded that the active managed mutual funds performance was actually inferior to the performance of randomly selected portfolios with the same risk after compensation for expenses. Gruber (1996) found that index funds in general outperform their counterpart active management mutual funds by 0.65 percent. He used a four index model to calculate these differences. Carhart (1997) finds in his research with a sample of more than 1500 mutual funds, that active managed funds on average underperform their benchmark index by about the costs of those funds. Meaning that without costs the funds would perform the same. Nevertheless, he finds a small number of funds which do outperform the index and these focus on past performance of the underlying stock (persistence) and seem to have reasonable low expense ratios.

Both Wermers (1997) and Grinblatt and Tittman (1989 and 1993) evaluated the manager by looking at the performance of the underlying stocks held in the portfolios. Their studies concluded that fund managers do have stock picking talent and outperform their benchmarks with around 2.5 percent

¹¹ Index funds versus active management, Unknown author, Link

each year before expenses. The outperformance lies according to Daniel et al. (1997) and Grinblatt, Titman and Wermers (1995) not in stock picking, but due to the underlying stock characteristics, meaning funds that use a value strategy hold stocks that have higher average returns than passive stock indexes. These researchers therefore do not find proof for the stock picking talent in their research.

Chen, Jegadeesh and Wermers (2000) find that active managers tend to buy stock that outperforms their sold stock by 2 percent each year, evidence of stock picking talents according to them. Wermers (2000) finds after combining multiple databases and using new techniques that mutual funds actively traded, outperform the broad market index by 1.3 percent (excluding costs). 0,6 percent of this is explained by the characteristics of the underlying stocks and 0,7 percent is due to the stock picking talents of the manager.

2.1.5 The Size and Number of Assets Under Management

Differentiation can also be made by the number of assets under management. We find that there are implications to holding a limited or a very large number of assets under management. The implications of having a small amount of funds under management (in value and number) and a large amount of funds under management will be discussed in this subsection.

The importance of fund size, total assets under management has been discussed in the literature quite thoroughly although with mixed results. Shukla and van Inwegen (1995) state that larger funds have better research-gathering resources and that they can benefit from economies of scale in terms of management expenses and transaction costs. On the other hand Shukla and van Inwegen (1995) conclude that large funds may have a disadvantage when it comes to trading large blocks, causing prices to change through their trades. Shukla and van Inwegen (1995) find in their study that large funds though have an advantage over smaller funds when it comes to the selection of stocks. This view is shared by Chen et al. (1992) they find a positive relation with size and stock selecting skills (but a negative relation for size and market timing but this does not offset the stock selection skills). Ramasamy and Yeungh (2003) establish that larger funds do attract more investments, because they can subsequently keep the costs down. Hence, from an investor point of view a larger fund seems to attract more money.

Grinblatt and Titman (1989) come to complete opposite results in their research and find that fund size and performance are negatively related. Although this could also be attributed due to the fact that smaller funds are heavily invested into value stock, so investment style might be decisive here.

The majority of research finds no connection between fund size and performance. Droms and Walker (1994) found, based on a dataset of international mutual funds, there is no significant relationship between size and performance. The same Grinblatt and Titman (1994) previously mentioned found in later research there is no significant relation between size and performance on U.S. markets. This is later confirmed by Cicotello and Grant (1996) on the U.S. market and on Swedish markets by Dahlquist, Engstrom and Soderlind (2000). The Australian researchers Callagher and Martin (2005) focus purely on the influence of size on the performance of mutual funds (other researchers focus parts of their study to the influence of size) and find no significant relationship.

The number of funds under management may also be an important factor for an investor, although previous literature does not really show any results on behalf of this subject. Ramasamy and Yeung (2003) argue though that different types of funds with differing objectives may be an attractive feature for the investor. The attraction is especially there, they argue, when it is possible to switch between funds without incurring a huge fee (therefore a cost issue). Of course, this will apply more to the large multinational fund companies than the small boutique funds, although even there a small number of funds with high differentiability can exist.

Even though we have not fully looked into the investors' perspective on size, we can conclude that most research shows there is no significant relation between size and performance. A relative small number of articles shows a positive relationship for large funds and performance mainly due to lower costs. In either case the results do not speak in favour of boutique funds which have a relative small size and small number of assets under management.

2.1.6 Persistence in Mutual Funds

Nothing has been so much researched or got so much attention in previous research as past performance and persistence. Still there are some doubts if past performance is a good indicator for future performance and even if persistence exists at all. Sharpe (1966) did not find any persistence in the long or short run for mutual funds. Jensen (1969) found that good performance in the past is not followed up by good performance later on. Neither, Grinblatt and Titman (1989) found persistence in their later more refined study.

However the evidence of persistence in later studies is quite extensive but over different time frames and due to different reasons. Hendricks et al. (1993), Brown and Goetzmann (1995) and Wermers (1996) all find persistence in a period of one to three years, and attribute this persistence to the “hot hands” effect or a certain investment strategy. An example of such an investment strategy is that the manager consequently selects companies with a low book to market ratio or some other investment strategy that doesn’t require stock selecting skills. Hot hands is a strategy focused on selecting the winners of previous periods and buying these winners for the upcoming periods. Hendricks et al. (1993) find that icy hands exist in the market, the negative counterpart of hot hands.

Grinblatt and Titmann (1992) proved that persistence over a longer period of time exists and see this confirmed by Elton. et al. (1995). They state that although the hot hands-effect maybe of some influence, their research shows that this effect cannot explain the long term effect of the persistence found. They attribute the persistence mainly to the stock selecting skills of the manager. Carhart (1997) also finds that stock selecting skills attribute more than 50 percent of the persistence shown in the short term and long term. Although he found that the persistence is much weaker in the long term.

Persistence is also interesting when looked at by Lynch & Musto (2003) who found that persistence exists, but only among winning funds, not under losing funds. Berk & Green (2004) also found persistence under winning funds, but noted that the results were too small to turn into a successful investment strategy. Kosowski et al. (2007) found persistence for a select group of “star” managers, ruling out luck using a bootstrap method.

There are more factors that drive persistence. Persistence in expense ratios drive most of the persistence in mutual funds is stated by Carhart (1997) and shown by Elton. et al. (1995). Therefore, lowering costs could be a wise idea according to them. The main problem with most of this research is the survivorship bias, which affects the results in many of the previous mentioned reports. It can give an appearance of persistence when it is not even present. That this effects a lot of papers is shown by Brown et. al (1992).

As a conclusion, we get mixed signals from previous research but persistence might exist in the current mutual fund market, maybe due to costs, maybe due to skills or a certain investment

strategy, research is not conclusive on that. Survivorship bias is perceived to have a severe impact on results.

2.2 The Manager

2.2.1 Introduction

One of the attributes of a boutique fund is that the fund manager is also the (partial) owner of the fund company. So his salary is based for a large part on the performance of the fund company, meaning he will receive more payment as the fund company and its funds attract or generate more money. This is in contrast to a normal fund manager who often gets a set salary. Manager owned companies avoid problems around the agency theory and puts the expectations of the fund investor in line with that of the fund manager. We will discuss literature and theory of managers, their incentives and possible agency costs. We will then conclude, on what the advantages or disadvantages are, for a manager owned fund.

2.2.2 Does a Manager Have Selection Skills?

Already with Jensen since 1969 researchers looked into the performance of different groups of mutual fund managers using different methods. Jensen (1969) found that managers could not obtain subsequent good performance after good performance in the past. As we concluded in previous sections, we have seen that most researchers conclude that the average mutual funds underperforms its benchmark. So the manager will lack skills to outperform the benchmark. But Wermers (1997) and Grinblatt & Tittman (1989 and 1993) conclude that a fund manager does have stock picking talent and outperform their benchmarks with around 2.5 percent each year before expenses. Although in later years Daniel et al. (1997) and Grinblatt, Titman and Wermers (1995) found that these factors did not lie in the manager stock picking talent but in the stock type they selected.

Gruber (1996) is one of the few though, who studies the ability of managers to select funds. He showed that managers did seem to have selection ability skills. This is later confirmed by the previous mentioned Chen, Jegadeesh & Wermers (2000) who found that active managers tend to buy stock that outperform their sold stock by 2 percent each year, proof according to them of stock picking talents. Kosowski et al. (2006) found after compensating for “luck” that there are a small number of managers who pick stocks well enough to more than cover their costs and can do so over several years.

Although we now listed some examples of research that showed that managers do have selection skills. We have seen in previous chapters that in many cases management often does not outperform their respective index benchmark and therefore does not have selection skills. We conclude with the fact that an average manager does not have any special selection skills but that in some special sub-groups, managers outperform their counter-parts significantly.

2.2.3 Good Manager Characteristics

We want to get some insight into the key elements of a good manager. We will do this mainly based on the article of Chevalier and Elisson (1999) who performed an extensive survey into the characteristics of the successful manager. They find proof of a relationship between certain manager characteristics and performance. They looked specifically into age, SAT score, MBA degree and experience. What they found was that managers who went to prestigious undergraduate institutions performed significantly better, this was also the case for managers with a high SAT score.

They found that young managers performed better on average than old managers, explained by the fact that young managers want to prove themselves more. Young managers also performed better because of the fact that older managers are often less educated than young managers.

Experience on the other hand was a crucial factor, this seems not to go hand in hand with age being a positive thing, but they showed that even young managers on average needed at least 7 years experience to become a good manager. This is in line with research that Mikhail, Walter and Willis (1997) performed which showed that an experienced analyst is a good analyst. Managers with a MBA degree outperformed their counterparts in raw returns but at a higher amount of risk and therefore did not lead to significant results.

We can also differentiate on location where we can argue that a local investor has superior information access in comparison to foreign investors and therefore local investors should outperform their foreign counterparts (Brennan & Cao, 1997). A direct comparison has been made by Shukla & van Inwegen (1995) who investigate US investors (locals) and UK investors (foreign) and their investments in the US market. They come to the conclusion, after controlling for size, tax effects and objectives, that foreign mutual funds significantly underperform their counterparts. This according to them due to the information effect. But in a more extensive research, controlling for among other the survivorship bias and the type of securities held and using a larger database, Otten and Bam (2007) find in their research that there are no significant differences between local and foreign investors.

Concluding we can say that on average a good manager is a, relatively young, experienced, educated on prestigious institutions and with a high SAT score manager. Also that it could be beneficial if this manager is working in his home country.

2.2.4 Incentives

An incentive is an expectation that encourages people to behave in a certain way (Sheffrin, 2003). There are numerous kind of incentives in today's mutual fund industry some explicit others less obvious. The main reason why incentives can be profitable for the investor is because it aligns the managers interests with those of the investor (Agency Theory). So incentives can help align the managers' and the investors' expectations, but does it work ?

There are numerous kinds of incentives, Gruber (1996) and Sirri and Tufano (1998) showed that one of the strongest incentive to perform well is the expected growth in funds from good performance. Usually mutual funds companies receive a fixed percentage from assets under management as compensation, they therefore have incentives to increase the total assets of their fund. As we have shown before previous performance is the main reason that a fund attracts more investors.

Chevalier and Ellison (1999b) showed another form of incentive; the career concerns of a manager. They showed that young managers tend to be in line with the average mutual fund manager because if they do not, they will be most likely fired. This leads to young managers investing in the most conventional portfolios and therefore having less unsystematic risk (diversifiable risk) in their portfolio.

Of course there are also plain incentive fees, a reward structure that makes management compensation a function of performance relative to some benchmark. In 1999 only 108 of 6716 mutual funds used an incentive fee to align the investors interest with those of the managers (Elton et. al. 2003). They found that those 1.6 percent with incentive fees had 10.6 percent of the mutual funds assets under control. An interesting topic, according to Elton et. al. (2003) this is caused by the fact that funds paying incentive fees attract the best managers and that the best managers attract the most investors. They conclude that investors are better off investing in companies with specific investments fees for the managers, because these funds outperform their counterparts significantly.

Carpenter (2000) showed that in general the incentive contracts are positive focused, managers are not cut on salary when performance is bad. This leads according to them that these managers have a high incentive to create large variance around the benchmark. Brown et. al. (1996) and Chevalier and Ellison (1997) showed the increased risk that incentive fees can introduce. Brown

et. al. (1996) showed that if managers performance in the first part of the year was behind the market this would lead to more variability (risk) in the second half of the year, in comparison to good performing managers in the first half year. Chevalier and Ellison (1997) showed that bad performing mutual funds over a time period from 1982-1992 get increasingly more risky over time.

Incentives are a double-edged sword on the one hand you want the manager to perform well but not at a cost of increasing risk over time. Conclusion is that incentives can work very well to align the investors and managers expectations but increased risk is a factor to take into account.

2.3 The Investor

We now have looked into the characteristics of mutual funds and their managers but what about the investor who pays for these mutual funds and their managers. What drives the investor of mutual funds and is he rational or not? This will be discussed shortly in this chapter, the more in depth factors with investors (e.g. investors and costs and size) are or will be discussed in different chapters.

First of all we will discuss some facts as shown by ICI about the investors on the U.S. market for mutual funds in 2008 (see also Appendix B). They did extensive research and found 88 million individual investors own funds, holding 86 percent of total mutual fund assets in the United States. Altogether, 51 million households or 44 percent of all U.S. households, own funds. Mutual funds represent a significant component of many U.S. households' financial holdings. Among households that own mutual funds, the median amount invested in mutual funds is 100,000 dollar. The majority of individuals that own mutual funds are married or living with a partner, and almost half are college graduates. About three-quarters of these individuals work full- or part-time. Most of the investors started investing in mutual funds more than 10 years ago and on average they hold 4 mutual funds at the time. Most of the investors 91 percent invest in mutual funds to save for retirement. More than half (52 percent) also invest in mutual funds to reduce taxable income.

Alexander et. al. (2000) analyzed the responses of two thousand American mutual fund investors and found that the average mutual fund investor is older, wealthier and better educated than the average American. They also showed that investors are not very well aware of the costs of mutual funds and their influence on performance, which is slightly contradictive with the results shown by ICI that find that 74 percent of the investors look at the costs before investing in a mutual fund (See appendix B). Interesting was also that more than 40 percent of the investors never reads the prospectus and on average an investor sees the prospectus as the fifth best source of information for

a certain mutual fund. The researchers came to the conclusion that investors although well educated still need to learn a lot over investing in mutual funds.

Research showed that the performance track record of a mutual fund is the most important factor why investments are made in a certain mutual fund (Capon, Fitzsimons, & Weingarten, 1994). One of the great mysteries in mutual funds is why investors stay with funds that perform poorly. There are multiple explanations for this; irrationality, high transaction costs and human psychology. Goetzmann and Peles (1997) did an extensive psychological research and survey under hundreds of mutual funds investors. They found that most mutual fund investors are not irrational but are often uninformed (which is complementary to the research of Alexander et. al. (2000)). They asked the question why so many investors stayed invested in a bad performing fund. The main reason they believe is that mutual funds shareholders tend to revise their beliefs to reduce apparent logical contradictions. The psychological term for this is cognitive dissonance.

The problem for the investors is that the combination of looking at past performance and cognitive dissonance can lead to staying in a certain fund way too long. The focus is too much on previous performance and investors do not look good enough at current fund performance. Also fund companies can exploit this by creating many mutual funds with high volatility and low correlation. The mutual fund company can advertise with the fund that at that current time performs best, and attract new investors all the time, while they keep the other investors locked in their losing funds.

