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Fund Management Companies

– Linking Performance to Characteristics –

ABSTRACT

The purpose of this thesis is to examine links between characteristics attributable to Fund Management Companies (FMCs) and the performance of funds within FMCs. The thesis studies the performance of 108 Swedish equity funds between the beginning of 2004 and the end of 2008 and attempts to link the performance of the funds to characteristics of the 31 Swedish FMCs they belong to. The characteristics studied are FMC fund wealth, employees per fund, total number of funds and number of domestic equity funds as well as domestic focus. Jensen's alpha as well as the Sharpe and Treynor ratios are calculated as performance measures for individual funds. The thesis concludes that, for performance measured by the Sharpe and Treynor ratios there is a negative impact on performance by an increase in the number of domestic equity funds managed by an FMC. For the Treynor ratio there is also a negative relationship between performance and the number of employees per fund in the FMC, as well as a positive relationship between performance and FMC fund wealth. For total number of funds and domestic focus no significant relationship to performance can be established for any of the performance measures. A number of statistical tests are performed to verify the robustness of the results.

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1. Introduction

1.1 Background and Relevance

Almost all Swedish adults, 98%, invest in mutual funds through the PPM system (TNS Prospera, 2008). Although, during the last two years, there has been a slight drop in the proportion of Swedes who invest in funds, the proportion is still very high. Even beyond the PPM system almost three quarters of all Swedes invest in funds; 76% of the women and 71% of the men. According to investors, the most important characteristics when making investment decisions are risk-level and management fees (TNS Prospera, 2008).

There is great interest among investors on following fund performance; only 3% of investors say that they do not follow the performance of the funds that they have invested in (TNS Prospera, 2008). Most investors evaluate their funds' performances mainly by comparing the quotation development in their own investments. Relatively few investors compare them with any index.

By the third quarter of 2008, Swedish investors held assets of close to SEK 1.3T in funds. This is an increase of almost 300% during the last 10 years (Fondbolagens förening, 2009). The number of funds in which Swedish investors invest grew from 1200 to 3300 between the end of 1997 and 2007. This testifies to an increased competition among FMCs to gain investors' confidence and access to their money (Fondbolagens förening, 2009). The fund fraction (excluding PPM) of Swedish households' total financial assets increased from 15 to 26% between the end of 1997 and 2007. This shows that over a short period of time, for retail investors, funds have gained an enormous popularity and importance as a financial asset (Fondbolagens förening, Apr 2008).

Because of the overwhelming interest in funds, the continued growth in total fund wealth, the increased number of FMCs and the increased number of funds in the market, a continued investigation into which fund attributes drives performance is justified. The absolute majority of research to date conducted on determining the drivers of fund performance have been limited to the characteristics of individual funds such as management fees, past performance, flows, wealth, turnover, expenses and trading activity. It has not been linked to the characteristics of the FMCs they belong to.

This thesis tackles the issue of determining some drivers of fund performance from a different angle. Namely how characteristics attributable to the individual FMCs influence the performance of funds that the FMCs manage.

Does for example the amount of employees per fund that an FMC has employed have an impact on the average fund performance of that company? As additional labor yields value in production in most economic growth models, one might assume that part of this value would trickle down into higher fund performance.

How does the total number of funds managed by the FMC affect performance? The rapid growth of the fund market, both in terms of new FMCs and in number of funds offered by existing FMCs, has tightened competition and put pressure on market share among individual FMCs. The increased number of funds within existing FMCs could thus be a reaction to capture market share by offering an increased product

line, something that has proved to be successful in the marketing of consumer goods (Smith & Park, 1992). An increase in the number of funds offered by an FMC could thus be a way to capture value from the market through the increased market share. For the market as a whole however an increased number of funds per FMC could work to destroy overall market value if larger amounts of funds decrease average fund performance. This would be the case if the value capture effect for the FMC of an increased product line dominates an effect of lost credibility from not prioritizing investor interests.

Within the funds managed by an FMC, what impact does the domestic focus have on the fund performance? Given that fund managers experience a home information advantage (Otten & Bams, 2007), (Shukla & van Inwegen, 1995), FMCs with a greater domestic focus might protect investor interests better.

Does the FMC fund wealth affect performance? There are different reasons to assume that the fund wealth managed by an FMC should affect performance. For example the cost of liquidating positions should increase with the size of transactions because of an increased buy-sell bid-spread (Lindeen & Gros, 2009). Taking into consideration that the size of transactions is correlated with the fund wealth it could then be the case that larger funds have a disadvantage in the cost of liquidation. On the other hand larger operations often gain economies of scale advantages (Latzko, 1999). As costs associated with fund management are not completely variable with wealth, this could give economies of scale advantage to FMCs that manages higher fund wealth. How FMC fund wealth affects the average performance is thus an interesting area to investigate.

1.2 Purpose

The purpose of the thesis is to contribute to an increased understanding of how characteristics attributable to FMCs affect fund performance. More precisely the thesis aims to explain how the average fund performance in a Swedish FMC is linked to the number of employees per fund, FMC fund wealth, total number of funds and number of domestic equity funds as well as domestic focus of the FMC.

To the best of our knowledge, this thesis is the first of its kind to address these linkages and it will therefore contribute to the academic debate on the drivers of fund performance, both internationally and in Sweden. From a practical standpoint the thesis will support both investors and FMCs in their decision making processes. Especially retail investors (as opposed to institutional investors) have limited time and understanding of how to assess their portfolios. There are few easily applicable filters and tools to help retail investors choose between different mutual funds. For that reason, even though numerous studies have examined the links between fund performance and characteristics such as e.g. fund style and policy conditions, an easily observable characteristic such as the number of funds that an FMC manages could be helpful for the retail investor if a connection to performance is determined.

For FMCs there is also a value of knowing if e.g. a high number of employees per fund generate value. This could increase strategic insight among FMCs and help to strengthen their competitive position.

1.3 Definitions

An FMC is defined as a company that administers the wealth in a fund (Morningstar, 2009). Multiple funds can be administered by the same FMC. Multiple FMCs may be part of the same corporate group, for example a bank or an insurance company. The sales representative in an FMC acts as a middle man between the fund and the investor. Swedish FMCs are under supervision of the Swedish Financial Supervisory Authority (Finansinspektionen).

The data for this thesis is limited to the Swedish fund market. All FMCs studied are registered in Sweden. The limitation to the Swedish market has been made in order to avoid comparison problems of FMC performance between countries. If FMCs from different judicial areas would have been included, institutional and legal differences could have affected regression estimates.

The data used to calculate average fund performance for FMCs is based on the performance measures of Swedish equity funds. This is an intentional limitation for comparison purposes and will be further discussed in the Methodology section.

A fund is a separate legal entity that invests in securities and is administered by an FMC (Morningstar, 2009). Shares are sold and bought back by the FMC (normally once a day) to the specific share price quoted that day. In Sweden a fund's assets has to be accommodated and controlled by a depository, normally this is one of the four larger banks Nordea, SEB, Handelsbanken and Swedbank. A fund is under the restriction of the law "Lagen om investeringsfonder" (2004:46) that was implemented in April 2004.