2.4 The Costs Involved in Mutual Funds

2.4.1 Introduction

"If you add up redemption fees, brokerage fees, back-end load fees, management fees, inactivity fees, 12b-1 fees, transfer fees, minimum equity requirement fees, commissions, the cost of limit orders and sundry overheads like consultancy costs, bookkeeping and accounting and even more, it is not difficult to see that they can constitute a major problem. The simple fact is that costs determine whether your entire investment process is viable."¹²

Previous quote shows that the acquiring of mutual funds always comes with a number of fees and expenses that are not always very clear when purchasing a mutual fund. The management of a

¹² Brian Bloch, The hidden Costs of Investing, Investopedia 2008

mutual fund of course faces costs in running the mutual fund like marketing, transaction, advisory, selection and distribution costs. The costs faced by the actual investor of a mutual fund breaks down into three categories; transaction costs, yearly fees and hidden costs. We will discuss these types of costs now.

The acquiring and selling of a fund occasionally brings transaction costs with it. These costs are either a purchase or redemption fee which is paid directly to the fund company. The purchase fee is paid on the acquirement of a fund and the costs generally can range from 0 percent to 4 percent. The redemption fee is the fee paid when selling funds back to the fund company. The charges here also can range from 0 to 4 percent. In case of purchasing a fund from a broker the funds transaction costs can also be in the form of loads. Load funds have a sales load with a percentage charge on trading of shares. A load is a form of commission to the broker. Depending on the type of fund charges may be at time of purchase, time of sale, or a mix of both. For the investor both transaction costs and load costs come down to a lower value invested into the mutual fund at purchase or a lower amount retrieved from the invested fund when sold.

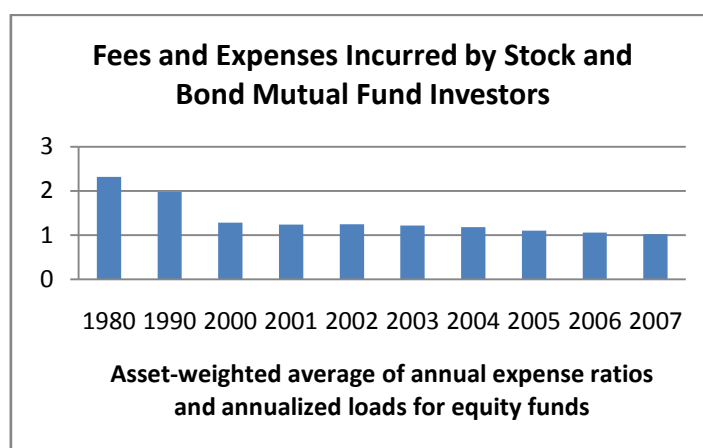
Yearly fees generally consist of management fees, administration fees and marketing fees (e.g. the 12B-1 Fee in the USA which consists of advertising and promoting expenses for the fund). All these costs together are known as the management expense ratio (MER). In general only the MER is shown and the other fees are not shown. The other costs are however generally included in the management expense ratio. The management fee is the cost for having a professional manager making and selecting a portfolio of stocks for you. So all the costs for analyzing the stocks, markets and other influences, the administrative work that needs to be done, the information gathering and information providing to the investors of the fund's holdings and performance is included in this fee. Management fee's structures vary from fund to fund, but they are typically based on a percentage of assets under management.

The costs we discussed before are all stated and known before a fund is actually acquired, there is although another more treacherous form of costs which needs to be taken into consideration; the hidden costs. Hidden costs consist of the expenses made by acquiring and selling stocks and are directly implemented in the value of the mutual fund and therefore not visible for the investor. The transaction costs involved in the acquiring of funds eats away from the profit that could have been made without these costs, these are implemented into the everyday performance of a stock so don't

show up separately. This means that in active management the profits or at least the costs of a company can be increased by 'over' active managers.

The cost charged by mutual funds have been steadily declining in recent years for mutual funds as is shown by figure 2-1 below. Clearly is shown how the expense ratios for equity funds have been brought down considerably in recent years from 2.32 percent in 1980 to 1.02 percent in 2007.

Figure 2-1: Expense ratios shown for equity funds in the period 1980-2007.



The main reason is probably that due to a larger mutual funds market, therefore larger economies of scale and more parties entering the market, bringing more competition, the fund fees and costs have been pushed down.¹³ We will discuss what the influences are of costs on performance and for investors in the next chapters. One thing we do need to take into consideration is that most researchers look at times where costs were higher than they are nowadays so the influence of costs has also declined.

2.4.2 The Influence of Costs on Performance

The transaction costs and expense ratio of mutual funds has been a much researched subject in the area of mutual funds. Wermers (2000) finds that the expense ratio of an active managed fund is around 100 basis points a year, compared to the 20 basis points of an index funds this seems quite high. Elton et. al. (1993) find in their research, that a regression of alphas for their sample showed that a percentage point increase in expense ratio leads to a percentage-point decrease in returns. They found that funds underperformed their respective indices equal to the average management

¹³ Investment company fact book 2008, 48th edition section 5

fee. Elton et al. (1996) showed that bad performance of the lowest deciles is largely explained by the high expense ratio of those funds. This inverse relation between costs and performance is also confirmed by Gruber (1996).

Hidden costs are usually attributed to the number of trades made by a manager. Carhart (1997) finds that the more active a fund a manager trades, the lower the adjusted net-return to investors will be and so the higher the hidden costs are. Ang et. al. (1998) explain that an active investment style brings higher than average costs due to the large research team which is required to make the necessary investment decisions.

Wermers (2000) finds that although the trading activity from mutual fund managers has doubled in the period from 1975 to 1994, the expenses of these trades were down to one third of the price of those in 1975. Wermers (2000) found though that the total expense ratio did increase in this time frame, although as stated before the trading costs went down with 66 percent. So costs increased in other areas than trading, like advertising and administration.

Concluding remarks come from Gruber (1996) and Barber et. al. (2005) who found that good managers tend to have lower management costs than bad managers. In addition they state that good managers tend to not increase costs over time, because the cash inflow into the fund (due to the good performance) will often already increase their salary.

2.4.3 The Influence of Costs on Investors

Investors have shown in surveys and previous research that they are not really informed about the costs involved when investing into a mutual fund. Costs shown in previous research are an important aspect of the performance of mutual funds.¹⁴ Failing to take the costs of a mutual fund into consideration would be a very foolish thing to do when evaluating a mutual fund and this should be one of the first things an investor should look at.

Alexander et. al. (1998) found in their survey of 2000 mutual fund investors that more than 80 percent of the interviewed investors could not give an estimate of the costs involved in their largest mutual fund they were invested in at the time. Also despite the research we have shown in the previous chapters 84 percent of the interviewed investors believed that higher costs lead to above average returns. Barber et al. (2005) found that in the timeframe 1970 to 1999 funds with higher expense ratios have not lost market share. They do argue that funds with front-end load fees have

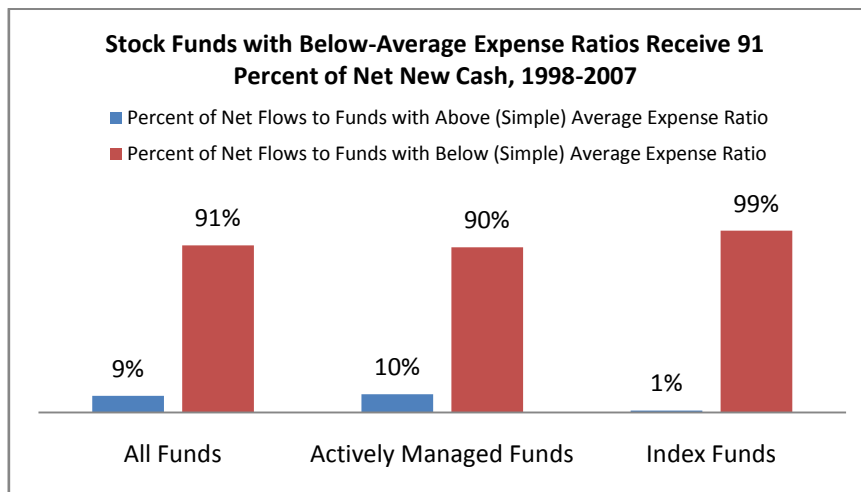
¹⁴ For example shown in the studies of Elton et. al. (1993), Elton et al. (1996) and Gruber (1996).

seen a decrease in market share over time. Their explanation is that mutual fund marketing does work. The negative effect of the costs is offset by the money spent on marketing. Non-marketing expenses though reduce fund flows.

Sirri and Tufano (1998) and Barber et. Al (2005) found that investors would not quickly invest into a fund with high front-end-load fees and operating expenses. A contradiction to the survey of Alexander et. al. (1998) where investors believed higher expenses lead to higher returns.

Ramasamy and Yeungh (2003) found that larger funds do attract more investments, because they can keep the costs down. So also from an investor point of view, low costs seem to attract more money. This is also shown in the real markets by figure 2-1¹⁵ which shows us how new investors allocate their money between high and low costs mutual funds during the period 1998-2007. If we look at the active managed funds (which will be the subject of our study) it is interesting to see that 90 percent of newly attracted money is invested in mutual funds with lower than average costs. Also 74 percent of the investors look at costs before they invest in a mutual fund so costs is a crucial factor for many investors. (see appendix B)

Figure 2-2: Percentages of flows to funds with below and higher than average costs.



Concluding we can say that although not perceived by investors necessarily as a bad thing, costs do lower the value of the invested money. Overall empirical analysis documents negative relations between fund flows and front-end-load fees or commissions but no relation (or a positive relation) between fund flows and operating expenses.

¹⁵ Investment company fact book 2008, 48th edition section 5

2.5 Boutique funds

2.5.1 Characteristics

Although subject of this research it seems no set definition is given for boutique funds, we will try to set those parameters in this thesis by gathering information from several articles and then come to set the characteristics of a boutique fund. The problem with setting these characteristics is mainly that almost none of the respected contributors to the mutual funds research has dedicated any serious research into it. Therefore we are limited to publications in popular (financial) magazines and online databases or websites.

There is mentioning of boutique funds in the article of Ramasamy and Yeungh (2003) where they describe a boutique fund as a highly focussed and small investment fund. Brahm in Businessweek¹⁶ agrees with this and states that boutique funds are small and unique funds. Size is not a discussion in most found articles, Wall of the Herald Tribune¹⁷ also finds this and states that although most investors like the security of a big brand name, boutique funds do seem to perform better. IMS capital management (IMS) state in their online document¹⁸ 'that as a result of their compact size, boutiques offer the advantage of agility since they are unencumbered by layers of management and are free to make quick decisions'. All these publications therefore agree that boutique funds are small but how small differs. With assets under management of smaller than one billion Euro we will have set a bar which is agreed with by most articles.

In the article of IMS they also mention that boutique funds have an owner managed structure and state this offers continuity to a fund. They found that 11 out of 22 top performing U.K. equity funds are managed by their founders. Manager-owned is very likely a characteristic of a boutique fund. Money Week¹⁹ finds they also allow managers to participate in the profits of the business. "Even if they do not own the company, it is likely that they will have shares in it." Drury, of the Sydney Morning Herald states²⁰: "Boutique managers tend to own the business or a large chunk of it." This is viewed positively because it means they have a much greater stake in the fortunes of the business.

¹⁶ Brahm Lewis, June 20, 2005, Why boutiques have an edge, Businessweek

¹⁷ Barbara Wall, 2003, Smaller fund managers thrive in Europe: Big isn't Beautiful, International Herald Tribune

¹⁸ IMS Capital Management, Small Investment Boutiques Offer Big Opportunity

¹⁹ Unknown author, 13 June 2007, The best boutique funds to buy and hold, Moneyweek

²⁰ Drury, B, 2005, Boutique funds, The Sydney Morning Herald.

Braham also finds that boutique funds are manager-owned and finds this very positive since owners bring a high degree of passion to the job. If the company goes bankrupt so do they. So we have our second characteristic, a boutique fund is without a doubt (partially) manager owned.

Boutique funds seem to focus on certain market segments or niches (Ramasamy and Yeungh, 2003) and this is also stated by several other articles like Drury in his article on boutique funds who states: “To be a successful niche player you need a clear and distinctive style, a focus on a particular market sector or adherence to a benchmark or absolute return.” Prestridge, from thisismoney.co.uk²¹ finds that most boutique funds try not to spread themselves too thin by offering all things, as is the case with most big investment houses. They often offer only a limited number of funds.

So we conclude that focus is brought by having a reasonable small number of different mutual funds in the fund company. We have set this number to a maximum of 15 different funds. Similar funds but denoted in different currencies are not included in the total number of funds under management.

Maybe not stated in every article as something special, but still of great importance to exclude a lot of funds is the fact, that a boutique fund needs to be actively managed. As some articles state small boutique funds give managers the opportunity to follow their own investment style which is not forced upon them from higher up in the chain of command. So we therefore add a fourth criteria that boutique funds need to be actively managed, therefore all index funds are excluded.

Now we have set the first four parameters of a boutique fund it can also be interesting to look at the way most boutique funds are formed, because they often have a similar history. According to Hall (2005) the recent rise of boutique funds has everything to do with the ICT market crisis of 2001. During this period the major investment banks of London and New York had to let go numerous analysts and mutual funds managers to reduce costs. Some of these fund managers started their own mutual funds company with great success according to Hall. While this article gives the rise of boutique funds due to a particular crisis, the red line is that most of these managers were experienced and afterwards successful in setting up a boutique fund. Most of the online articles previously mentioned, give an example of a managers, who had numerous years of experience in much larger fund companies before starting their own fund company. We can therefore safely conclude that although boutique funds are small the managers overall are experienced and trained

²¹ Prestridge, Jeff, 2008, Boutique investment funds: Does size matter? Thisismoney

at large fund companies. This characteristic is very hard to take into account in our research due to a lack of managerial data. Therefore we will not use this as one of the characteristics of boutique funds in our research.

Concluding we can state that boutique funds in this research are funds with the following characteristics:

1. A boutique firm is relatively small in assets, less than 1 Billion Euro in the mutual fund.
2. A boutique firm is owner managed, meaning that the manager has a substantial financial stake in the company. (minimal 5 percent)
3. There are a limited number of funds under management in the fund company, with a maximum of fifteen.
4. A boutique firm is actively managed.

2.5.2 Why a Boutique Fund ?

So what are the advantages of boutique funds ? One of the big advantages for the market is that boutique funds bring diversification opportunities to the market. They often invest in different companies and niches of the market that most mutual funds do not invest in. Secondly having large parts of the invested money in mutual funds, in a small number of hands, works counter productively. Since this will increase the size of shares hold and add to price volatility.²² So boutique funds are actually good for the markets in general due to diversification options and lower price volatility in the market.

Other benefits as mentioned before are the small size of boutique funds which can offer them the advantage of flexibility. This is a big advantage in current rapidly changing markets who become more volatile and uncertain every day as is shown in the article of Laster and Cole (1996). Boutique funds have the opportunity to focus on smaller investments and can invest in a local supermarket chain for instance. Where for a large mutual fund this is not an option since it will not change much of the portfolio structure they have. Also the small size makes sure the boutique fund is primarily focussed on investments and not on managing personnel and bureaucratic issues that may arise in a large firm.