Funds can be categorized in various ways. There are four major types of funds; equity funds, mixed funds, money market funds and hedge funds (Fondbolagens förening, Apr 2008). Another dimension is the different profiles that a fund can have. A common grouping of profiles is the following; Swedish funds, Swedish and Global investments, European funds, Industry funds and Developing market funds. Table 1 provides an overview of how the distribution has changed among types and profiles between 1997 and 2007.

Table 1: Swedish Fund Distribution within Groups and Profiles in 1997 and 2007

Type	2007 (%)	1997 (%)	Profile	2007 (%)	1997 (%)
Equity funds	54	68	Swedish funds	26	18
Mixed funds	15	14	Swedish and Global investments	26	39
Money market funds	25	18	European funds	9	12
Hedge funds	6	0	Industry funds	4	11
			Developing market funds	12	2
			Other equity funds	23	18

Source: Fondbolagens förening, Apr 2008

An equity fund is a fund that invests at least three quarters of the total asset wealth of the fund in equity or other equity related securities (Morningstar, June 2007). Equity funds can have many different strategies. They can be very narrow in their profile and only invest in one sector or in a specific country, they may also be very wide in their profile and invest in all of Europe or the whole world. Profiles

focusing on a certain size of companies to invest in are also common (Morningstar, 2009). A Swedish fund is defined as a fund that invests at least three quarters of its total assets in Swedish securities (Morningstar, June 2007).

1.4 Disposition

An introduction to the topic of the study has already been presented in the first section of the thesis. The continued structure proceeds as follows. In Section 2 the theoretical framework for the thesis as well as a summary of empirical findings from previous research relating to the topic is given. Consequently, the hypotheses are developed and the motives behind them discussed. In the Methodology section, variables and regression specifications are presented. Characteristics of the data set and their implication on treatment of the regression equations are reviewed in the Data section. In Section 6 empirical findings and analyses of the hypotheses are presented. Lastly, the findings of the thesis are summarized and additional interesting areas of research related to the topic of the thesis are discussed.

2. Theoretical Framework

In this section the theoretical framework for the thesis as well as a summary of empirical findings from previous research relating to the topic is described. Distinctively, in Section 2.1 research relating specifically to FMCs and their characteristics is presented. In Section 2.2, research relating to the characteristics examined in this thesis is reviewed. Although, the context of the research for these characteristics is not always related to FMCs and their performances, it can still be valuable for drawing parallels when developing hypotheses. The theoretical background for the performance measures used to evaluate the funds of the FMCs is described in Section 2.3.

2.1 Previous Research on Characteristics of FMCs and Links to Performance

Previous research on characteristics of FMCs and the implications of these is limited. Besley et al. (2007) studied the relationship between how FMCs configure their boards of directors, and the performance of the funds under a particular board's authority. FMCs use either one board to oversee all the funds within the company or multiple boards that each oversees one fund or a subset of the FMC's funds. The results from the study indicated that FMCs that use multiple boards have higher board-level returns while there is no significant difference in excess expenses on the board-level.

In 2007, Kim and Davis studied the link between business ties of FMCs to firms that were part of the FMCs' portfolios (portfolio firms) and the tendency and inclination to vote with management in these firms. The business ties studied by them were those of the FMCs' potential management of the employee benefit plans for their portfolio firms, and where the portfolio firms' management simultaneously could decide which FMC should manage their employee benefit plan. In the study, aggregate votes at the FMC level indicate a positive relation between the total number of FMC business ties and the overall tendency of the FMCs to vote with management in portfolio firms. Votes at specific portfolio firms, however, revealed that FMCs were no more likely to vote with management of client firms than of non-client firms. The authors suggested that the reason for this discrepancy may be that because the votes took place when FMCs knew their votes would be publicly scrutinized, FMCs with a larger client base and investments in more companies may have adopted voting policies that lead to less frequent opposition to management in all firms (Davis & Kim, 2007). In those instances when there is a propensity to vote with management because of business ties, investor value would decrease as fund managers' incentives to use their voting power to demand good corporate governance, which in turn leads to higher valuations, would be compromised (Durnev & Kim, 2005). Hence, if FMCs with more business ties have adopted policies to less frequently oppose management, these FMCs would in theory perform worse.

In another study, Drachter et al. (2007) examined the decision processes in German FMCs and their impact on fund performance. This study was conducted by collecting data through a telephone survey which was used to assess the behavior and attitude of German mutual fund managers. The design of the survey linked the fund manager data with information about mutual funds and FMCs. The results of the study suggested that the behavior of managers depend heavily on the characteristics of the funds and of the FMCs. Fund managers are employees of fund companies and can only make decisions within the firm's organizational framework. The outcome of the study points out a number of interesting insights.

Firstly, it shows that while small FMCs are more likely to restrict their fund managers than large FMCs in taking on risk, there is no significant difference in performance, even after controlling for the size of the FMC. Secondly, the FMCs can also influence the managers' decisions by the frequency of performance assessment. Also for this variable, no significant systematic difference in performance could be determined. These findings suggest that the restrictions imposed by FMCs on fund managers, at least in these instances, cannot be used by investors to select better performing managers.

In 2003, Berkowitz and Qiu compared the performance of mutual funds managed by publicly traded FMCs with those managed by privately owned FMCs. Their study indicated that publicly traded FMCs invest in assets with higher risk as well as charge higher management fees relative to the privately owned FMCs. While this was found, the risk-adjusted returns of the mutual funds managed by each of the two categories of FMCs did not appear to differ. In the Canadian equity funds category the results were even so that the publicly traded FMCs significantly underperformed their private counterpart. Publicly traded FMCs in the study incurred higher agency costs than what privately owned FMCs did. Publicly traded FMCs also took on more risk and by that also undertook greater effort to invest in risky assets, which in turn requires greater compensation even though they, according to the study, did not generate higher risk-adjusted returns. All in all, this requires publicly traded FMCs to charge higher management fees than the private FMCs. The higher fees lower returns for investors and should have a negative impact on future investments in these funds. This, however, did not occur. The puzzle is, if the funds managed by publicly owned FMCs do not achieve higher performance but charge higher fees, why do investors continue to place their money in these funds? The authors suggested that a possible explanation for this is that management of the publicly traded FMCs take advantage of the mutual fund investors' ignorance of management fees and their inability to calculate risk-adjusted returns. The authors, therefore, go on to suggest that all other things being equal, the results of their study could indicate that investors should avoid funds managed by publicly traded FMCs when they decide in which funds to invest. Although this thesis does not examine the relationship between performances of FMCs based on whether they are public or private, public FMCs tend to manage more funds and one could assume that a significant result, for this thesis, relating to the number of funds of an FMC could at least partly account for the difference in public versus private.

2.2 Previous Research Related to the Characteristics Chosen in this Study

In this section, research relating to the chosen characteristics examined in this thesis is reviewed; however the context of the research for these characteristics is not always related to FMCs and their performances, but will still be valuable when developing the hypotheses.

2.2.1 Number of Funds

No previous research on what impact the number of funds, that an FMC manages, has on average performance of that FMC's funds, is accessible in major databases. Therefore, a broader approach has been taken for this thesis when discussing implications from pervious research on the chosen characteristics "total number of funds" and "number of domestic equity funds", not limiting the scope of research to that of financial products.

Much research on the number of products offered by a company originates from the field of marketing. Hence, the research presented in this section is to a large extent based on marketing research and marketing theory on the importance and implications of product line and brand extensions.

In 2001, Putsis and Bayus studied the determinants of product line decisions. The results of their study indicated that firms tend to expand their product lines when industry barriers are low or market opportunities are perceived to exist. Firms that already have high market share, aggressively expand their product lines, something which also seems to be the case for firms with relatively high prices or short product lines. The study built on a previous study by the same authors that investigated the relationship between product line extensions on one hand and impact on market share and supply cost on the other hand (Bayus & Putsis, 1999). Their results showed that product line extensions have a positive impact on market share but simultaneously increase supply cost to a disproportional extent.

In 2005, Draganska and Jain investigated product-line length as a competitive tool. The background for the study was the increasing number of consumer goods and services offered in recent years which, argue the authors, suggests that product line extensions has become a favored strategy of product managers. The study challenged the idea that a larger assortment kept customers loyal and allowed firms to charge higher prices. The results indicated that there were decreasing returns to product line length in the consumer goods industry studied. The reason, argue the authors, is that high cost implications of product line extensions have a dominant effect over potential increases in revenue.

In 1992, Smith and Park conducted a study on the effects of brand extensions on new products' market share and on advertising efficiency. According to their findings brand extensions capture greater total market share and realize greater advertising efficiency than individual brands. The study also concludes that the market share of the new products generated through brand extensions is positively correlated to the strength of the parent brand. The authors did not manage to establish a general link between parent brand and advertising efficiency. However, they found elevation in effects of advertising efficiency when the brand extension was similar to the other products affiliated with the brand. Furthermore, the study concluded that advertising efficiency and market share were elevated when the brand extension competed in markets where consumers had limited knowledge of the product class.

2.2.2 Domestic Focus

Most research on the implications of "domestic focus", one of the characteristic chosen for this thesis, is a mix between finance and economic studies with somewhat contradicting results.

In 1995, Shukla and Inwegen conducted a study on the link between performance of mutual funds and the geographic background of the fund managers. The authors hypothesize that local knowledge and contacts lead to superior returns for local mutual fund managers relative to foreign managers. The data used for the study is that of US and UK mutual funds investing in the US. Shukla and Inwegen examined the effectiveness of foreign, UK, fund managers investing in the US relative to local, US, fund managers investing locally in the US. The results of the study indicated that, controlling for tax differences, fund expenses, fund objectives and currency risk, the foreign mutual funds performed worse than the

domestic, US, funds. The authors therefore concluded that relationship and information disadvantages contribute to the worse performance of foreign funds.

In 2007, Otten and Bams conducted a study similar to that of Shukla and Inwegen (1995) in which they studied the link between performance of mutual funds and the geographic background of the fund managers. Otten and Bams (2007), similarly to the study performed by Shukla and Inwegen, based their study on US and UK mutual funds investing in the US. Based on informational disadvantages the authors hypothesized that foreign, UK, mutual funds, would underperform in relation to local, US, funds. They believed this to be particularly true for investments in the research intensive small-cap market. However, after controlling for taxes, fund objectives, investment style and time-variation in betas, they did not find any significant difference in performance between foreign and local funds. Furthermore, in the small-cap segment the authors even found a slight out-performance by foreign funds compared to local funds.

In 1970, Levy and Sarnat wrote a well recognized paper on international diversification of investment portfolios. As background to the paper the authors used the theoretical models for portfolio selection that where developed by Markowitz and Tobin. These models highlighted the benefits of, and provided normative rules for the diversification of risky assets. Levy and Sarnat however pointed out, that the degree to which diversification can reduce risk depends on the correlation among the security returns in which one invests. No amount of diversification can affect risk if security returns are perfectly correlated. On the other hand, diversification can eliminate risk if the returns are not correlated. The authors then go on to suggest that within an economy, periods of relatively high or low general economic activity depend on economic phenomena that move in accord. The high degree of positive correlation between companies within an economy therefore suggests the possibility of risk reduction through diversifying investments internationally. The conclusion of the paper is therefore that not enough international diversification is made because of a home bias by investors.

2.2.3 Employees per Fund

Most research on the area of value contribution by employees has till date been based on economic theory and concerns foremost the quality of human capital and not as much the quantity of labor.

In one of the most famous growth models, developed by Solow (1956), adding additional labor yields higher return in absolute terms, although the effect is diminishing without additional qualitative human capital.

Already in 1966, William F. Sharpe wrote a well recognized paper on mutual fund performance. Among other things, the author contributed to the subject of value creation through employees by emphasizing that some funds experience too much expenditure on research and administration. This was later supported by empirical research (Indro et al., 1999). If funds spend too much on research and administration it would lead to these funds yielding an inferior rate of return.

In 1991, Nancy L. Stokey developed a model of growth in which individuals invest in human capital. Her model predicts that more human capital leads to production of higher-quality goods. The author

analyzed stationary growth paths and concluded that there is a linear relationship between human capital and the quality of goods.

In a well recognized paper by Jones (1999) on the link between ideas and growth, the author pointed out that ideas are different from most goods analyzed in economics as the use of an idea by one person does not hinder the simultaneous use of the idea by another person. This then implies that returns on production increases once the fixed cost of creating the idea is taken into account. It is this fundamental link between ideas and returns to scale that gives rise to idea-based growth models. It implies further that the amount of research undertaken in the economy drives the growth rate. One might then assume that an increase in the number of researchers due to an increase in size of population, other things being equal, would lead to an increase in the growth rate of per capita income. This is however a somewhat flawed prediction since it suggests that population growth automatically leads to accelerating per capita income growth. The author therefore brings forward a novel method of eliminating the growth effect of scale which is that research can increase productivity within a product line, or it can increase the total number of available products. Overall growth however, is dependent on research in each product line and not population growth per se.

Chevalier and Ellison (1999) examined whether mutual fund performance is related to the human capital characteristics of fund managers such as ability, knowledge or effort. The relationships studied in practice were those of performance in relation to the manager's age, average SAT-score and whether the manager had an MBA degree, which were meant to approximate the human capital qualities the study aimed to examine. The study found some significant results; in particular fund managers who attended higher-SAT undergraduate institutions contributed to systematically higher risk-adjusted excess returns.

2.2.4 FMC Fund Wealth

As no research has been found on the link between total fund wealth managed by an FMC and fund performance, it is relevant to consider previous research on the link between individual fund wealth and fund performance.

In a recent study by Lindeen and Gros (2009) on the implications of fund wealth on performance, they took into account that fund wealth can be seen as an approximation of effects of various factors that influence the performance of funds. Among these effects are liquidity costs, economies of scale in FMCs and extreme net flows. Their study did not show any significant relationship between wealth and performance over the ten year period studied. The authors, however, managed to identify that liquidity costs were present in the Swedish equity market and increase with fund wealth. Furthermore their results showed that there were diseconomies of scale from being part of the largest FMCs in the Swedish market. The authors suggested a possible explanation for this to be e.g. bureaucracy within FMCs. The authors also found that extreme net flows had a positive impact on funds' performances.