²² IMS Capital Management, Small Investment Boutiques Offer Big Opportunity

The manager-owned structure makes sure the manager and investors expectations are aligned and offer continuity to the investor. Since the manager owns a substantial part of the company he is not likely to leave when a bonus doesn't come through or another job offer comes up. The manager is in that way more bound to its own investments than he is within a large firm. Often the manager has already had the experience of a large firm and usually does not want to return back to that situation. At a boutique fund he is in control of all targets and investments on his own, without a supervisor or board peeking continuously over his shoulder.

2.6 Conclusions

With the characteristics defined of boutique funds, we can maybe already form a first conclusion of what we expect of boutique funds in our research. Based on the articles in chapter 2.5 we expect boutique funds to perform very well. But our more extensive literature research into different aspects of mutual funds can give us a more scientific expectation. We will very shortly discuss the five aspects of boutique funds based on previous literature in this chapter.

According to the theory the fact that most mutual funds are small is a disadvantage, since overall costs will be higher and performance lower. Although as stated by other articles the flexibility due to the size can be an advantage. We think, based on previous research, the costs are decisive in this matter. If the boutique funds can keep their costs under control they have an advantage if not they are in a disadvantage. Overall we think small size is a slightly negative thing due to the large influence of higher than average costs.

The implication of the manager-owned structure of a mutual fund, we conclude is a positive one. The high commitment of the mutual funds manager to its company and therefore its investors. The agency problem will be largely solved and also the rewards will be higher for the manager than in a normal mutual fund company. This also leads according to the theory to a more motivated manager. Overall the manager-owned structure of boutique funds is a positive influence.

The number of funds under management has an increasing positive effect according to research, this is mainly attributed to the cost effect that may arise when switching funds. Also we think that a focussed strategy, where a company focus on a single market segment can be a positive influence on returns. Therefore we are indecisive if a small number of funds under management is a positive or negative thing.

Based on previous research it is save to conclude that active management in general does not seem to outperform index funds when looking purely at the fund net returns. Other more recent research has shown that active managed funds in some cases are able to outperform their counterparts, but often costs are excluded to get these results.. Because we are mainly comparing active managed boutique funds with active managed normal funds, this is neither a negative nor a positive influence.

Our last characteristic is that the mutual fund managers often have years of experience at the big mutual fund houses before starting their own boutique fund. We see this as a positive influence since the boutique fund now has on average an experienced, well educated, extremely well motivated manager setting out the future of the fund.

Overall the influences are indecisive to come to the conclusion that boutique funds are in general better than an average mutual fund according to the previous published research. We have according to the theory a positive influence from the manager and the manager-owned structure. But a negative influence because of the higher costs and the small size of boutique funds. We can therefore draw no conclusions based on the theory.

3 Data

3.1 Data Sources

Our mutual funds and boutique sample is constructed from data from the Bloomberg²³ database. We used the Bloomberg database to access the weekly returns of the mutual funds. The Bloomberg database although not commonly accessible for students, is used in some studies that appeared recently.²⁴ The Bloomberg database is used to access the returns for the mutual funds, the different indices to estimate beta's, the exchange rates and the 30 day LIBOR (assumed the risk free rate (R_{ft})). Bloomberg will also be used to look at the investment styles of boutique funds.²⁵ We access the Bloomberg professional database through the Bloomberg terminal located at the office of SNS Fundcoach.²⁶ This database is used by more than 250.000 professionals worldwide who rely on Bloomberg to track more than five million financial instruments.²⁷ We can therefore assume the data is the most complete, comprehensive and accurate dataset we can collect with our limited resources. Although Bloomberg is a very extensive program it is nearly impossible to create a sample free of survivorship bias. We are not in the position to use all mutual funds in existence during the sample period as used by Carhart (1997), neither can we use a follow the money technique as used in Gruber (1996). Both these methods are unfortunately not possible to implement due to lack of resources, skill and time. We have used Bloomberg for all our data; mutual funds closing prices, assets under management, manager information, LIBOR, Indices and more.

3.2 Data Descriptions

The reported weekly mutual funds prices, include transaction costs, expenses, fees and other asset based costs. The closing prices of the mutual funds however don't include front-end sales costs and

²³ Bloomberg is a financial services system that provides 24-hour current and accurate financial, economic, and government information covering all market sectors worldwide. It also features analytics, company financials, historical market data approximately twenty years back, statistics and current news reports. See also www.bloomberg.com

²⁴ Like the recent study off Kaminsky et. al. (2004)

²⁵ Hendricks et al. (1993), Brown and Goetzmann (1995) and Wermers (1996) found persistence was caused by certain investment strategies.

²⁶ I would like to thank SNS Fundcoach and Mr. M. Kok in particular for their time and assistance in helping me collecting the data.

²⁷ Bloomberg, Bloomberg data, Link

costs induced after selling the assets (loads). Although the costs over assets are already reflected in the price, the front-end sales charges and back end fees are not included. We do need to take them into account because they have a significant impact on results, since they lower the amount invested or received from the mutual fund.²⁸

The funds we collect are all open-end equity funds which accumulate dividends in the stock prices. An equity fund is classified as such when the main focus is investing in equity. A mutual fund that has equity as its main focus but also invests partially in other investment vehicles for liquidity reasons is also included as an equity fund. The thumb rule is that the portfolio needs to consist of more than 80 percent of equity. We excluded mutual funds which pay out their dividends since that lowers the Net Asset Value (NAV) and introduces biases in our sample. This is not an issue since most current funds accumulate dividend payouts in the mutual funds price or have two types for the same fund; one paying out dividends, the other one reinvesting its dividends. We only selected the later one.

Gruber (1996) did not select any funds having less than 15 million dollars in assets, since apparently it was difficult to find consistent and sufficient data for these funds. If we also adhere to this rule we will use the same sample cut off but then compensated for 2009 prices. Compensating for the 1996-2008 inflation²⁹ for the developed countries we get an amount of 21,3 million dollars (or 15,8 million euro). We therefore will also not include any funds which have less than 21,3 million dollars invested into the fund. We also want at least 1 year (52 weeks) of weekly returns to include a fund into our sample. When looking at the minimum invested amount of capital we noticed some mutual funds, who needed millions of dollars as a minimum investment. Since we want to look at the performance of mutual funds accessible to most investors we set the maximum minimal investment at 100.000 euro. Since some funds are denoted in Australian Dollars, Japanese Yen, US Dollars etc. we converted these numbers to Euro. We used the exchange rates from Bloomberg for 1 April 2009 to convert all these amounts into Euros.³⁰

²⁸ Barber et al. (2005) showed that front end sales costs had a negative impact on performance but also in the money received into a fund.

²⁹ As collected and published by the federal bank of Cleveland who retrieves their data from the International Labor Organization (LABORSTA)

³⁰ Also look at <http://www.bloomberg.com/invest/calculators/currency.html> for up to date currency exchange rates from Bloomberg.

The weekly data we receive are from funds that are all compliant to the Global Investment Performance Standards (GIPS). They are adjusted for stock splits and dividends according to the rules set by the GIPS standard. Using standardized rules for dividends, stock splits and multipliers, GIPS tries to establish a standardized, industry-wide approach as to how investment firms should calculate and report their investment results to prospective clients to ensure fair representation and full disclosure all over the world.³¹ Bloomberg uses this standard so all mutual funds we add to our sample are using the same standard to calculate returns. In this way no biases are caused based on differing methods for calculating returns when a mutual fund splits or merges.

We take the weekly closing prices to calculate the weekly returns in the following manner:

$$R_{it} = \frac{P_t}{P_{t-1}} - 1.$$

Where:

R_{it} = Return of a fund or index in a week

P_t = Price of a fund or index in week t

P_{t-1} = Price of a fund or index in week t-1

The excess market return, the size factor, the value factor, the bonds factor and the momentum factor are used in the different models to estimate Jensen's alpha. The market factor corrected for the risk free rate is denoted as $(R_{mt} - R_{ft})$. The weekly returns on the MSCI world index (R_{mt}) minus the weekly return on a 30 day LIBOR (R_{ft}) gives the excess market return. The size factor is denoted as SMB and is the difference between a small and large cap portfolio weekly return. The closing prices are retrieved from the MSCI world small cap index and the MSCI world large cap index. HML is the value factor showing the difference between a high growth portfolio and a value portfolio weekly return, based on the MSCI world growth index minus the MSCI world value index. The bonds factor is the excess weekly return on a bond index that represents an estimate of aggregate corporate and government bonds. Based on equal parts of Credit Suisse High Yield Index Value, EFFAS (European Federation of Financial Analysts Societies) Global Market Weighting and J.P. Morgan Global Aggregate B USD index. The momentum factor is denoted as PR1YR. It is build up of an equal weight average of the firms with the highest 25 percent 11 month returns lagged one month minus the lowest 25 percent, 11 month returns lagged one month based on a sample of 500 stocks taken from the NYSE, Amex, Nasdaq as used by Carhart (1997).

³¹ CFA Institute, Global Investment Performance Standards (GIPS) factsheet, Link

We collected data from the period 1 April 1999 to 1 April 2009. A period of ten years with bear and bull markets. The period chosen is sufficiently large, researchers like Gallagher & Martin (2005) also use a ten year period in their research. On the other hand databases are used with a longer time series like Gruber (1996), 25 years and Wermers (2000), 20 years. Ideally we would use a longer time span, the problem is that there are almost no boutique funds in the 1980's. The lack of boutique funds makes any longer period of time useless since we need a decent number of boutique funds to make a fair comparison. So although the data is available to us, the lack of boutique funds makes it not possible to select such a long period.

3.3 Sample Descriptions

Retrieving data from Bloomberg resulted in a sample of 623 mutual funds and 79 boutique funds. When taking a closer look at the sample we had taken, we found a lot of double entries in the data and removed them from the sample. After removing double funds and funds that did not follow our selection criteria, we had a sample of 67 boutique funds and 452 mutual funds. The observation period runs from 1 April 1999 to 1 April 2009. We use weekly returns. Table 3.1 reports the summary statistics on the mutual funds data we collected. On average a boutique fund had a weekly return of 0,0176% percent and total assets in 2009 of 163,09 million euro. The average boutique fund in our sample has reported data for 7,5 years from the 10 year sample we have in comparison to the average 5,9 years for a normal fund, a large difference. Normal mutual funds clearly perform worse than boutique funds with a negative return of -0,044 percent per week. Even while this is the case the current fund value of normal mutual funds is more than double the size of boutique funds with an average of 350,41 million euro in current assets. This is quite similar to the 268 million dollars for an average mutual fund in 1993, corrected to 342,29 million euro in 2009³², that Carhart (1997) found in his research on mutual funds.

When we look briefly at the minimal investments we see an average minimum initial investment of 8.183 euro for normal funds and a minimum investment of 20.772 euro for boutique funds. A large difference although it should be noted that this average is constructed from the funds that filled in their minimum investments through Bloomberg, for the entire sample this is the case in 43,89 percent of the cases.³³ In 33 percent of the cases the monthly minimum invested amount was now

³² Corrected for the average inflation in 16 years and for the current exchange rate, data retrieved from Bloomberg and Infationdata.com

³³ Also see table 4-3 for more detailed information on the summary statistics shown here.

and the differences here are a monthly investment of 1.222 euro for normal funds and a minimum of 518 euro for boutique funds.

Table 3-1: Summary Statistics of sample funds

Group	Number of Funds	Mean Weekly Return	Median Weekly Return	Standard Deviation	Avg. No. of Years	Current Value of Fund (mln)	Min. Initial Investment	Min. Monthly Investment
All Funds	519	-0,0440%	0,0229%	3,61%	5,1	€ 335,27	€ 9.647	€ 1.147
Boutique	67	0,0176%	0,1971%	3,15%	7,5	€ 163,09	€ 20.772	€ 518
Normal	452	-0,0440%	0,0229%	3,61%	5,9	€ 350,41	€ 8.183	€ 1.222

The table reports averages of mutual funds and boutiques in the period April 1999 to April 2009. There are 519 mutual funds in total, of which 67 boutique funds and 452 regular mutual funds. Shown are the corresponding weekly mean returns, median returns, standard deviation, the average number of years recorded per fund in that category in the period of 10 years (1999-2009), the average current value of the funds portfolios, the minimum initial investment needed to make into a fund to be able to invest into it and the minimum monthly investment needed to make into a fund to be able to invest into, for the sample and for each group. For more details see also table 4-3

3.4 Survivorship Bias

Survivorship bias occurs when funds are selected that existed continuously over a period of time and had some stated investment policy at the beginning or end of that period. Such a sample produces survivorship bias, since only the funds that existed during that period are selected and the ones that disappeared are not. (Elton et. al. 1996).

There are two main thinking lines in the survivorship bias theorem, one is the theory of Brown et. al. (1992) that spurious persistence will be introduced. This is contradicted by the other main contributor Grinblatt and Tittmann (1992) who show there is a negative relation or nonexistent relationship between persistence and survivorship bias.

Numerous empirical studies that followed Brown et. al. (1992) produced evidence in support of their hypothesis. Such studies include Brown and Goetzman (1995) and Gruber (1996). 'The logic underlying the Brown et al (1992) argument is that a manager who takes on a high degree of risk will have a high probability of failure. If the manager survives, the probability is that the manager took a large bet and won. Therefore, it is the winning managers who survive and create the appearance of positive performance persistence. The important point is that the appropriate measure of risk to look at is total risk; risk-adjustment measures focusing on systematic risk will not give the correct adjustment.

An alternative view on the nature of survivorship bias is put forward by Grinblatt and Titman (1992) who argue that it is the funds with persistently poor performance (loser-loser) funds who are most

likely to be eliminated from the sample. This means that the relative proportions of funds in the sample with inconsistent performance records would increase and that this would bias the results towards evidence of performance reversals. This argument does require, however, that the market is efficient in disciplining poor performing funds, but the evidence on this point is inconclusive. Several studies have found evidence to support the induced non-persistence hypothesis of Grinblatt and Titman (1992), for example Elton et. al. (1993).’ (Hallahan & Faff, 2001).

Another form of Survivorship bias is introduced by the rules of the SEC itself. ‘Prior to 1985, funds had to have a minimum of 1,000 shareholders to be listed by the NASDAQ. Furthermore, the SEC supplies an annual list to the NASD³⁴ of mutual funds that must be recertified (after their initial listing) as having a minimum of either 750 shareholders or \$15 million in total net assets in order to be included in the NASDAQ listing supplied to newspapers.’ (Elton, Gruber & Blake, 1996) Such incubating funds can use their past returns when going public according to the SEC rules. This while the performance of unsuccessful or merged funds, never get published and are not found in any database.

Our sample also introduces survivorship bias since we only have data on mutual funds that existed in April 2009. We could remove most of this survivorship bias by using all the mutual funds and boutique funds that were present at the starting date of the sample 1 April 1999, this is unfortunately a solution which cannot be applied due to the fact that our database would get immensely large and unworkable. Also finding all boutique funds that were in existence in 1999 is very difficult, since the term did not really exist then and data from 1999 about size and manager structure is not often available in Bloomberg’s database. To give an answer for the possible influence of survivorship bias in our sample we will perform a survivorship bias theory investigation where we will try to classify and estimate the size of the survivorship in our sample for both boutique funds and normal mutual funds.