Earlier research by Chen et al. (2004) indicates that liquidity costs for the funds may affect large funds' performances negatively. The reason for this would be that investing large amounts of capital requires highly liquid stocks (and thus high capitalization stocks) of the companies the fund invests in. The reason

for this is avoidance of big discrepancies in the buy-sell bid spread. Large capitalization stocks' high liquidity may come at the price that they provide less return per investment than smaller businesses' stocks would, since it is easier for the highly liquid stocks to attract capital from large investors. Research by others supports this and indicates that wealth has a negative impact on fund performance (Ciccotello and Grant 1996, and Christopherson et al. 2002).

A study by McCrae in 1996 does not manage to establish any connection between fund wealth and either excess returns or risk-adjusted returns of the funds studied during the years 1977-1993. This result is coherent with a study by Droms and Walker (1994) on US data. McCrae suggested the following explanation for why a negative relation could exist between wealth and performance: Investors often focus on short-term performance which drives FMCs to fierce competition for investors' capital. The unexpected implication of this may be, given the well documented difficulties of managers to beat index, that fund managers take the easy and safe solution of investing in portfolios similar to the market index. As superior long term performance demands the acceptance of higher volatility in the short run, fund managers who choose this route will not attract as much capital. The result is that those funds that, in relative terms, underperform but have low volatility, will attract more money and thus grow bigger.

There are also studies where the results indicate a positive relation between fund wealth and performance. Bergström and Sundén (2008) studied domestic funds on the Swedish market and found a significant positive relationship between fund wealth and performance.

Latzko (1999) examined the occurrence of economies of scale in mutual fund administration. The idea put forward is that when a mutual fund grows, the costs do not grow in the same pace. One might consider that the difficulty of handling a large fund as opposed to a small one is higher, but the notion that the effort would double if the wealth doubles seems unlikely. The author points out that many expenses in fund management are fixed and as mutual funds usually charge customers a fixed percentage of net assets to cover the fund's expenses, growth would enable the fund to bring in more resources in terms of additional research, increased ability to attract talent etc. The results of the study indicated that funds' expenses increase less than proportionally to fund growth which indicates the existence of economies of scale.

Finally, Chen et al. (2004) chooses an opposite approach and argues that there is an existence of diseconomies of scale. Their notion is that while a smaller fund may be run by a single manager a large fund needs a number of co-managers since a single manager does not have the capacity to invest all the money himself. A larger number of agents to coordinate, when picking stocks, is believed to exist. The consequence, if the increasing cost effect from employing more people is dominant over potential relative savings effects from growth, would be suffering fund performance. The study concludes that even though a negative relationship between fund wealth and return may be established, performance of funds increases with the wealth of other funds under the management of the parent FMC. This supports the notion that economies of scale do exist at least on an FMC level.

2.3 Performance Evaluation Measures

In order to measure performance of the FMCs, one or more performance measures have to be determined. The measures that the analysis in this thesis is based on are Jensen's alpha, the Treynor ratio and the Sharpe ratio. In this section the theoretical background for each of the measures is described.

In order to understand the theory behind Jensen's alpha one first needs to consider the capital asset pricing model (CAPM). It was developed by Sharpe (1964) and Lintner (1965), who tried to find an appropriate way to put a price on risk in the market. The CAPM states that the expected risk premium varies in direct proportion to beta. The CAPM is described by Equation 1.

Equation 1

$$E(r_{j,t}) = rf_t + \beta_j\left[E(r_{Market,t}) - rf_t\right]$$

In Equation 1, $E(r_{j,t})$ is the expected return on the asset, $E\left(r_{market,t}\right)$ is the expected market return, rf_t is the risk free interest rate and β_j is the risk measure for how sensitive the asset's return is to market return. The idiosyncratic risk is not included in β_j since only non-diversifiable risk is taken into account. The CAPM assumes that all investors aim to maximize economic utility and are risk-averse. It also assumes that all investors are price takers, i.e., they cannot influence prices. Furthermore it assumes that investors can lend and borrow without limit to the risk free interest rate and trade without transaction- or taxation costs. Under CAPM, all securities are highly divisible and information is at the same time available to all investors. In terms of risk premium CAPM can be stated as in Equation 2:

Equation 2

$$E(r_{j,t}) - rf_t = \beta_j\left[E(r_{Market,t}) - rf_t\right]$$

Jensen (1968) reasoned that for managed portfolios, if the manager is a superior forecaster (perhaps because of special knowledge that is not available to others) he/she will tend to systematically select securities that makes his/her portfolio earn more than the "normal" risk premium for its level of systematic risk. Jensen stated that this possibility should be allowed for. That could be done by allowing for the possible existence of a non-zero constant in Equation 2, as is shown by Equation 3.

Equation 3

$$E(r_{j,t}) - rf_t = \alpha_j + \beta_j\left[E(r_{Market,t}) - rf_t\right]$$

The alpha in Equation 3 is referred to as Jensen's alpha. It shows the part of the managed portfolio's returns that cannot be explained by systematic risk. It implies that there are over- or under-pricings in the market. A positive realized alpha is interpreted as the investor outperforming the market and a negative realized alpha is interpreted as underperformance. Hence, alpha is a return that is unsystematic and uncorrelated to a general market direction and risk. In CAPM, the implied Jensen's alpha is zero. According to the efficient market hypothesis, investors should not consistently be able to outperform the market by using any information that the market already knows since market efficiency

should cause existing share prices to always incorporate and reflect all relevant information (Fama E. F., 1970). Supporters of the CAPM argue that it is pointless to search for undervalued stocks in the market and academics point to a large body of evidence in support of the efficient market hypothesis, however disagreements exist.

Another performance measure that is used in this thesis is the Treynor ratio (Treynor, 1965). The Treynor ratio relates the excess return on a risky investment to systematic risk. The systematic risk is the beta of the risky portfolio. The higher the Treynor ratio, the better is the performance. The Treynor ratio allows for relative comparisons between funds in the sample. The ratio is defined in Equation 4. The expected return and risk-free rate in the equation can be approximated by the average return of the risky asset and the average risk-free interest rate respectively.

Equation 4

$$Treynor_j = \frac{E(r_{j,t}) - rf_t}{\beta_j}$$

The Sharpe ratio (Sharpe, 1966) resembles the Treynor ratio in the way that it relates excess return to risk. However, the Sharpe ratio includes the total risk of the portfolio and not only the systematic risk. A portfolio with high total risk but relatively low systematic risk is not very well diversified and has a higher proportion of idiosyncratic risk, which is not priced in the market according to e.g. CAPM. The performance should be interpreted in a similar way as the Treynor ratio i.e. a comparatively higher ratio is better. The Sharpe ratio is defined in Equation 5. Also in this case, the expected return and risk-free rate can be approximated with the average return of the risky asset and the average risk-free interest rate respectively. σ_j is defined as the standard deviation or volatility of the risky asset.

Equation 5

$$Sharpe_j = \frac{E(r_{j,t}) - rf_t}{\sigma_j}$$

3. Hypothesis Development

This thesis explores the linkages between characteristics attributable to FMCs and fund performance. This is done by examining how the average fund performance of different FMCs is affected by characteristics of that particular company. More specifically, we have chosen to examine how FMC fund wealth, employees per fund, total number of funds and number of domestic equity funds as well as domestic focus of the FMCs contribute to explaining the performance. Based on previous research, or perhaps more accurately the lack of previous research in the field, the hypotheses for this thesis are formalized.

3.1 Hypothesis 1 & 2: Number of Funds

In this section we put forward our hypothesis on why the number of funds that an FMC manages may have an impact on the average performance of these funds. As has already been mentioned, previous research has indicated that the number of funds that an FMC manages may have an impact on individual fund performance. This has been indicated by Kim and Davis (2007) who found that an increasing number of business ties between an FMC and portfolio companies could lower incentives for fund managers to protect investor interests. It is likely that number of business ties increase with number of funds, and also that the specific conflict of interest presented in the study increases with number of funds and the amount of securities in which an FMC invests. It has also been shown by Berkowitz and Qiu (2003) that public FMCs, and thus often FMCs with a higher number of total funds, perform worse than private FMCs. Both these studies, however, only relate to the number of funds in an indirect way.

In lack of previous direct research on the subject, this thesis proposes the angle of product- or brand extensions' implications as to why the number of funds offered by an FMC may impact performance. From the research reviewed in section 2.2.1, the following insights can be extracted. Firms seem to extend their product lines when industry barriers are low or market opportunities perceive to exist. Firms that already have a high market share seem to aggressively expand their product lines, something which also seems to be the case for firms with relatively high prices or short product lines (Putsis & Bayus, 2001). Furthermore, product line extensions seem to have a positive impact on market share but simultaneously increase supply cost disproportionately much (Bayus & Putsis, 1999). In at least some industries, there are decreasing returns to product line length (Draganska & Jain, 2005). The reason for this is most probably that cost implications of product line extensions have a dominant effect.

Also in the case of brand it seems as if brand extensions capture greater market share and realize greater advertising efficiency than individual brands. In the consumer goods market the market share of the brand extensions is positively correlated to the strength of the parent brand. When there is similarity between the extension and other products affiliated with the brand, advertising efficiency effects are elevated. Subsequently, advertising efficiency and market share are elevated when the brand extension competes in markets where consumers have limited knowledge of the product class (Smith & Park, 1992).

Based on the reasoning above it is plausible to assume that the number of funds offered by an FMC has implications on average fund performance. Firstly, the number of funds offered may be seen as the FMC's product line where the FMC offers different funds, with e.g. an individual profile relating to a

geographic region, particular size of company, specific industry, any combination of these, and other factors. Secondly, the number of funds also relates to the FMC's brand extensions as quite often funds from the same FMC are co-branded with the parent brand as the base. This is for example the case with the FMC "Banco Fonder" where the funds are called "*Banco* Kultur", "*Banco* Småbolag", "*Banco* Miljö" etc. As is shown by Johnson and Myatt (2003) a company may shorten its product line in order to preserve quality. Thus, there might be a conflict between the incentives to protect investor interest by focusing on a few good quality funds and the FMC's interest in capturing a large part of the market by offering many funds through product line extension and brand extension. For this reason we hypothesize that there is a negative relationship between the number of funds that an FMC offers and the average fund performance. This effect is most probably valid both for the total number of funds and for the number of Swedish equity funds which is the category of funds in which there is the greatest variation on brand and product profiles.

Hypothesis 1: *Performance relates negatively to the total number of funds offered by an FMC*

Hypothesis 2: *Performance relates negatively to the number of Swedish equity funds offered by an FMC*

3.2 Hypothesis 3: Domestic Focus

The previous research reviewed in section 2.2.2 which is conducted on the implications on performance and value creation of foreign vs. local investments show inconsistent results. On one hand there is the economic theory developed by Levy and Sarnat (1970) that suggests a sub-optimal home bias by investors. This is due to the high degree of positive correlation between companies' performances within an economy, which in turn implies the possibility of risk reduction through diversifying investments internationally. The conclusion by the authors is therefore that not enough international diversification is made because of a home bias by investors. If this was to be true for mutual fund managers as well, it would imply that FMCs with a higher degree of international diversification in their funds would on average perform better. On the other hand empirical research has been attempted on linking performance to local versus foreign fund managers. This research side-steps the diversification problem by comparing only local and foreign managers that invest their whole portfolio in one country. This captures the issues of information and relationship advantages but neglects the issue of increased risk due to lack of diversification across international boarders. The study by Shukla and Inwegen (1995) indicated a home advantage where foreign mutual funds perform worse than domestic funds when having controlled for tax differences, fund expenses, fund objectives and currency risk. They concluded that the relationship and information disadvantages contributed to the worse performance of foreign funds. When the study was redone by Otten and Bams in 2007 the link had ceased to exist and they found no significant difference in performance between foreign and local funds. Surprisingly, these

authors found a slight out-performance by foreign funds compared to local funds in the small-cap segment.

This thesis will not attempt to redo previous research but rather contribute with a new angle to shed light on the implications of domestic focus. If there is a home advantage for local funds, this may imply that FMCs with a higher degree of focus on the home market would on average perform better, than rival FMCs with a lower degree of focus would do; if an FCM chooses to focus on an area where it has a comparative advantage in fund performance, it may be the case that the FMC is particularly concerned about protecting investor interest. Therefore, in the existence of home advantage to local funds it is likely to be a positive relationship between domestic focus of an FMC and performance. However, research on the subject till date has shown inconclusive results regarding the benefits that are linked to investing in the domestic market. Assuming that there is no home advantage for local funds, we argue that the more the FMC diversifies internationally, the more does it protect investor interest. If that is the case, it is likely that there is a stronger culture of protecting investor interest within FMCs that have low domestic focus, hence there would be a negative relationship between domestic focus of an FMC and performance. In either case, it is reasonable to examine the impact of domestic focus on performance. Because of the inconsistency in results from previous research of home advantage it can be argued that the latter case is better grounded in theory. Furthermore, according to the efficient market hypothesis it is impossible to consistently outperform the market by using any information already known to the market (Fama E. F., 1970). This would again support the latter. From this follows that investor interest should best be protected by as high diversification as possible, as international diversification decrease the risk from positive correlation between companies' performances within an economy. The domestic focus of an FMC could be captured by the share of funds within an FMC that invests in the domestic market.

Hypothesis 3: *Performance relates negatively to domestic focus of FMCs*

3.3 Hypothesis 4: Employees per Fund

Earlier research on value creation through labor and human capital described in Section 2.2.3 stems from macroeconomic theory and various types of growth models. The shortcoming of these models is that they often do not separate the quantity of labor from its quality. They are generally grouped under one term. Some exceptions exist; the well known Solow growth model, for example, includes the factors of labor and human capital. When quantity of labor increases in the model, total output increases, although the effect diminishes without additional qualitative human capital (Solow, 1956).