³⁴ ‘The NASD (*National Association Of Securities Dealers*) watches over the Nasdaq to make sure the market operates correctly. It was a self-regulatory organization of the securities industry responsible for the operation and regulation of the Nasdaq stock market and over-the-counter markets. In 2007, the NASD merged with the New York Stock Exchange's regulation committee to form the Financial Industry Regulatory Authority, or FINRA.’ Source: Investopedia

3.5 Selection Bias

Selection bias is a type of bias caused by choosing non-random data for statistical analysis. The bias exists due to a flaw in the sample selection process, where a subset of the data is systematically excluded due to a particular attribute. The exclusion of the subset can influence the statistical significance of the test, or produce distorted results.³⁵

In our sample this form of bias appears when we are selecting the stocks to compare the boutique funds with, since we select from an alphabetical list out of Bloomberg. There is a chance we will select more funds from the first letters in the alphabet than from the last letters in the alphabet. And therefore can lead to an over presentation to the number of funds with a letter at the beginning of the alphabet. We avert selection bias because we made a random selection out of the entire sample from Bloomberg. This was done by assigning random numbers by Excel and selecting the first 1000 numbers (the entire dataset was over 42000 mutual funds). Then using our selection criteria to omit certain funds we had retrieved a sample of 452 useable regular funds.

³⁵ Investopedia.com, Sample selection bias, Internet Source

4 Methodology

This chapter will discuss the models we will use to show performance and persistence and how we adjust for survivorship bias and costs.

4.1 Performance models

Jensen (1968) was one of the first researchers who looked at performance by an absolute instead of a relative performance measure. Using the basic market model he estimated Jensen's alpha, the outperformance of a security over the security's theoretical expected return. Over time the model used to estimate Jensen's alpha got more sophisticated. In current literature there are multiple models developed and used to estimate Jensen's alpha. From the basic market model to more advanced methods using a three or four factor model with different estimators. In our thesis we will use multiple measures as used in recent literature to estimate the outperformance of funds.

First we will use a basic return relative to the market as used by Gruber (1996), although this is not compensated for numerous factors it can give us some early insight into the performance of funds.

- 1) A measure of return relative to the market:

$$R_{it} - R_{mt}$$

Where:

R_{it} = The weekly return of fund i in week t

R_{mt} = The weekly return on the relative market index (the MSCI world index) in week t

Fama & French (1993) developed their three factor model and used it to show outperformance for mutual funds, this exact model is later also used Barber et. al. (2005) to look at the relationship between expenses and performance. Later four factor models are mostly based on the three factor model as developed by Fama & French (1993). Since current literature is still using this model and the fact that it is the basis of the more advanced four factor models, we will include this model as one of the models to estimate outperformance.

- 2) The excess return based on Fama and French (1993) three factor model

$$R_{it} - R_{ft} = \alpha_i + \beta_{mi}(R_{mt} - R_{ft}) + \beta_{si}(\text{SMB}) + \beta_{gi}(\text{HML}) + e_i$$

Where:

R_{it} = The weekly return of fund i in week t

R_{mt} = The weekly return on the relative market index (the MSCI world index) in week t

R_{ft} = The weekly return on the 30 day Euro LIBOR in week t

α_i = The risk adjusted excess return measured from the three index model

β_{ki} = The sensitivity of the excess return on fund i to portfolio k , where k can represent the market estimated by the three index model, a size factor or a growth factor

SMB = The difference between a small and large cap portfolio weekly return. Based on the MSCI world small cap index and the MSCI world large cap index.

HML = The difference between a high growth portfolio and a value portfolio weekly return. Based on the MSCI world growth index and the MSCI world value index.

Gruber (1996) developed a four factor model which included the major types of securities held by funds, small cap stock, large cap stock, bonds, value stock and growth stock. He used indices to estimate the size, book to market and bonds factors. Using for size, a small cap index and a large cap index, and using for book to market factor a value approach index and a growth approach index. The inclusion of a bond index was new for the time. He argued and showed that failing to include the bond index would lead to incorrect conclusions about performance. His model was later used by himself and others in many other studies like Elton et. al. (1993) and Elton et. al. (1995).

3) The excess return based on Gruber (1996) four factor model

$$R_{it} - R_{ft} = \alpha_i + \beta_{mi}(R_{mt} - R_{ft}) + \beta_{si}(\text{SMB}) + \beta_{gi}(\text{HML}) + \beta_{di}(\text{BONDS}) + e_i$$

Where:

R_{it} = The weekly return of fund i in week t

R_{mt} = The weekly return on the relative market index (the MSCI world index) in week t

R_{ft} = The weekly return on the 30 day Euro LIBOR in week t

α_i = The risk adjusted excess return measured from the four index model

β_{ki} = The sensitivity of the excess return on fund i to portfolio k , where k can represent the market estimated by the four index model, a size factor, a growth factor or a bond factor

SMB= The difference between a small and large cap portfolio weekly return. Based on the MSCI world small cap index and the MSCI world large cap index.

HML The difference between a high growth portfolio and a value portfolio weekly return. Based on the MSCI world growth index and the MSCI world value index.

BONDS= The excess weekly return on a bond index that represents an estimate of aggregate corporate and government bonds. Based on equal parts of Credit Suisse High Yield Index Value, EFFAS (European Federation of Financial Analysts Societies) Global Market Weighting and J.P. Morgan Global Aggregate B USD index.

Around the same time Gruber (1996) included the bonds factor, Carhart (1997) developed a model to take into account a momentum factor to compensate for the one year- momentum anomaly found by Jegadeesh and Titman (1993). Jegadeesh and Titman argued that the momentum anomaly was a market inefficiency created by slow reactions on new information in the market. Carhart's (1997) momentum factor was created from an equal weight average of the firms with the highest 30 percent 11 month returns lagged one month minus the lowest 30 percent 11 month returns lagged one month. This model is today still one of the most used models in mutual funds performance literature as used by Bolle and Busse (2005) and Kosowski et. al. (2006). Although slight adjustments have been made in various research to the momentum factor, the momentum factor as described by Carhart (1996), is still used.

4) The excess return based on Carhart (1997) four factor model

$$R_{it} - R_{ft} = \alpha_i + \beta_{mi}(R_{mt} - R_{ft}) + \beta_{si}(SMB) + \beta_{gi}(HML) + \beta_{di}(PR1YR) + e_i$$

Where:

R_{it} = The weekly return of fund i in week t

R_{mt} = The weekly return on the relative market index (the MSCI world index) in week t

R_{ft} = The weekly return on the 30 day Euro LIBOR in week t

α_i = The risk adjusted excess return measured from the four index model

β_{ki} = The sensitivity of the excess return on fund i to portfolio k , where k can represent the market estimated by the four index model, a size factor, a growth factor or a momentum factor

SMB= The difference between a small and large cap portfolio weekly return. Based on the MSCI world small cap index and the MSCI world large cap index.

HML The difference between a high growth portfolio and a value portfolio weekly return. Based on the MSCI world growth index and the MSCI world value index.

PR1YR= Equal weight average of the firms with the highest 30 percent 11 month returns lagged one month minus the lowest 30 percent 11 month returns lagged one month based on a sample of stocks taken from NYSE, Amex and Nasdaq.³⁶

Although all performance measures will be discussed, most emphasis will lie on the two four factor models as it has been proven to be the most accurate as it also compensates for the size, growth, bonds and momentum factors.³⁷

4.2 Persistence measures

Persistence research is well documented in recent literature as shown by Carhart (1997), Elton et. al. (1996), Gruber (1997) and Bolle and Busse (2004).

Since we are following Gruber's (1996) research methods throughout this paper and the fact he studied other previous methods we will look at persistence of mutual funds and boutique funds according to the method of Gruber (1996). Although our research differs significantly, the method is still valid although some adjustments have to be made.

We will test if previous performance can predict future performance using the following methodology. We will separate the sample of boutique funds into two periods, one estimation period and one performance period. Gruber (1996) ranks the funds at the end of each year and places them into deciles according to the risk adjusted performance and raw returns in that year. Because our sample of boutique funds is much smaller than Gruber's sample of mutual funds we will use quartiles. We rank the funds each year and look at the performance one year after that for each quartile. We exclude all boutique funds which are not included in the database at that time of ranking the funds.

We divide the sample in quartiles based on the raw returns and the four index model in the estimation periods. The performance periods give us the raw returns and the alpha's of the four index model for each quartile for nine periods from April 2000 to April 2009.

³⁶ Sample constructed as Carhart (1997), On Persistence in Mutual funds Performance, The journal of Finance, Page 61.

³⁷ As did Carhart (1997) and Gruber (1996)

The statistical significance for persistence is tested using two different methods. First we will use the Spearman's rank correlation test of quartiles in the selection and performance period. This will show us a basic estimation if there is a relationship between the estimation and performance period. The second test is done by computing the means of the differences in the excess return on quartiles and testing whether these differences are statistically different. A t-test can then be used to show differences between means of the quartiles.³⁸ Over the performance period alphas are calculated for each fund separately. The alpha for each quartile is computed by treating the quartile as an equally weighted portfolio of the alphas of each fund. According to Gruber (1996) this is the best method since risks and the composition of the funds change every year.

We perform above mentioned tests for boutique funds only in an attempt to see if the outperformance of the boutique funds is persistent and if a viable investment strategy can be made from it.

4.3 Survivorship Bias

When we review the literature on survivorship bias in mutual funds and look at prior estimates of the survivorship bias we found six articles that give us such estimates. Although some of those are not very relevant to our research. Elton et. al. (1993) concludes that survivorship bias gives a 0,27 percent yearly higher return for bond funds. Since we focus on equity funds this is not very serviceable for us. An overview of the results we discuss in this chapter is summarised in table 4.1

Grinblatt and Titman (1989), Brown and Goetzmann (1994) and Malkiel (1995) all give us estimates for equity funds based on raw market returns. Grinblatt and Tittman use quarterly holdings to estimate the survivorship bias. They calculate returns on two equally weighted portfolios, one with survivorship bias and one without. Their estimate of the size of the survivorship bias is the difference between these two portfolios. They found quite a small size of survivorship on the order of 0,5 percent per annum or less. The bias is somewhat larger for the smaller funds. In the article of Brown and Goetzmann (1995) they present annual returns for two samples. One free of survivorship bias and the other one with an almost survivorship bias free sample. Again the difference shows the size of the survivorship bias. They find an estimate of survivorship bias of maximum 0,8 percent annually based on raw returns. Malkiel (1995) examines the performance of all funds that exist the entire time over a period of 20 years and the performance of funds that did not survive. He found on average in

³⁸ Method derived from Gruber (1996)

his sample a survivorship bias of 1,5 percent but he did see differences between growth funds (2 percent) and general equity mutual funds (1,2 percent).

The last two articles we will discuss are from Elton et. al (1996) and Carhart et. al (2002), the main difference between the latter two and previously mentioned articles is that they quite extensively and solely focus on survivorship bias. They also research survivorship bias based on risk adjusted returns, underlying characteristics and time span. We therefore will only use the latter two publications to adjust the risk adjusted returns we found. We see no added value for adjusting raw returns, because raw returns without implementing risk is not a good benchmark to compare results.

Table 4-1: An overview of the estimations of the size of the survivorship bias by different researchers

Author	Raw returns	Risk adjusted one factor	Risk adjusted 3 or 4 factor	Method
Brown and Goetzmann (1994)	0,80%			Raw yearly returns
Elton et. al. (1993)	0,27%			Based on bond funds raw yearly returns
Grinblatt and Titman (1989)	0,20% - 0,50%			Raw quarterly returns
Malkiel (1995)	1,20 % - 1,50%			Raw returns, also estimated for different categories
Elton et. al. (1996)	1,84%	0,31%	0,91%	Risk adjusted returns bases on a one and three factor model (CAPM), also estimated over different time spans
Carhart et. al. (2002)	4,32%		0,96%	Risk adjusted returns bases on a one and four factor model (CAPM + momentum factor) also estimated over different time spans

This table shows different authors who made an estimation of the survivorship bias for mutual funds. We give the survivorship bias of the raw returns for each other in the second left column. In case of Elton et. (1996) al. and Carhart. et. al. (2002) we also give risk adjusted estimations of survivorship bias. The method used is shortly summarised in the last column.

Elton et. al. (1996) use a sample of 361 funds categorised as having common stock investment policy in the 1977 edition of Wiesenbergers Investment Companies³⁹. They found that from the funds in size of 15 million dollars or more in assets out of the 207 in their sample 146 survived until 1993. They estimated the risk adjusted monthly return based on the three factor model as also explained in chapter 4.1. The estimation comes down to a bias of 0,9069 percent per annum for surviving funds. The raw return estimation of the bias leads to a bias of 1,84 percent. Carhart et. al (2002) used a similar method but extended the three factor model that Elton et. al. (1996) used with a factor

³⁹ As Elton et. al stated, Wiesenberger was considered the standard directory for information on mutual funds in 1977.

capturing the Jegadeesh and Titman's (1993) one year momentum anomaly. This model is also used in this thesis to estimate the risk adjusted returns and is explained in chapter 4.1. Using data from 1962 to 1995 and a sample of 2071 funds they estimated a risk adjusted bias of 0,9612 percent per year. This result is quite similar to the risk adjusted return of Elton et. al. (1996) with 0,9069 percent. But these biases are based on a sample period of twenty years. Both studies also look at the effect of the sample duration and the effect of the bias. Since a longer sample period leads to a larger bias according to both researchers, both biases that are presented in the previous section are based on a sample period of 20 years, since our sample is based on a period of 10 years we need to compensate for this. Using the tables from Elton et. al. (1996)⁴⁰ and Carhart et. al (2002)⁴¹ we conclude that in a sample of ten years the average bias is $\frac{0,66+0,378\%}{2} = 0,519\%$ per year.

To use this survivorship bias to adjust our returns we need to have more information on the characteristics of funds that may influence this bias. Both Elton. et. al (1996) and Carhart et. al. (2002) look at the relation between fund size and the survivorship bias, seeing both a negative relation between the total net assets and the size of the survivorship bias. Carhart. et. al. (2002) estimate this relation by running a pooled time series, cross-sectional regression of annual group adjusted returns on some explanatory variables. Most noteworthy and significant are the negative relation between fund size (TNA) and the positive relation between the survivorship beta and the net expense ratio.

Elton et. al (1996) looks at the size of the assets under management and ranks all the funds into deciles and calculates their risk adjusted beta. Interesting to see is that when the results are biased the performance of the largest 10% decile and the smallest 10% decile are almost the same (return difference of 0,052%) but when they are unbiased we see a difference in returns arise of 0,41% in favour of the largest decile. The results clearly show that a larger percentage of small funds relative

Table 4-2: Influence of sample duration on Survivorship Bias

Number of years in study	Survivorship Bias size by author		
	Carhart. et. al. (2002)	Elton. et. al. (1996)	Average
1	0,07%		0,07%
5	0,37%		0,37%
10	0,66%	0,39%	0,52%
15	0,85%	0,67%	0,76%
20	0,94%	0,91%	0,92%
25	0,99%		0,99%
30	1,04%		1,04%

An overview of the survivorship bias given by Carhart. et. al. (2002) and Elton. et. al. (1996) and their averages. Given for sample durations from 1 to 30 years if available. Clearly is seen here the increasing bias with increased duration of the sample.

⁴⁰ Table 7, page 1116 of Elton. et. al. (1996)

⁴¹ Table 3, page 1452 of Carhart et. al. (2002)

to large funds fail to survive, and funds that fail to survive have poorer performance than funds that do survive. Since Elton et. al (1996) do not give any results considering the differences in risk adjusted survivorship bias these results cannot be used directly into our research.

Our conclusions based on the survivorship bias will be based on the characteristic of the total net assets under management of a fund. Because we already found that on average the boutique funds are about half the size of regular funds they will probably suffer the most from the survivorship bias. We take a conservative approach to only adjust the returns from the boutique funds and lower solely their performance to fully compensate for the survivorship bias and get as robust results as possible. The size of the bias will be discussed and determined in the results chapter. There we will adjust the results we obtained with the survivorship bias. We understand also that normal mutual funds experience survivorship bias, but since we lack the extended data from previous research to make a sound interpretation of results, we have taken this approach. Although this is quite a drastic measure we will make sure that possible outperformance of the boutique funds is undeniable.

4.4 Costs and minimal investments

Another issue we need to look at are the costs involved in the two different categories of mutual funds. Luckily Bloomberg supplies data on most of the costs involved in mutual funds so we can make a fair comparison and can take the costs into account for our conclusion. Bloomberg reports the front load, back load, the current management fee and the expense ratio. We will look at these costs in depth in the results chapter of the costs and compare boutique funds to the regular mutual funds. An overview of the costs in our sample is given in table 4-3.

Table 4-3: Extended information on fees, expenses and minimal investments

Group	Maximum Front Load Fee	Maximum Back Load Fee	Management fee	Total Expense Ratio	Current Value of Fund (mln)	Minimum Initial Investment	Minimum Monthly Investment
Normal	4,05%	0,51%	1,41%	1,84%	€ 350	€ 8.183	€ 1.222
	(35,2%)	(32,9%)	(90,4%)	(52,0%)	(100,0%)	(43,9%)	(33,1%)
Boutique	3,67%	0,15%	1,39%	1,53%	€ 163	€ 20.772	€ 518
	(30,6%)	(36,1%)	(100,0%)	(55,6%)	(100,0%)	(72,2%)	(50,0%)
All	4,03%	0,48%	1,41%	1,80%	€ 335	€ 9.647	€ 1.147
	(34,9%)	(33,1%)	(91,2%)	(52,4%)	(100,0%)	(47,2%)	(34,9%)

This table shows the maximum front load fee, maximum back load fee, management fee, the total expense ratio, the current value of the fund in millions of euro, the minimum initial investment in euro and the minimum monthly investment in euro, for the complete sample and each group. The corresponding percentage of funds recorded with a fee is given

below in parentheses. We see that only 35,22% of the normal funds have a reported front load fee and that averages 4,05%. The total expense ratio for boutique funds is only given in 56% percent of the cases.

We see surprisingly that the costs of normal funds are on all criteria higher than those of the boutique funds. This is surprising cause we expected higher costs due to the average size of boutique funds being smaller than normal mutual funds, Ramasamy and Yeungh (2003) found that larger funds could keep the costs down better than small funds. We can only assume that Gruber (1996) and Barber et. al. (2005) who found that good managers tend to have lower costs than bad managers holds for our sample.

This short overview of the costs gives us a preliminary insight into the costs structure from boutique funds and regular mutual funds. But we do need to look at the effects of these costs on performance. Therefore we need to adjust the results we obtain with the costs endured by normal and boutique funds to come to a better insight of the performance of boutique funds. Since the total expense ratio is already included into the daily prices of the mutual funds we do not have to compensate our results for this. But the costs that we will look into are, of course, the costs that directly lower the invested amount of capital, the front load and back end load fees. We will consequently look at these fees and see if we subtract these costs from the performance results, we still have significant levels of outperformance for boutique funds.

5 Hypothesis

To answer if boutique funds outperform their mutual funds counterparts we will form some research questions to be able to answer the main research question:

Do boutique funds outperform average mutual funds and is there persistence in these results?

We will try to answer the question if the performance of boutique funds is significantly different then the performance of normal mutual funds. We will look at the abnormal returns based on four different models, a model relative to the market, a three factor model (Fama and French 1993), a four factor model (Gruber 1996) and another four factor model (Carhart 1997).

1. *When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly, based on the market adjusted model, a three factor model and two four factor models.*

Null-hypothesis = $H_0 : \alpha_{boutique} - \alpha_{normal} = 0$

Alternative hypothesis = $H_1 : \alpha_{boutique} - \alpha_{normal} \neq 0$

If boutique funds show outperformance we also want to test if these results are persistent in the long run using Gruber (1996) method of persistence testing. If boutique funds outperform normal mutual funds significantly do boutique funds then also show persistence in these results ?

2. *The past performance of a boutique fund is a viable predictor of future performance in the long run.*

Null-hypothesis = $H_0 : \mu_{estimation\ period} = \mu_{performance\ period}$

Alternative hypothesis = $H_1 : \mu_{estimation\ period} \neq \mu_{performance\ period}$

Besides these two main hypotheses we also want to take a closer look at the influence of survivorship bias and costs on performance. We will therefore add two more hypothesis that need to be tested.

3. *When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly after correcting for survivorship bias, based on a three factor model and two four factor models.*

Null-hypothesis = $H_0 : (\alpha_{boutique} - \beta_{surv}) - (\alpha_{normal} - \beta_{surv}) = 0$

Alternative hypothesis = $H_1 : (\alpha_{boutique} - \beta_{surv}) - (\alpha_{normal} - \beta_{surv}) \neq 0$

4. *When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly after correcting for front load and back loads, based on a three factor model and two four factor models.*

Null-hypothesis = $H_0 : (\alpha_{boutique} - C_{boutique}) - (\alpha_{normal} - C_{normal}) = 0$

Alternative hypothesis = $H_1 : (\alpha_{boutique} - C_{boutique}) - (\alpha_{normal} - C_{normal}) \neq 0$

This four hypothesis will give us a thorough insight into the performance and persistence of boutique firms compared to regular mutual funds.

6 Results

6.1 Raw and Risk Adjusted Return Results

6.1.1 Overview of results

We took data from April 1999 to April 2009 and we started examining the performance of our funds compared to the performance of the market (MSCI World Index). Table 6-1 the left column presents the results of these yearly returns. In line with research from Jensen (1968), Gruber (1996) and Carhart (1997) we expect not to find an outperformance for mutual funds compared to the world index. But if we look at the market adjusted returns we see outperformance for both the boutique funds as for the normal funds, with a yearly outperformance of respectively 6,048 percent and 4,654 percent. Quite a high outperformance of the market by both regular as boutique funds. But looking at the differences of the two types we see that boutique funds outperform normal mutual funds significantly with 1,394 percent a year. So based on market adjusted raw returns boutiques clearly outperform regular mutual funds.

In order to make a fair comparison we need to adjust these results for the risk that is accompanied by them. We compared the same risk measures to each different investment in order to get a relative performance perspective. We used three different risk adjusting models; the Fama and French 1993) three factor model, Gruber's (1996) four factor model with a bonds factor and the Carhart's (1997) four factor model with a momentum factor. These models will give us a better insight in the risk adjusted performance of mutual funds. The results for these risk adjusted returns as well as the estimated size of the factors are included in table 6-1.

When we look at the three factor model we see an estimated alpha of 1,851 percent per annum for normal mutual funds and a higher estimated alpha of 3,224 percent for boutique funds a difference of 1,373 percent. The same trend in results can be seen for the four factor model of Gruber (1996), also here a clear outperformance of 3,27 percent for boutique funds and 1,92 percent for normal funds. However the added bonds factor has a negative relationship with both boutique and regular mutual funds. Because the bonds factor though is of less influence on boutique funds, no real weight can be put on this result since this factor is not significant.

Table 6-1: Returns for boutique and normal mutual funds

	Excess return		F&F(1993) Three Factor Model				Gruber(1996) Four Factor Model					Carhart(1997) Four Factor Model				
	return	Std Dev	Alpha	RMRF	SMB	HML	Alpha	RMRF	SMB	HML	BONDS	Alpha	RMRF	SMB	HML	PR1YR
Normal	4,654%	0,380%	0,0185	0,86	0,39	0,21	0,0192	0,97	0,44	0,21	-0,18	0,0185	0,86	0,35	0,22	0,04
			(5,00)	(341,87)	(60,56)	(32,15)	(5,18)	(34,50)	(33,54)	(32,35)	-(4,17)	(5,00)	(343,66)	(52,08)	(34,14)	(28,99)
Boutique	6,048%	0,718%	0,0322	0,84	0,36	0,14	0,0327	0,91	0,39	0,14	-0,11	0,0306	0,84	0,31	0,16	0,05
			(4,64)	(167,79)	(30,25)	(11,94)	(4,70)	(17,48)	(15,86)	(12,01)	-(1,16)*	(4,42)	(168,99)	(25,31)	(13,10)	(17,06)
All	4,888%	0,339%	0,0207	0,85	0,39	0,20	0,0214	0,97	0,43	0,20	-0,17	0,0205	0,86	0,34	0,21	0,05
			(6,30)	(379,42)	(67,56)	(34,26)	(6,50)	(38,65)	(37,23)	(34,52)	-(4,56)	(6,24)	(381,50)	(57,88)	(36,53)	(33,12)

An overview of excess return to market and Jensen's alpha estimated by three models; Fama and French (1993) three factor model, Gruber (1996) four factor model and Carhart (1997) four factor model, for normal mutual funds, boutique funds and combined. The weekly excess return is made out of the raw returns minus the weekly return on the MSCI world index. Behind the alpha's for each model is stated the influence of the beta's; RMRF is a market proxy, SMB is the factor for size, HML is the factor for book to market, BONDS is the factor for the bonds and PR1YR is a factor mimicking portfolio for one-year momentum. The R squared are also given as the explanatory power for each model. * the only non significant factor at a 5% level.

The Carhart (1997) four factor model clearly shows us the outperformance of boutique funds in comparison to regular funds with a difference of 1,212 percent per year in our sample period. Boutique funds have an annualised adjusted return of 3,06 percent compared to the 1,85 percent per year from the normal funds. The momentum factor seems to be of small positive influence on the boutique and regular mutual funds.

The beta's of the market RMRB are all very close to 1 and we do not see any big significant differences in this between boutiques and regular mutual funds. This is as expected most researchers find a beta close to one. We find betas for the different models between 0,31 and 0,44 for the size factor SMB. Unfortunately we cannot retrieve any conclusions from the values of SMB. A value lower than zero signifies a tilt for large cap, and a value of greater than 0,5, small cap. Since our values fall between this margins we cannot argue that mutual funds or boutique funds follow a certain style in size of stocks they invest in. The HML values all fall between 0,14 and 0,22. To see if mutual funds invest more in value or growth funds the values need to exceed 0 or 0,3. A zero or smaller than zero value defines a growth portfolio, a value of more than 0,3, a value fund.⁴² The HML value therefore also gives us no insight whether boutiques and mutual funds differ significantly from each other.

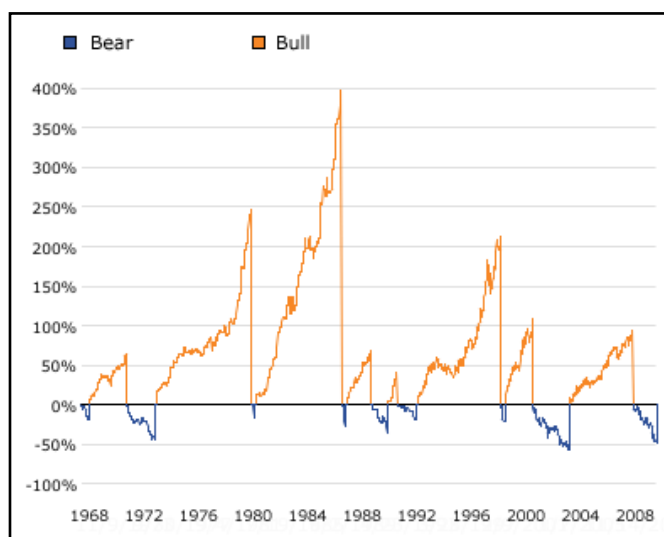
6.1.2 Interpretation of results

Table 6-1 gave us an overview of the yearly performance of boutique and normal mutual funds in our sample from 1999-2009. Whether we look at the market adjusted returns or at the three risk adjusting models, boutique funds clearly outperform the market and their regular mutual funds counterparts significantly. It is interesting to see how our results of outperformance compare to other research done in recent years. We start off by looking at our main peer, Gruber (1996), he finds in his sample from 1985 to 1994 that mutual funds underperformed the market with around 1,94 percent a year. When looking at the four index model Gruber found a risk adjusted return of negative 65 basis points (0,65%) annually. Gruber (1996) therefore also wonders why people still invest in mutual funds with the higher costs endured by mutual funds and the proven bad performance. Well clearly, in our sample mutual funds perform significantly better than in the sample of Gruber (1996). The major difference is the period in which the sample was taken. Where Gruber's sample was taken in a period of relatively high growth, our sample was constructed in a period with 2 major crashes and a hard fall in a period of 10 years. In our sample the MSCI World index went down with

⁴² Values for SMB and HML retrieved from an efficient frontier by W.J. Bernstein (2001), See link

24,912%⁴³ where as in the sample of Gruber the market grew substantially and can clearly be defined as an overall bull market as can be seen in figure 6-1. It is quite remarkable that we have a period where on average in ten years the markets went down. No other research we have come across has this happening in their timeframe. A reason for the good performance can therefore lie in the fact that mutual funds in general and especially boutique funds perform well in volatile markets. When we take a closer look at figure 9-2 in appendix C we see that mutual funds and boutique fund especially perform better than the index in growth periods and about the same in periods of downwards motion. The upside potential of mutual funds and boutique funds is clearly shown in the 1999-2000 period and the 2003-2007 period where mutual funds clearly perform better than the index in the upside market. It seems mutual funds have developed in the years between 1995 and

Figure 6-1: Bull and bear market returns.



Bull and bear market returns for the MSCI World index from 31/12/1969 - 31/12/2008. Source: Franklin Templeton Investments Online Source.

index⁴⁴ during that period. This results appears more in line with the positive excess return we find in our sample. He finds that investing in certain characteristics of funds (growth, value, small or large stock) gave the mutual funds a benefit of around 60 basis points a year and that growth stock seemed to be the most profitable. The rest of the outperformance he attributed to stock selection skills. This research contrary to Gruber (1996) does find a positive performance of boutique funds

2000, since clearly in our sample mutual funds and boutique funds can use the upside of the market to perform much better than the MSCI World index and limit their downside to around the MSCI World index average.

When we look at the article of Wermers (2000) who studies the characteristics and performance of mutual funds, he finds that average mutual funds do outperform the index in the period 1975-1994. He found that on average a mutual fund performs 1.3 percent per annum better than the CRSP

⁴³ An overview of the index performance is given in Appendix C, these results are also shown for the Large Cap, Small Cap, Value and Growth indices.

⁴⁴ Center for Research In securities Prices value-weighted index.

more in line with our research. Although the difference between our returns and the returns that Wervers (2000) finds are still substantially large.

Grinblatt and Tittmann (1993) found that in the performance of mutual funds, fund managers do have stock picking talent and outperform their benchmarks with around 2.5 percent return each year before expenses. They found the strongest evidence of positive abnormal performance is present in the aggressive growth funds, which an average of 3.4 percent per year. These results are adjusted for survivorship bias. Our strongest results show 6 percent better performance than the market, this in raw returns and not corrected for a possible survivorship bias. The strong results of aggressive growth is contrary to what we find in our sample, where growth funds performed worse than the MSCI world index and then value funds. According to Grinblatt and Tittmann (1993) this group must also generate the best performance on their gross returns if the net returns offered to their investors are to be comparable to the returns offered by other funds due to the higher costs and turnover for these funds. The performance results of Grinblatt and Tittmann's (1993) research is more in line with what we found in our research, especially when taken into account we have to lower our results for the survivorship bias with 0,8364% . Finally when we look at the articles of Carhart (1997) and Brown and Goetzman (1995) of return for average mutual funds. They find a mean average return of respectively 14,3 and 14, 5 percent per annum much more than the average non market adjusted return of 4,1 percent we find in our sample. Of course this large difference is explained by the differences in the selection period as we have discussed before.