The idea based growth model by C. I Jones (1999) addresses quality foremost, as it describes how ideas drive growth. The problematic prediction of previous idea based growth models is that population growth leads to accelerating per capita income growth. This is addressed by the author, who brings forward a method of eliminating the growth effect of scale by linking ideas to research rather than to population growth. Research can thus increase productivity within a product line, or it can increase the

total number of available products. Overall growth however, is dependent on research in each product line and not population growth per se.

Sharpe (1966) discusses the employee aspect by emphasizing that some funds experience too much expenditure on research and administration. According to him, this would cause these funds to yield an inferior rate of return. Their performance would be poorer and could be expected to remain so.

Finally, Chevalier and Ellison (1999) conduct an empirical study on the effect of human capital quality on fund performance. Their study achieved some significant results; in particular, fund managers who attended higher-SAT undergraduate institutions contribute to yield systematically higher risk-adjusted excess returns.

Little of the previous research, however, isolates the implications of quantity of labor on value creation. Given the research based on macroeconomic theory such as the Solow growth model, we hypothesize that the quantity of labor has a positive impact on performance. This would mean that an increased number of employees per fund would have a positive impact on average fund performance within an FMC.

Hypothesis 4: *Performance relates positively to the number of employees per fund*

3.4 Hypothesis 5: FMC Fund Wealth

As presented in Section 2.2.4, results from previous research are often contradicting regarding the relationship between wealth and performance. One can easily understand that with a large number of factors driving wealth, these different factors affect performance in different ways and it is hard to establish which ones are dominant.

In the recent study by Lindeen and Gros (2009) on the Swedish market no significant relationship between wealth and performance over a ten year period was found. Liquidity costs in the Swedish equity market were however identified and increased with fund wealth. There were also diseconomies of scale from being part of the largest FMCs in the Swedish market. Furthermore, the authors found that extreme net flows had a positive impact on funds' performances. In the earlier research by Chen et al. (2004) liquidity costs were identified as drivers for negative fund performance of large funds. This is supported by research by Ciccotello and Grant (1996) and Christopherson et al. (2002) which indicates that wealth has a negative impact on fund performance. On the other hand, Bergström and Sundén (2008) managed to establish, in a study of domestic funds on the Swedish market, that there was a positive relationship between wealth and performance. A study by McCrae (1996) did not, however, manage to establish any connection between the two components. This result is coherent with a study by Droms and Walker (1994) on US data.

Latzko (1999) documented the occurrence of economies of scale in mutual fund administration. This was, however, later challenged in an article by Chen et al. (2004), who observed a negative relationship

between fund wealth and returns. However, Chen and his coworkers concluded that even though a negative relationship between fund wealth and return may be established, performance of funds increases with the wealth of other funds under the management of the same FMC. This supports the notion that economies of scale do exist at least on an FMC level.

This thesis will attempt to establish the link between the wealth driven factor of scale economies for FMCs, with the average performance of funds within FMCs. The data set used in this thesis provides an opportunity to better isolate the economies of scale effect that is driven by wealth from a different angle than has been done in previous studies. This is the case because other variables that may correlate with FMC fund wealth, mainly the number of funds, can be controlled for in the regression. More importantly, we would argue that it follows a stronger logic to investigate the economies of scale impact on performance through total FMC fund wealth rather than through individual funds' wealth. The reason for this is because fixed costs in managing funds are likely to be shared across fund management teams within an FMC. In view of the previous research relating to economies of scale in fund management, we hypothesize that FMC fund wealth has a positive impact on performance due to economies of scale.

Hypothesis 5: *Performance relates positively to FMC fund wealth due to economies of scale effects*

4. Methodology

In order to facilitate the calculation of performance in this study, a limitation of the data from which performance is calculated, has been made to Swedish equity funds. The limitation to equity funds is made in order to be able to extract relevant performance measures by regressing the performance of selected funds on a single equity market portfolio benchmark. The limitation to Swedish funds is made in order to be able to single down the benchmark portfolio from several equity market portfolios to an equity market portfolio benchmark for the Swedish market. Moreover, funds with the main objective of investing in other mutual funds have been excluded.

4.1 Initial Preparations and Data gathering

The data has been collected from several different sources. In order to specify which funds to include in the analysis, Morningstar's category specification system was used (Morningstar, June 2007). Via this system, it was possible to sort out the funds with the main objective to invest in the Swedish equity market. Simultaneously the sorting only included Swedish FMCs. This resulted in 145 Swedish mutual funds that invest in the Swedish equity market.

Once the funds had been specified, the next step was to obtain quotation data on the funds. For this purpose, Six Edge was used (Six, 2009). Six Edge presents post-fee quotations (NAV-quotations) on a daily basis, which later was used in order to calculate the monthly returns for the funds. When calculating the monthly returns, the quotation data on the last trading day of the month was put in relation to the corresponding value the previous month according to the following formula, where "j" denotes Swedish equity funds and "t" denotes month:

Equation 6

$$r_{Actual\,j,t} = \frac{p_{j,t}}{p_{j,t-1}} - 1$$

120 of the 145 Swedish mutual funds specified by Morningstar had quotation data registered on Six Edge; thereby 25 funds had to be excluded. Later on, another 12 funds had to be excluded as well due to insufficient data.

The benchmark used to approximate the development of the equity market (needed in order to calculate Jensen's alpha) was Affärsvärlden General Index. This is a price index of stocks registered at the OMX Swedish stock exchange. Monthly data of the development for Affärsvärlden General Index was obtained through Datastream (Thomson Financial Ltd, 2009), and monthly returns were calculated in the same way as shown in Equation 6.

In order to approximate the risk free rate, monthly quotations of the STIBOR with 3 months maturity were retrieved from the Swedish Central Bank (Sveriges Riksbank, 2009). The STIBOR rate each month was quoted on a yearly basis, which had to be recalculated to a monthly basis. In order to calculate the monthly risk free return, the formula presented in Equation 7, based on geometric average, was used.

Equation 7

$$rf_t = (1 + rf_{t,quotedyearly})^{1/12} - 1$$

Data for the variables that in the hypotheses are aimed at explaining returns for FMCs were collected from the annual reports of the FMCs and from Morningstar. For the years 2004 to 2007, data for the number of Swedish equity funds per FMC, denoted as "Swedfunds", and the total number of funds per FMC, denoted as "Totfunds", could be collected from annual reports of each FMC via Affärsdata (Newsline Group AB, 2009). However, the annual reports for 2008 are as of today's date not finalized, and in order to approximate the corresponding numbers for 2008, Morningstar was used. In the same way as described earlier when Morningstar was used for identifying the Swedish equity funds managed by Swedish FMCs, it was also used to identify all funds managed by the same Swedish FMCs. Thereby, the actual number of Swedish equity funds per FMC and the actual number of total funds per FMC, were obtained for the 25th of February 2009 (this was the day when the data was collected from Morningstar). These numbers are used as approximations for the corresponding numbers on the 31st of December 2008.