In our sample period we see that small cap stock have outperformed their counterpart large cap funds with almost 70 percent during our 10 year period⁴⁵. Value stock performed better during our sample with a negative performance of negative 18 percent compared to the negative 34 percent for the growth index.⁴⁶ According to betas from our estimations, we can't deduct a specific investment style mutual funds or boutiques use. So based on these results and the previously mentioned returns on growth and value stock we cannot give an explanation why boutique funds perform so much better than an average mutual fund. We therefore turn to the momentum and bonds factor from the Carhart (1997) and Gruber (1996) four factor models. But alas also here the differences in the beta's are very small and cannot give us any decisive information.

⁴⁵ Based on the MSCI Large cap and Small cap index, also see Appendix C

⁴⁶ Based on the MSCI Value and Growth index, also see Appendix C

A problem with our results is the relatively low explanation rate of around 0,57 percent for the three models. We expected an explanatory rate of at least 0,70⁴⁷ but it seems the adding of the variables only give minor extra explanatory power. For example the adjusted R squared for a single index model (not shown in table) is 0,51 for the entire sample. If we compare that to the 3 and 4 index models the differences are very small (around 0,57 adjusted R squared). Therefore the three and four index models do not seem to add very much explanatory power. Although we recognise the problems around this relatively low R square we are unable to correct for this.⁴⁸

In conclusion we find that boutique funds clearly outperform the market and their mutual funds peers. With market adjusted results in raw returns of 6 percent per annum boutique funds clearly have an edge over the market and their mutual funds peers. Also the risk adjusted returns of around 3,1 percent show that boutique funds perform very well in the market for the last 10 years.

As yet we cannot form any decisive conclusion on why this is the case based on the results presented in this chapter, although the good performance of boutique funds in a bull market is noteworthy. Although our results of more than 3 percent risk adjusted return seem large we do need to take into consideration we did not adjust these results for the possible survivorship bias and endured costs.

6.2 Persistence Results

6.2.1 Overview of results

Now that we have found positive evidence of the outperformance of boutique funds we want to see if mutual funds are persistent in their results. Persistence is often proven in the short run (Bolle and Busse, 2004) but less often in the long run (Gruber, 1996). For that reason we want to look at persistence in the long and short run. Consequently after our estimations periods we look at the performance for these funds in the one year and three years period after it. The results of our persistence research can be found in table 6-2. Table 6-2 presents the yearly adjusted excess return and raw returns that would be obtained by holding quartiles of funds for one or three years. The funds are ranked based on raw returns and based on the four factor alpha of Gruber (1996) model.

⁴⁷ As did Gruber (1996) and Carhart (1997)

⁴⁸ We performed a small research into the validity of the database and methods we use in Appendix D, no results show us that we needed to change our methods drastically although it seems the bonds factor in Gruber (1996) model does not add much value to the three factor model of Fama and French (1993)

The table shows the differences between deciles and if these are statistically significant. We see clearly the good performance based on raw returns of the top quartile (24 percent) compared to the bottom quartile (9,9 percent) in the one year estimation and expectation period. A difference in raw returns of 34,3 percent annually. All the differences based on the one year raw returns are significant on a 1 percent level, we conclude that raw return performance can give a good expectation of future performance. The Spearman's rank correlation test also shows this slightly. There is positive correlation between ranks in estimation and performance period but it's not very outspoken with a level of 0,196.

Table 6-2: Persistence performance measured by four index alpha and raw returns

Quartiles	Grubers (1996)				Grubers (1996)			
	1 year raw return	St. Dev.	1 yr 4 index alpha	St. Dev.	3 year raw return	St. Dev.	3 yr 4 index alpha	St. Dev.
Best 1	0,244	(0,028)	0,271	(0,018)	0,119	(0,015)	0,1909	(0,015)
2	0,094	(0,019)	0,154	(0,009)	0,044	(0,008)	0,1328	(0,008)
3	0,013	(0,018)	0,097	(0,004)	0,005	(0,005)	0,0986	(0,005)
Worst 4	-0,099	(0,018)	0,029	(0,005)	-0,004	(0,005)	0,0893	(0,005)
Top quartile - bottom quartile	0,343*		0,242*		0,123*		0,102*	
Top quartile - average bottom 3	0,241*		0,178*		0,104*		0,084*	
Average Top 2 quartiles - bottom 2 quartiles	0,424*		0,299*		0,163*		0,135*	
Spearman's Rank Coefficient	0,196		0,264		0,432		0,474	

* significant at 1 percent level

The table shows the average realised yearly raw returns and Gruber (1996) four index alpha's for one and three year holding periods after the initial estimation period of one year. Based on either raw returns or the four index alpha. The sample consists of all boutique funds in our database excluding the ones who were not present at the start of our estimation period. We had 9 estimation periods for the one year returns and 7 for the three year returns. We started measurement from April 1999. Our sample period is from April 2000- April 2009.

The one year forecasting method based on risk adjusted alpha gives a 27,1 percent annual return for the top quartile and a 2,9 percent return for the lowest quartile. Also here the differences between quartiles are statistically significant and show prove of persistence. The difference for example between the top quartile minus the bottom three quartiles is 17,8 percent per annum, a large difference. The Spearman's rank correlation test here shows better results for the risk adjusted alpha explaining more of the ranks correlation than for the raw return with a level of 0,264.

If we look at the persistence based on three years after the estimation period for raw returns we find that even long term persistence exists for boutique funds. Based on raw returns after the estimation

period of 1 year investors could receive an annual return of 11,9 percent in the next three years. Also here the differences between quartiles are significant. Spearman's rank correlation test shows the positive correlation between estimation and performance period with a value of 0,432.

If we look at the risk adjusted returns for the four quartiles based on a three year performance window we see that the differences between deciles become smaller but are still significant. We see that the top decile gives a return of 19,1 percent per annum compared to the 8,9 percent per annum for the lowest quartile. The Spearman's rank correlation test shows the relatively high correlation (0,474) between the performance and estimation window. It seems that overall according to the Spearman's rank correlation test, an investment strategy using the risk adjusted alpha is better at forecasting future winners than a strategy based on raw returns.

Table 6-3: Persistence test of fund performance for winners-winners

Year	Raw Returns			4 index alpha		
	Initial Year Winner	Next Year Winner	% Repeat Winners	Initial Year Winner	Next Year Winner	% Repeat Winners
1999	18	11	61,11%	18	9	50,00%
2000	20	11	55,00%	20	14	70,00%
2001	24	12	50,00%	24	13	54,17%
2002	28	16	57,14%	28	15	53,57%
2003	28	18	64,29%	28	20	71,43%
2004	30	21	70,00%	30	19	63,33%
2005	31	16	51,61%	31	19	61,29%
2006	33	19	57,58%	33	17	51,52%
2007	33	25	75,76%	33	27	81,82%
Average 1999-2007	245	149	60,28%	245	153	62,45%

This table presents the number of winners in the year given in the left column followed by the number of winners in the next year. Winners are defined as having a return in the top 50 percent of the sample. Also the percentages of each year repeat winners are given. These results are estimated and given for raw returns and Gruber's (1996) four factor model.

A simplified test of persistence for winners is also shown in the research of Malkiel (1995), where he looks if winners from the last year are also the winners for the next year based in raw returns. A winner is defined as having a return higher than that falls in the top 50 percent range. We find these results in table 6-3. Expected is a ratio of 50 percent in case of no persistence. For the raw return winners and the risk adjusted return winners we find almost the same percentage of around 60 percent chance on average that a past winner becomes a winner the next year. We see no years where the percentage is below 50 percent showing us that overall winners have a greater chance in

all years of becoming a winner again then becoming a loser. Especially the year 2003 and 2004 stands out where the winners of that year are a good forecast for the winners next year.

6.2.2 Interpretation of results

On basis of previous research from Gruber (1996), Hendricks et al. (1993), Brown and Goetzmann (1995) and Wermers (1996) and many others, we expected to find persistence in our results. We did not expect though the persistence to return such high results and seem to be so profitable. If we consider a portfolio with last year's winners in boutique funds using a risk adjusted model, and use that to hold a portfolio we would receive 19 percent per year annually in our estimation period. Nevertheless, when we look at the lowest quartile, we still see positive returns for a three year period, a risk adjusted return of 8,9 percent annually. The risk adjusted return for the lowest quartile based on Gruber's four index model is by far the best performing fourth quartile showing that even bad performing boutique funds still prove to be valuable to investors. It seems with boutiques they generally perform very well as was seen in the return results in the previous chapter. The relative high correlation of Spearman's rank coefficient for the three year returns, show us that in longer periods of performance after the estimation window many winners will be winners again. In the short term this rank correlation holds less but is still positively correlated.

Persistence has been one of the most documented and researched subjects in the mutual funds theorem. We therefore have numerous articles to compare our results with. Gruber (1996) also found significant persistence for the one and three year persistence for average mutual funds. Although his returns were lower, with significant differences between top and bottom decile of 3,6 percent. Although this does not compare very well to our samples differences of sometimes of 10,32 percent we do need to take into consideration his sample was based over a period with negative returns from mutual funds and his sample was survivorship bias free. Carhart (1997) finds in his sample a difference between top and bottom decile of 12 percent for the raw return and 12,2 percent for the risk adjusted alpha for a one year estimation and return period. This is smaller than the returns we find for a 1 year return top minus bottom winner for the raw returns and the alpha, 34,3 and 24,2 percent respectively. Malkiel (1995) using a different method estimated that in the 1982 to 1991 period that an investor that only bought the top 20 funds of the previous year from his sample every year would made a return of 17,275 percent based on raw returns still about half the size of our samples raw returns.

Finally we looked at the persistence results of Kosowski et. al. (2006) mainly because they use an overlapping time period to estimate the persistence of equity mutual funds from 1990-2002. He divides the sample from top 1 percent to bottom 1 percent and sizes in between this. What is most surprising is the big result of the top 1 percent ranked on a four factor models result. He finds a yearly four index alpha of 16,8 percent per annum. This is larger than the 11,9 percent alpha we find for our top 25% boutique funds. In his conclusion he states that he clearly finds that some star managers are able to outperform the market persistently and with very high results. It seems our boutique funds show characteristics in results with the top 1 percent of equity mutual funds in his sample and might qualify as having star managers.

From our winner persistence results we find that winners overall in our sample period had around 61 percent change to be a winner in the next period another proof of persistence in our results. These percentages are very close to what Malkiel (1995) finds in his results with a winner-winner percentage of 65,2 percent on raw returns in the 1970's.

Based on these results we conclude as Malkiel (1995), Kosowski et. al, Gruber (1996) did that boutique funds show persistence. Surprisingly even more so is that the persistence shown by boutique funds and the possible gains from using a winner-winner strategy are so profitable. The surprise therefore is not that boutique funds show persistence but rather how large the returns can be for an investor. It seems boutique funds show very high persistence in their results and not only over a 1 year period but also over longer periods of times. The results we therefore saw in the returns section are most likely persistent in future years to come, as good boutique firms tend to show year after year relatively high returns

6.3 Returns Adjusted for Survivorship Bias

A major influence according to researchers we already concluded in our methodology section is the influence of the survivorship bias. We calculated and did research to how high the estimated bias in our sample is and found the highest percentage for a 10 year sample was given by Carhart et. al. (2002) of 0,66 percent.⁴⁹ We choose this bias over the average bias we found, because we want our results to be robust. Since we see a big outperformance of boutique funds we will use solely the bias from Carhart et. al. (2002) for two reasons; first they find the largest bias in a sample period of 10 years of 0,66 percent making any outperformance from boutique funds more robust and convincing.

⁴⁹ Also see table 4-2

Secondly Carhart et. al (2002) also state the standard error so we can use this error to create a confidence interval of 95% for the beta. Assuming the bias follows a normal distribution we have the mean of 0,66 and the standard deviation of 0,09 percent. When we use the 95 percent interval (the critical value is 1,96) we come to a survivorship bias on a 95 percent confidence level $0,66\% + (1,96 * 0,09\%) = 0,8364\%$.⁵⁰ So we will adjust our boutique returns with a yearly percentage of 0,8364 to fully compensate for a possible survivorship bias in our sample.

The results of the survivorship bias adjusted returns are presented in table 6-4. We clearly see of course the results being lowered by around 30% for each of the models. But still boutique returns measure up to the expectations and outperform their peers significantly. The Fama and French three factor model results is a difference in return of 0,536 percent. The Gruber and Carhart four factor models give relative better performance of boutique funds of 0,51 percent and 0,375 percent respectively.

Table 6-4: Returns adjusted for survivorship bias.

Categories	F&F(1993) Three Factor Model	Gruber(1996) Four Factor Model	Carhart(1997) Four Factor Model
Boutique return	3,224%	3,27%	3,06%
Boutique bias adjusted return	2,388%	2,429%	2,221%
Mutual fund return	1,851%	1,919%	1,85%
Difference in return	0,536%	0,510%	0,375%

We see the returns of boutique forms before being adjusted with the percentage of 0,8364% and after we also show the performance of the normal mutual funds and the differences in return of the boutique survivorship bias adjusted returns and the normal mutual funds returns. The results are shown for the Fama and French (1993) three factor model, Gruber (1996) Four Factor Model and the Carhart (1997) Four Factor Model. The differences are all significant at 5% level.

We can consequently conclude that the returns are clearly in favour of boutique funds even when we use a very conservative and large survivorship bias to adjust solely the boutiques returns. The returns for boutique funds are without a doubt now very impressive and it seems boutique funds can give an investor a certain combination of characteristics that other mutual funds find harder to deliver.

⁵⁰ For a detailed explanation on confidence intervals and the z value of 1,96 see the site of the statistics department of the Yale University. See link in the appendix.

6.4 Returns adjusted for costs

Costs according to many researchers can limit the returns quite considerably for investors. Wermers (2000) finds that the expense ratio of an active managed fund is around 100 basis points a year. If we compare this to the expense ratios in our sample for normal funds and boutiques, we find expense ratios of 184 and 153 basis points⁵¹. Meaning that on average the costs for boutiques are lower than for normal funds, but still much higher than the costs found by Wermers (2000). Elton et al. (1996) found that on a regression of alphas, a percentage point increase in expense ratio leads to a percentage point decrease in returns. If we adhere this general rule we should see a difference of $1,84 - 1,53 = 0,31$ percent difference in return every year in favour of boutique funds. If we set this out against the risk adjusted, survivorship bias returns from Carhart (1997) this might even be a good approximation. The return difference is 0,365 percent where we expected 0,31 percent. The differences for the other two models are higher though with approximately 0,526 percent returns and 0,51 percent returns.⁵²

So normal funds face higher expense ratios than boutique firms but our returns have already implemented these returns, as the returns given by Bloomberg are adjusted for expenses endured. The expenses that are most important therefore are the front and back loads faced by an investor. They significantly lower the invested amount of capital invested or retrieved from a fund. We retrieved from Bloomberg the maximum front load fee that may be charged by a fund of 4,05 percent, data reported for 35,2 percent of the mutual funds. 30,6 percent of the boutiques reported a maximum fee of 3,67 percent. We retrieved data For the back load fee 32,9 percent and 36,1 percent reported fees for normal and boutique funds of 0,51 percent and 0,15 percent. Ramasamy and Yeangh (2003) stated that small companies have more trouble keeping the costs down as stated. The facts in our sample clearly disagree with these findings and follow more the view of Gruber (1996) and Barber et. al. (2005) that good managers can keep costs down better than bad managers. It seems boutiques managers do a fine job of keeping the costs down compared to their normal fund manager peers. It is therefore strange to see that although the costs and performance of regular mutual funds are higher that they still have almost twice the average fund size than boutiques. Especially when we look at Sirri and Tufano (1998) and Barber et. al. (2005) who stated that funds with high front load fees would not attract capital of investors quickly. So how can we explain this irrational behaviour from investors to stay invested in worse performing funds with higher costs?