Once the number of Swedish equity funds per FMC and the total number of funds per FMCs had been obtained, the Swedshare variable representing domestic focus could easily be calculated through Equation 8, where "i" denotes FMC and "T" denotes year.

Equation 8

$$Swedshare_{i,T} = Swedfunds_{i,T}/Totfunds_{i,T}$$

The data for employees per FMC was obtained from annual reports of each FMC via Affärsdata. The explanatory variable for employees per fund, "Empperfund", is believed to have a lagged effect on performance. This is because labor needs to be present in the production process before output is created. A one year lag for labor's effect on performance was chosen. The variable for employees per fund could thus be calculated using Equation 9.

Equation 9

$$Empperfund_{i,T} = Employees_{i,T-1}/Totfunds_{i,T-1}$$

The data on fund wealth was obtained from MoneyMate (MoneyMate Limited, 2009). It was compiled on a quarterly basis on individual fund wealth of all funds that invested in the Swedish equity market and were managed by Swedish FMCs. The reason why only Swedish equity funds' wealth was included was because the data from MoneyMate only reflects investments made by Swedish investors (MoneyMate Limited, 2009). As the discrepancy between Swedish investors' investment in Swedish equity funds managed by Swedish FMCs, and the total fund wealth in Swedish equity funds managed by Swedish FMCs, is close to zero, the data represents fund wealth of the Swedish equity funds very well. This, however, would not have been the case if fund wealth of all funds managed by Swedish FMCs would have been retrieved, since the corresponding discrepancy may be very large for funds investing outside of Sweden. For this reason, data from MoneyMate on Swedish equity funds' fund wealth

provides a more consistent way to approximate total fund wealth across FMCs than what Swedish investors' investments in all funds would have done. Since the other explanatory variables in the model are presented on a yearly basis, the quarterly wealth data from MoneyMate had to be transformed into yearly data. This was done by taking the average of the four quarters for the year according to Equation 10 where "q" denotes quarter.

Equation 10

$$Wealth_{j,T} = (Wealth_{T\,j,q=1} + Wealth_{T\,j,q=2} + Wealth_{T\,j,q=3} + Wealth_{T,q=4})/4$$

The most recent observations retrieved from Moneymate were from the 1st of October 2008, so for 2008 the average wealth of the first three quarters had to be used as an approximation for the whole year. The FMC fund wealth variable, denoted "Wealth" could be calculated by summarizing the average fund wealth for each FMC's funds a given year, as is shown by Equation 11. This thesis has chosen to examine the relationship between performance and absolute FMC wealth, as opposed to relative market share. The reason for this is that absolute wealth would provide a better measurement to capture the economies of scale effect.

Equation 11

$$Wealth_{i,T} = Wealth_{i\,j=1,T} + Wealth_{i\,j=2,T} + \cdots + Wealth_{i\,j=(n-1),T} + Wealth_{i\,j=n,T}$$

4.2 Regression 1: Performance

The FMCs' performances were approximated by the average performance of each FMC's Swedish equity funds. Three different performance measures were calculated, on a yearly basis, for each fund. These measures were Jensen's alpha, the Sharpe ratio and the Treynor ratio. In order to be able to calculate the measures on a yearly basis, the data was split so that only observations from one specific year were processed at a time. Excess return for each month was calculated using Equation 12:

Equation 12

$$r_{Excess\,j,t} = r_{Actual\,j,t} - rf_t$$

In order to calculate the Sharpe ratio for each fund and year, the standard deviation for actual returns for each fund and year were calculated, as well as the mean of excess return for each fund and year. The Sharpe ratio for each fund and year could be obtained through Equation 13.

Equation 13

$$Sharpe_{j,T} = \frac{(r_{Excess_{T\,j,t=1}} + r_{Excess_{T\,j,t=2}} + \cdots + r_{Excess_{T\,j,t=(n-1)}} + r_{Excess_{T\,j,t=n}})/n}{\sigma_{j,T}}$$

In order to be able to calculate Jensen's alphas and the Treynor ratios, a regression had to be run on how excess returns of the funds were explained by the excess return of the market. This regression is stated in Regression 1, where returns from Affärsvärlden General Index represent the market returns.

Regression 1

$$r_{Excess_{T\,j,t}} = \hat{\alpha}_{j,T} + \hat{\beta}_{j,T} * (r_{T_{Market,t}} - rf_{T_t}) + \varepsilon_{T\,j,t}$$

The alphas obtained from Regression 1 are the year specific Jensen's alpha for each fund. The betas obtained from the same regression are used to calculate the Treynor ratio for each fund and year:

Equation 14

$$Treynor_{j,T} = \frac{(r_{Excess_{T\,j,t=1}} + r_{Excess_{T\,j,t=2}} + \cdots + r_{Excess_{T\,j,t=(n-1)}} + r_{Excess_{T\,j,t=n}})/n}{\hat{\beta}_{j,T}}$$

In cases where the FMC had only one fund, the FMC's performance measures for each year consisted of its fund's Jensen's alpha, Treynor ratio and Sharpe ratio for that year. If, on the other hand, an FMC had many funds, the FMC's performance measures for each year consisted of the averages of its funds' performance measures that year. These averages were calculated in the way presented through Equation 15, Equation 16 and Equation 17.

Equation 15

$$Sharpe_{i,T} = (Sharpe_{i_{j=1,T}} + Sharpe_{i_{j=2,T}} + \cdots + Sharpe_{i_{j=(n-1),T}} + Sharpe_{i_{j=n,T}})/n$$

Equation 16

$$Treynor_{i,T} = (Treynor_{i_{j=1,T}} + Treynor_{i_{j=2,T}} + \cdots + Treynor_{i_{j=(n-1),T}} + Treynor_{i_{j=n,T}})/n$$

Equation 17

$$Alpha_{i,T} = (Alpha_{i_{j=1,T}} + Alpha_{i_{j=2,T}} + \cdots + Alpha_{i_{j=(n-1),T}} + Alpha_{i_{j=n,T}})/n$$

4.3 Regression 2: Hypothesis Testing/Model Development

In order to estimate to what extent an FMC's performance can be explained by the characteristics chosen for this thesis, panel data was used. Panel data is data where multiple cases are observed at two or more time periods (Princeton University, 2009). The case element of our panel was the different FMCs. 31 FMCs had a sufficient number of observations to be able to be used in the panel data regression. The time variable was the different years in the data, i.e. 2004, 2005, 2006, 2007 and 2008. The three performance measures were, on a yearly basis, calculated for each FMC as described in the previous section. The explanatory variables, i.e. Totfunds, Swedfunds, Swedshare, Empperfund and Wealth, were also stated on a yearly basis (a summary of the data set on characteristics and performances of FMCs is displayed in Table 5 in Appendix).

Using Stata, a first sorting of the data by the panel variable and then by the date variable within the panel variable was done. The case element and time variable were defined, then the regressions could be run. Each panel data regression estimated how well the performance measure could be explained by the explanatory variables, i.e. Totfunds, Swedfunds, Swedshare, Empperfund and Wealth. These regressions included all of the explanatory variables at once. The estimated regressions are represented

by Regression 2, Regression 3 and Regression 4. Further details on specifications regarding treatment of autocorrelation, heteroscedasticity and omitted variables are presented in Section 5.