⁵¹ See Table 4-3

⁵² See table 6-4

Previous research gives us several explanations. First Barber et al. (2005) find that funds with higher expense ratios have not seen a decrease in market share mainly because the negative effect of the costs is offset by the money spent on marketing. We could therefore argue that normal mutual funds have a better marketing division or better known brand name, which is of course both possible and in line with expectations. Secondly it can be that investors are just irrational. Alexander et. al. (1998) found in their survey that investors 80 percent of the time could not give an estimate of the costs. They also noted that investors expected higher costs would lead to higher returns. Both of course worrisome facts, but they do give an explanation of the larger size of normal mutual funds. Investors are just uninformed and irrational. The investor is besides this also a victim of his own psyche where cognitive dissonance would lead to staying in certain funds way too long. Faced with this and high exit costs, as we have seen relatively to boutiques (0,15%) for normal mutual funds (0,51%) investors might hesitate to switch funds and consequently stay longer in unprofitable mutual funds.

If we look at the management fees of the two different types of investors we see small differences. Reported are in 90,4 percent of the cases a management fee for normal mutual funds of 1,41 percent and all boutiques together reported a 1,39 percent management fee. Apparently management in boutiques and large mutual fund houses are rewarded by the same standard. If we take into account the fact that as we described in the theory section that a large number of boutique firms is controlled by old employees of the big mutual fund houses, it is no surprise the reward structure for management is the same. The new self employed bosses probably will want the same salaries as in their starting years.

When we look into the average minimal investments for investing in boutiques and normal funds we see that on average a boutique requires a larger initial investment (€20.722) than normal funds (€9.647). This is more than double the size for an initial investment. Monthly payments though are lower for boutiques with their monthly investment being half the size of normal mutual funds. We conclude that some boutiques might be more tailored for the larger investor who sees the benefits boutique funds bring to him. Although we found that only 43,9 percent of the normal mutual funds reported their initial investment. The question is therefore if these results may not be biased too much.

So how are the results affected by the costs endured by boutiques and mutual funds? How large is the costs factor an effect of the performance in comparison to the market and to each other? We will

compare the market adjusted returns for boutiques and mutual funds in table 6-5 corrected for loads over 1, 2, 3, 4, 5 and 10 years. We do this because the effect of loads are smaller the longer an investor stays in a fund. We clearly see that the difference in returns for normal mutual fund in the first year almost wipes out the entire positive return from mutual funds if investors hold the fund for only one year. The decrease comes down to 97,99 percent. The decrease of boutique funds return due to loads is also quite high (-63,24%) but still gives a positive return for the one year period of 2,22 percent. We see that the influence lowers over time but still remains substantial with -9,8 percent relative lower returns for normal funds after 10 years and minus 6,32 percent for boutique funds.

Table 6-5: The effect of loads on market adjusted raw returns

Years invested	1	2	3	4	5	10
Boutiques return	0,0605	0,1210	0,1814	0,2419	0,3024	0,6048
Boutiques return - loads	0,0222	0,0827	0,1432	0,2037	0,2641	0,5665
Percentual Difference	-63,24%	-31,62%	-21,08%	-15,81%	-12,65%	-6,32%
Mutual fund return	0,0465	0,0931	0,1396	0,1862	0,2327	0,4654
Mutual fund return - loads	0,0009	0,0475	0,0940	0,1406	0,1871	0,4198
Percentual Difference	-97,99%	-48,99%	-32,66%	-24,50%	-19,60%	-9,80%

Table 6-5 shows the market adjusted raw returns for investing in an average mutual fund or boutique during a certain number of years and the influence on the return. The differences are shown between returns adjusted for loads and returns not adjusted for loads. The returns are computed from the period April 1999-april 2009.

Concluding we find that the influence of costs only works in the advantage of boutique funds compared to normal mutual funds. We see that the performance of normal mutual funds might also be lower due to the higher costs endured by these funds. Investors would do best to pay more attention to costs in combination with performance because as we have seen they can be of great influence. Boutique funds compared to the market after deduction of costs still are still a viable investment vehicle and outperform the market in raw return significantly.

7 Conclusions and Further Research

7.1 Conclusions

The main objective of this thesis was to research the performance of boutique funds compared to average mutual funds. We did this based on numerous methods of performance using multiple models and methods to show proof of the outperformance of boutique funds. We can clearly state that in performance measurements and models we used, even after compensating for a high survivorship bias and costs we find better performance from boutiques than from average mutual funds. The outperformance is also persistent in the short and long run making these results interesting for future investors. We will discuss our findings now by answering the four hypotheses we stated in chapter 5.

When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly, based on the market adjusted model, a three factor model and two four factor models?

We have seen that based on market adjusted raw returns boutiques outperform the market by over 6 percent and other mutual funds with 1,39 percent annually. When estimate our results according to the three factor model of Fama and French we retrieve a yearly difference of more than 1,3 percent with an alpha for boutiques of 0,0322. These results also show for the two four factor models of Gruber (1996) and Carhart (1997) and show alphas for boutiques of 0,0327 and 0,0306. The normal mutual funds had alphas of 0,0192 and 0,0185 respectively around 40 percent lower alphas. We can without a doubt conclude that based on our models boutique funds outperform the market and their normal mutual funds significantly. We can therefore now look into the persistence of mutual funds and see if winners of the past are the winners for tomorrow when it comes to boutique funds.

The past performance of a boutique fund is a viable predictor of future performance.

We then tested if this outperformance is also persistent in its results and found based on two different measures that good performing boutique funds in the past are most likely also good performing boutiques of the future. We showed this according to a persistence method shown also in Gruber (1996) and a simple method shown in Malkiel (2000). Our first method had one estimation period and one performance period of either 1 or three years. We ranked the funds at the end of

each year and places them into deciles according to the risk adjusted performance and raw returns. We saw that the top quartile in our results outperformed all the other quartiles significantly on a one and three year's basis. Differences between top and bottom quartile based on four index alpha where 0,242 annually for one year and 0,102 annually for three holding periods. The differences were higher for the one year period than the three year period but both significant. It seemed based on the Spearman's rank correlation test that the risk adjusted alpha measure was a better method to predict future winners than raw returns. We also wanted to see if winners of today are also the winners of tomorrow and used a very simple where we calculate the percentage winners of the next year compared to the winners of the previous year. If the percentage is overall higher than 50 percent than there exists persistence among winners. We found a percentage of 60,28 percent for raw returns and a percentage of 62,45 percent for winners based on the alpha. We conclude that the outperformance we have shown in the performance section is clearly persistent and can be a very profitable investment opportunity for investors.

When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly after correcting for survivorship bias, based on a three factor model and two four factor models.

As we have seen in the literature survivorship bias can overestimate returns quite significantly. We therefore decided to compensate our three factor models returns with a very high percentage of 0,8364%. We only adjusted the returns from the boutique funds to make sure any outperformance is still significant and robust when compensated for survivorship bias. The Fama and French three factor model results give a difference in return of 0,536 percent in favour of boutiques. The Gruber and Carhart four factor models give relative better performance of boutique funds of 0,51 percent and 0,375 percent respectively. We can consequently conclude that the outperformance of mutual funds is clearly in favour of boutique funds even when we use a very conservative and large survivorship bias to adjust our returns. The returns for boutique fund are without a doubt now very impressive and it seems boutique funds can give an investor a certain combination of characteristics that other mutual funds find harder to deliver.

When boutique funds are grouped together do they outperform the other normal mutual funds in the sample significantly after correcting for front load and back loads, based on a three factor model and two four factor models.

We see that we retrieved expense ratios of 184 and 153 basis points for mutual funds and boutique funds respectively. Although these costs are already implemented into the returns it gives us an explanation why the returns of normal mutual funds are lower than boutique funds. Clearly the higher expense ratios lower the return for investors, so investors and mutual funds would do best to keep a close eye on the costs. Loads can lower return on investments very significantly due to the amount invested being lowered by front loads or the amount returned being lowered by back loads. We found that the front and back loads for boutique funds are lower than the loads of normal mutual funds. The loads decrease the return of normal mutual funds with 97,99 percent when invested for one year. The decrease of boutique funds return due to loads is also quite high (-63,24%) but still gives a positive return for the one year period of 2,22 percent. We see that the influence lowers over time but still remains substantial with -9,8 percent relative lower returns for normal funds after 10 years and minus 6,32 percent for boutique funds. Concluding we find that the influence of costs only works in the advantage of boutique funds compared to normal mutual funds. Boutique funds compared to the market after deduction of costs still are still a viable investment vehicle and outperform the market in raw return significantly.

The implications of our results can be quite substantial. Very high costs and lower returns are still tolerated by investors while there are substitutes available in the market who perform better and more efficient. The reason behind why boutiques funds perform better can be explained in our research through mainly costs control of boutique funds. We did not find any proof of a different strategy that boutiques use than normal mutual funds. We therefore follow the theory of Malkiel (2000) that boutiques employ star managers who can significantly and persistently outperform the market and their peers. This is according to us due to the fact that managers of boutiques have a relatively high focus on their fund since they limit the number of funds in their portfolio. But mainly due to the fact that boutique fund managers are so highly dedicated to the performance of their funds since they are so heavily invested into it themselves. Boutique fund investors therefore have a relatively low risk agency problems and see that fund managers will for their own benefit try to keep the costs down and the performance up. We can definitely see that in the mutual funds market good things come from small packages.

7.2 Recommendations for Further Research

The database used in this thesis was although quite substantial not near perfect. Mainly due to the limited time period of ten years and the fact that the database was not survivorship bias free. A database survivorship bias free as used by Gruber (1996) and for the last twenty years would give us a better insight in the actual performance results of boutique firms. This would put possible outperformance of boutiques without a doubt and could be interesting to watch in future years.

Another way of increasing the performance of our results would be by using a model that has a higher explanation rate than the models we used for our database. Although we used highly common models to estimate the alphas our explanation rate (R^2) was fairly low. It is possible that with a different database the explanation rate would go up since we used a highly diversified number of funds over the world.

Although our results are highly in favour of boutique funds, we did not use a model which fitted our sample perfectly. Since we found in our model specification tests (see appendix D) that there is a good chance we were missing a factor of influence in our model for some of the funds in our sample. Specific factors could be of influence here, meaning that sector specific funds might be highly depended on sector specific factors. This also explains why often in other research sector funds are omitted from the sample.⁵³ A better model which implements sector specific factors might improve the model significantly.

The most important recommendation for future research we would put into the characteristics behind boutiques. Research performed into the specific characteristics that make a boutique fund could give a true insight. Why do boutiques exactly perform better than mutual funds? Although we can theorise some of the reasons, there is no dedicated research in this thesis. Is this indeed due to the lower costs and better management or is it may be certain investment styles that deliver these good results. The use of more advanced methods developed recently for the measure of performance, persistence, influence of costs and the survivorship bias could help with this. The mutual funds theorem is a subject with a lot of attention drawn to it and there are numerous of different research methods to show these results in persistence, performance and more. Dedicated research into one of these measures and purely focussed on boutique funds could give us more insight into boutique funds.

⁵³ See also Gruber (1996)

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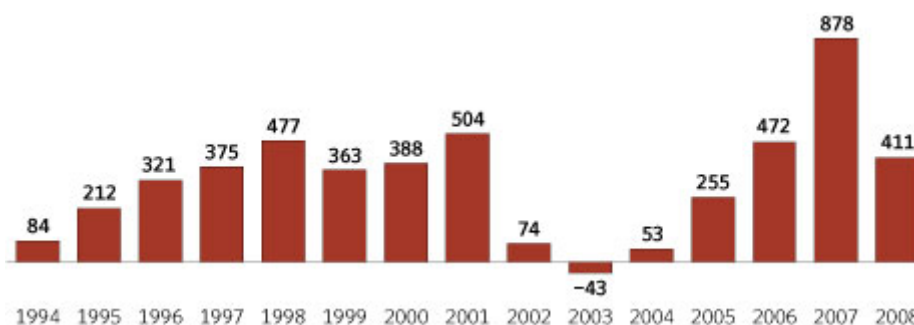
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9 APPENDICES

9.1 Appendix A: Net flows to mutual funds

Figure 9-1: Net Flows to Mutual Funds in the period 1994-2008 in billions of dollars



'Investor demand for mutual funds slowed substantially in 2008. Net new cash flow to all mutual funds—the dollar value of new fund sales minus redemptions, combined with net exchanges—was \$411 billion, less than half the frenetic record pace set in 2007, but comparable to that of 2006. Outflows from stock mutual funds and reduced inflows to taxable bond mutual funds accounted for much of the deceleration.' Source: http://www.icifactbook.org/fb_sec2.html

9.2 Appendix B: Mutual Fund Investors reports by ICI

9.2.1 Characteristics

Characteristics of Mutual Fund Investors

(2007)

HOW MANY PEOPLE OWN MUTUAL FUNDS?

88 million individuals

51 million U.S. households

WHO ARE THEY?

49 years of age (median)

75 percent are married or living with a partner

46 percent are college graduates

73 percent are employed (full- or part-time)

45 percent are Baby Boomers

24 percent are Generation X

WHAT DO THEY OWN?

\$175,000, median household financial assets

64 percent hold more than half of their financial assets in mutual funds

68 percent own IRAs

76 percent own defined contribution retirement plan accounts

WHAT IS IN THEIR FUND PORTFOLIO?

56 percent bought first fund more than 10 years ago

4 mutual funds, median number owned

\$100,000, median mutual fund assets

57 percent purchased first mutual fund through defined contribution retirement plan

80 percent own equity funds

WHY DO THEY INVEST?

91 percent are saving for retirement

52 percent hold mutual funds to reduce taxable income

45 percent are saving for emergencies

Sources: Investment Company Institute and U.S. Census Bureau (Fundamentals, "Trends in Ownership of Mutual Funds in the United States, 2007" (www.ici.org/pdf/fm-v16n5.pdf), Profile of Mutual Fund Shareholders, 2007 (www.ici.org/pdf/rpt_profile08.pdf), and Fundamentals, "Characteristics of Mutual Fund Investors, 2007" (www.ici.org/pdf/fm-v17n2.pdf))

9.2.2 Information Reviewed Before Purchasing Mutual Funds

Shareholders Review a Wide Range of Information Before Purchasing Mutual Fund Shares

(percent of recent fund investors who reviewed or asked questions about each item before most recent fund purchase, ¹ 2006)

More than two-thirds of recent fund investors considered:

The fund's fees and expenses ²	74
The historical performance of the fund ²	69

More than half of recent fund investors considered:

The risks associated with investing in the fund ²	61
The fund's price per share [or net asset value]	58
The types of securities in which the fund invests ²	57
The minimum investment required to invest in the fund	57
The fund's performance compared with the performance of an index ²	55

About half of recent fund investors considered:

The fund's sales charge, if any ²	52
The tax consequences of investing in the fund ²	47
Information about the fund's dividends and distributions	47

Less than half of recent fund investors considered:

Information about the company offering the fund	45
The fund's investment objective ²	40
How to buy and sell fund shares	39
The services offered by the fund	37
The fund's rating from a mutual fund rating service	35
The fund's portfolio turnover rate	34
Information about the fund's portfolio manager	25
Information about the fund's board of directors	15
The fund's proxy voting policies	15

¹ Multiple responses are included.

² These items must be included in the front of the prospectus in the Risk/Return Summary.

Note: The confidence interval for these estimates is + or - 3.6 percentage points at the 95 percent confidence level.

Source: Understanding Investor Preferences for Mutual Fund Information, August 2006 (www.ici.org/pdf/rpt_06_inv_prefs_full.pdf)

9.3 Appendix C: Overview of indices returns in table and graph

Table 9-1 Overview of indices returns

Index	Return in the april 1999 - april 2009 period
Large Cap	-29,53%
Small Cap	40,06%
World Index	-24,91%
Value Stock	-18,08%
Growth Stock	-33,70%

An overview of the 10 year return in the period April 1999 to April 2009 for the MSCI Large Cap Index, the MSCI Small Cap index, the MSCI World index, MSCI Value Index and the MSCI Growth index.

Figure 9-2: Chart of the returns 1999-2009

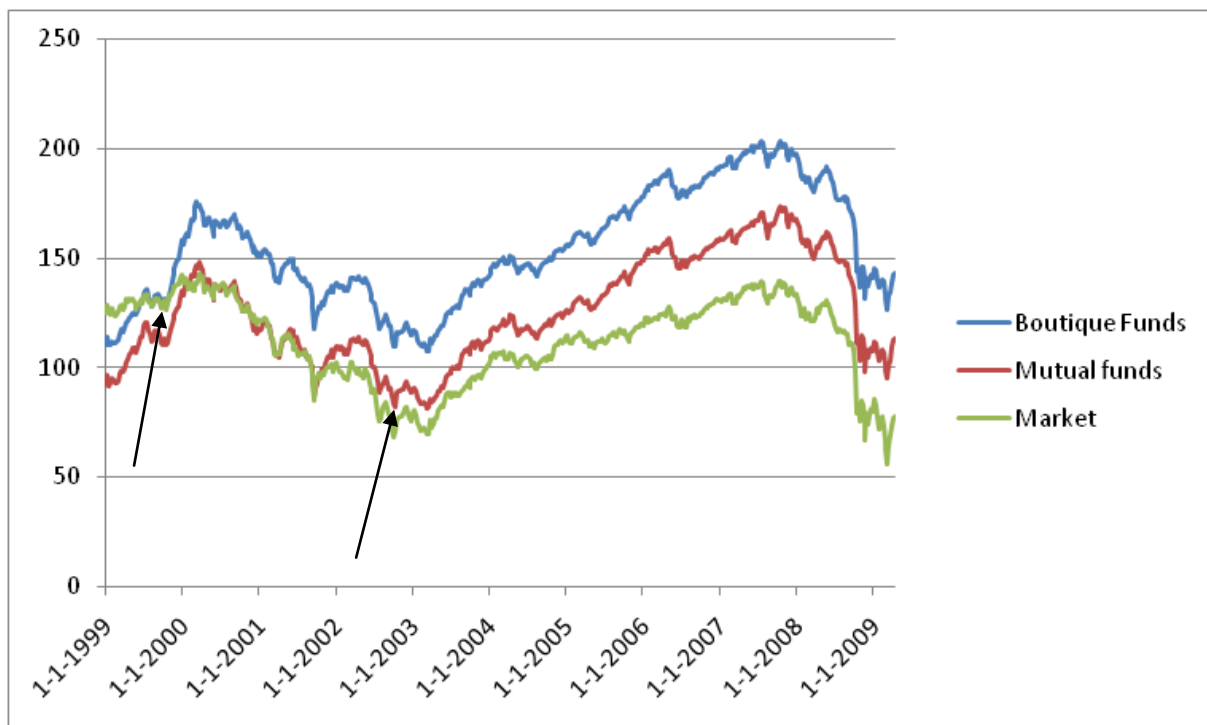


Chart of the returns of an average boutique fund, average normal mutual funds and the MSCI World index in the period Jan 1999- April 2009. Pointed out are the two starting points where large differences in the results appear.

9.4 Appendix D: Models tested

To address the problems that can arise around linear models we tested our regressions performing multiple tests from the UCLA Academic Technology services for STATA. Located at <http://www.ats.ucla.edu/stat/stata/webbooks/reg/chapter2/statareg2.htm> we tested for:

- Linearity
- Normality
- Homogeneity of variance
- Multicollinearity
- Model specification

We perform our test for the entire boutique sample of 67 funds we will sometimes only show the results of one or two funds if those are representative for the rest of the data. All introducing the texts as well as all the tests we performed are directly taken from

<http://www.ats.ucla.edu/stat/stata/webbooks/reg/chapter2/statareg2.htm>,

We perform all tests for the 2 four factor models from Gruber (1996) and Carhart (1997). An overview for these results are given in the table 9-2. For further explanation about each tests and implications we point you at the specific paragraphs.

Table 9-2: Overview of model specification tests.

Test	4 factor Gruber (1996)	4 factor Carhart (1997)
Linearity	Linear relationship	Linear relationship
Normality of residuals	High peak, but not of major influence	High peak, but not of major influence
Homogeneity of variance	No heteroscedasticity found	No heteroscedasticity found
Multicollinearity	Multicollinearity between bonds and market	No multicollinearity found
Model specification	Possible omitted factor for some sector funds	Possible omitted factor for some sector funds

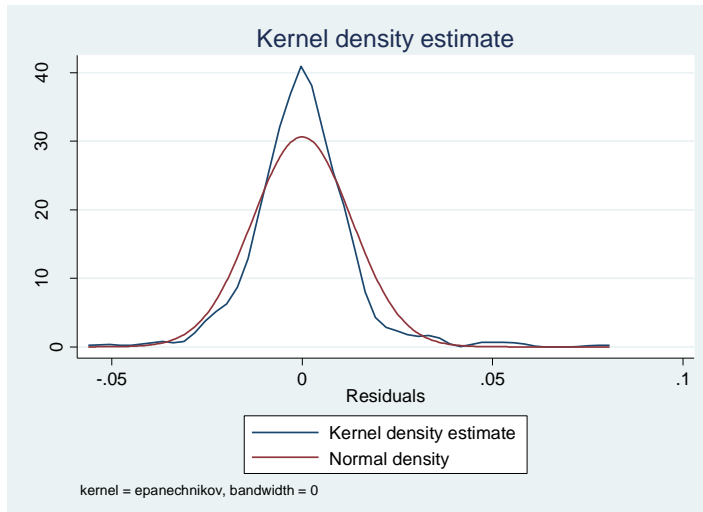
9.4.1 Checking Normality of Residuals

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rf	523	0.92008	27.995	8.026	0.00000

The p-value is based on the assumption that the distribution is normal. In our example, it is very small, indicating that we reject that the residuals are normally distributed. But if we look at the graph we see that the residuals follow a close to normal distribution only with a high peak.

Figure 9-3: Kernel density estimate



So we see that our regressions are unfortunately not perfectly normally distributed. This isn't a real problem for our estimates of the coefficients, mainly the alpha because only the p values might be biased. (UCLA Academic Technology services)

9.4.2 Checking Homoscedasticity of Residuals

The Breusch-Pagan tests the null hypothesis that the variance of the residuals is homogenous.

For example for b67

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

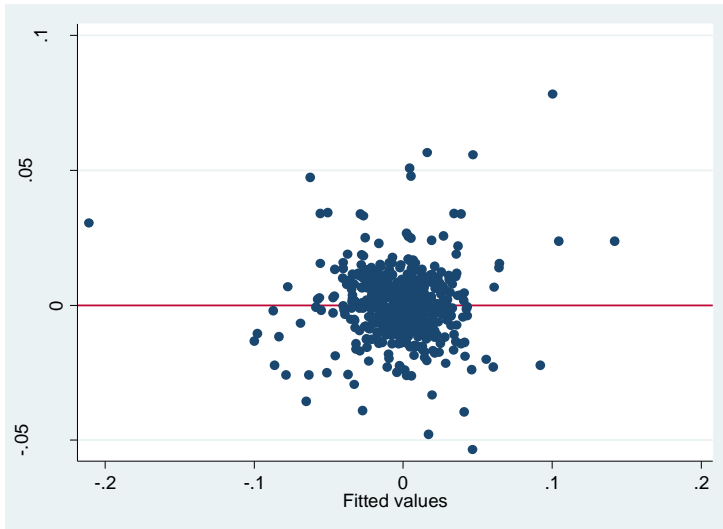
Variables: fitted values of b67

$\chi^2(1) = 1.81$

Prob > $\chi^2 = 0.1790$

Overall for all 67 boutique funds we find proof of homogeneity of variance of the residuals.

Figure 9-4: Graph of homogeneity of the residuals Gruber (1996) model



We clearly see no pattern in this graph again proof of homogeneity of the residuals.

9.4.3 Checking for Multicollinearity

As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation:

Variable	VIF	1/VIF
growth	1.37	0.729009
size	1.32	0.756874
market	1.18	0.845064
timing	1.06	0.940906
Mean VIF	1.23	

The variance inflation factor for our entire sample is fine for the Carhart (1997) model. This is not the case for the Gruber (1996) model as can be seen here:

Variable	VIF	1/VIF
market	95.76	0.010443
bonds	94.11	0.010626
size	4.59	0.217731
growth	1.08	0.922918
Mean VIF	48.88	

The high VIF factor for the bonds factor is troublesome and leaving it away solves the problem of the multicollinearity.

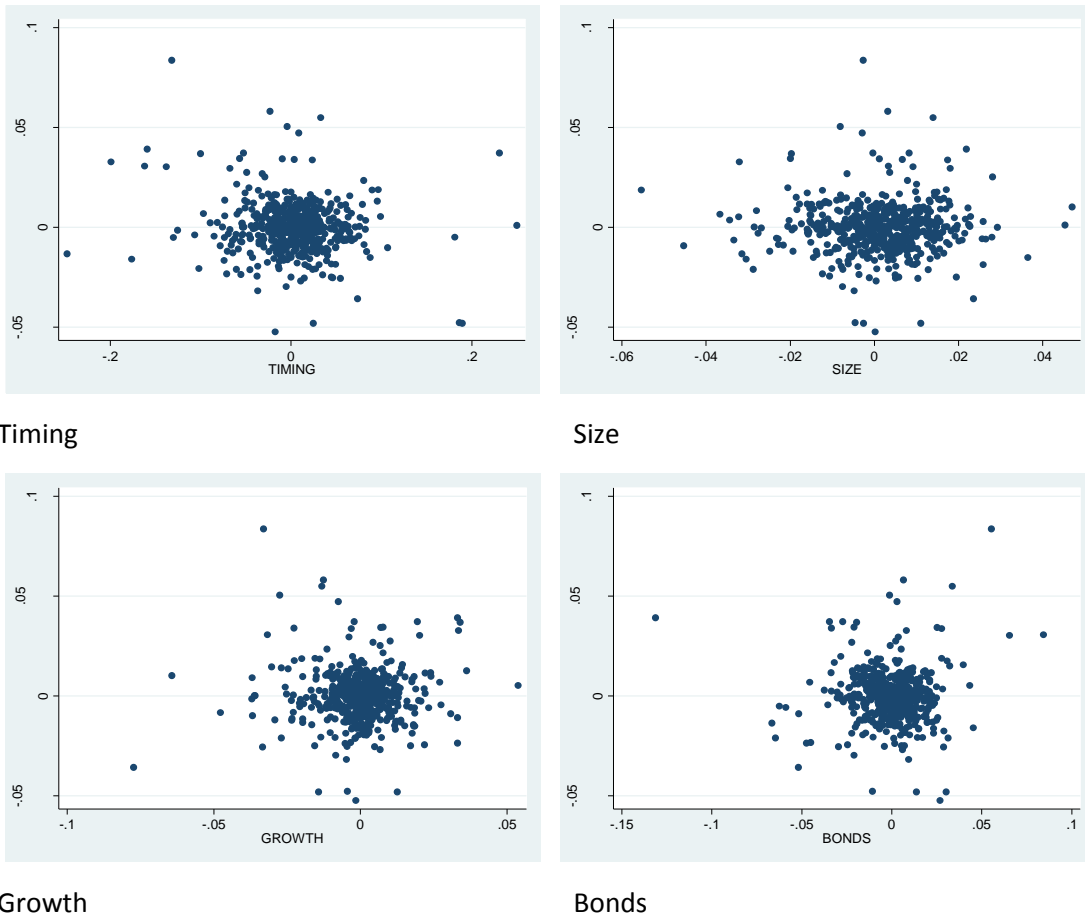
Variable	VIF	1/VIF
size	1.04	0.964074
market	1.02	0.979222
growth	1.02	0.983550
Mean VIF	1.03	

We performed these tests of validity of the model unfortunately at the end of writing this thesis. Since we use the three different models to estimate our returns and have models which do not face multicollinearity we take these results as given but will not adjust for it. Also the fact that the results of the Gruber (1996) model and the Carhart (1997) model are so similar we decided that the differences of the results would be so small that none of our results would be altered or any of our conclusions would change.

9.4.4 Checking Linearity

None of our factors show a curved bank or big wave as shown in graph 9-5 by the timing factor (PR1YR), size (SMB), bonds and growth (HML) factor graphs here below showing we have a linear relationship between the response variable and the predictors:

Figure 9-5: Nonlinearity graph for timing, size, growth and bonds



9.4.5 Model Specification

“A model specification error can occur when one or more relevant variables are omitted from the model or one or more irrelevant variables are included in the model. If relevant variables are omitted from the model, the common variance they share with included variables may be wrongly attributed to those variables, and the error term is inflated. On the other hand, if irrelevant variables are included in the model, the common variance they share with included variables may be wrongly attributed to them. Model specification errors can substantially affect the estimate of regression coefficients.” (UCLA Academic Technology services)

ovtest tells us if we have a specification error in our model the general results are shown below:

Some results from boutiques showed us the model we were using had a missing variable so to investigate this further we added all 5 variables into one model and were still getting omitted variables from some funds.

Ramsey RESET test using powers of the fitted values of b60

Ho: model has no omitted variables

$F(3, 514) = 7.43$

Prob > F = 0.0001

We therefore decided to make an average of all funds and see what the values of the OV test were on average.

We found a p value an average of 0,160037 for the Gruber(1996) model and 0,189992 for the Carhart (1997) model. meaning that on average we cannot reject H0. We therefore conclude our model is good specified. Although overall the model could be well specified it could be argued that maybe sector specific funds are the reason of the omitted variables issue. Relevant factors for one specific sector could explain a low R2 for a fund and the fact that we find sometimes that our model does not fit well for a specific fund. This could also be the reason why researchers often omit sector specific funds in their sample. We did not do this in our sample hence the maybe low R2.