Regression 2

$$Alpha_{i,T} = \hat{\beta}_{0_A} + \hat{\beta}_{1_A} * Swedfunds_{i,T} + \hat{\beta}_{2_A} * Totfunds_{i,T} + \hat{\beta}_{3_A} * Swedshare_{i,T} + \hat{\beta}_{4_A} * Empperfund_{i,T} + \hat{\beta}_{5_A} * Wealth_{i,T} + \varepsilon_{A_{i,T}}$$

Regression 3

$$Sharpe_{i,T} = \hat{\beta}_{0_S} + \hat{\beta}_{1_S} * Swedfunds_{i,T} + \hat{\beta}_{2_S} * Totfunds_{i,T} + \hat{\beta}_{3_S} * Swedshare_{i,T} + \hat{\beta}_{4_S} * Empperfund_{i,T} + \hat{\beta}_{5_S} * Wealth_{i,T} + \varepsilon_{S_{i,T}}$$

Regression 4

$$Treynor_{i,T} = \hat{\beta}_{0_T} + \hat{\beta}_{1_T} * Swedfunds_{i,T} + \hat{\beta}_{2_T} * Totfunds_{i,T} + \hat{\beta}_{3_T} * Swedshare_{i,T} + \hat{\beta}_{4_T} * Empperfund_{i,T} + \hat{\beta}_{5_T} * Wealth_{i,T} + \varepsilon_{T_{i,T}}$$

5. Data

5.1 Survivorship Bias

Survivorship bias may be a concern in the data set for this thesis. Survivorship bias arises if funds that have ceased to exist are excluded from the data and the data only consists of existing funds. This could bias the data set towards overestimating the performance of the fund market (or in some cases of FMCs, if some of their funds later have had to close down) earlier in time compared to how the fund market (or FMCs) performed as a whole at that point in time. This is the case because non-survivors tend to perform worse than survivors and they are excluded from the data set (Brown et al., 1992). Since Six Edge only contains data on historical quotations for funds that exist at present, and not funds that have been closed during the observed period, it has not been possible to correct for potential survivorship bias.

Since the time period examined stretches over five years, the survivorship bias problem is less severe than if a longer period of time would have been examined; most probably very few funds have had to close down during the fairly short time interval studied. The problem with survivorship bias would probably also be more severe in studies that examine e.g. whether past performance affects future performance. This thesis, in contrast, examines performance in relative terms between the surviving funds in the FMCs and performances' links to FMC characteristics.

5.2 Multicollinearity

Multicollinearity does not lower the predictive power of a model as a whole but rather affects results regarding individual predictors. A model in which the explanatory variables are highly correlated can still explain the outcome that it aims at explaining, but it may not give significant coefficients for the explanatory variables. Multicollinearity is a question of degree; hence it is not meaningful to "test" if there is multicollinearity in a model or not. Rather, it can be of relevance to measure to what extent there is multicollinearity in the sample (Gujarati, 2003, s. 359). There is not one unique method to detect and examine the strength of multicollinearity, but there are some rules of thumb. One indication of high multicollinearity is if R^2 is high but there are few significant p-values for the coefficients. Another indication is if there are high pair-wise correlations between regressors. In that case, a rule of thumb is that "high" pair-wise correlation is present when the correlation between two or more regressors exceeds 0.8; then multicollinearity is a serious problem. In Stata, we calculated the pair-wise correlations between all of our explanatory variables, the results are presented in Table 2. The highest value of pair-wise correlation for the regressors examined in this thesis was between Totfunds and Swedfunds, the correlation between these two explanatory variables was 0.54. This is well below the limit of 0.8 and therefore, this method shows no detection of multicollinearity to the extent that it causes serious problems in the data. However, caution must be taken in drawing too strong conclusions; a high zero-order correlation is a sufficient but not a necessary condition for the existence of serious multicollinearity (Gujarati, 2003, s. 359).

Table 2: Pair-Wise Correlation between Regressors

	Swedfunds	Totfunds	Swedshare	Empperfund	Wealth
Swedfunds	-	0.5381	0.0228	-0.0086	0.1890
Totfunds	0.5381	-	-0.3245	-0.0382	0.2691
Swedshare	0.0228	-0.3245	-	0.0877	-0.1887
Empperfund	-0.0086	-0.0382	0.0877	-	-0.0337
Wealth	0.1890	0.2691	-0.1887	-0.0337	-

5.3 Tests

In this section, tests for autocorrelation, heteroscedasticity and omitted variable bias in the data, as well as implications of these, are presented. The tests are done in order to detect potential problems in the data that, if disregarded, could cause misleading results from the regressions. For each of the issues examined, the test for it is described and potential actions taken based on the test results are motivated. We have chosen the significance level for indications of the tests to 5%.

5.3.1 Autocorrelation

To disregard autocorrelation can result in misleading conclusions from ordinary least squares (OLS) regressions (Gujarati, 2003, s. 455) and lack of efficiency of OLS estimators (Gujarati, 2003, s. 477). In order to test for first-order autocorrelation in the data for any of the regressions, the program "xtserial" for Stata was used (StataCorp LP, 2009). It runs a test in a specified regression, after the endogenous and exogenous variables have been identified, where the null hypothesis is that there is no first-order autocorrelation present and the alternative hypothesis is that there is. The test was run for Regression 2, Regression 3 and Regression 4. The results showed that in Regression 2 and Regression 3, first-order autocorrelation seems to be present. For Regression 4, the xtserial program indicated that there was no evidence of first-order autocorrelation.

In order to correct for first-order autocorrelation in models where such is present, feasible generalized least squares (FGLS) can be used instead of OLS (New York University, 2009). To use FGLS has the advantage that it adjusts for the problem with autocorrelation in its regressions. It also adjusts for potential problems with heteroscedasticity. In very small samples it may actually be more efficient to use OLS instead of FGLS despite the autocorrelation problem, since for these samples properties of the estimators are not well documented (Gujarati, 2003, s. 485). However, the sample size used in this study exceeds that limit. Hence, we use FGLS when running Regression 2 and Regression 3.

5.3.2 Heteroscedasticity

It is important to examine whether the models in this thesis are homoscedastic or heteroscedastic in the error term. Disregarded heteroscedasticity can result in misleading conclusions from OLS regressions (Gujarati, 2003, s. 398). In order to examine whether there is heteroscedasticity in the data, a likelihood ratio test can be conducted. In the regressions where we used feasible generalized least squares due to autocorrelation (i.e. in Regression 2 and Regression 3), there is no reason to test for heteroscedasticity as this has already been corrected for. However, the likelihood ratio test is still relevant for Regression 4.

The null hypothesis for the likelihood ratio test is that the data arises from a homoscedastic distribution, while the alternative hypothesis is that data arises from a heteroscedastic distribution. In practice, the test was conducted by fitting the model with panel level heteroscedasticity and saving the likelihood (StataCorp LP, 2009). Subsequently the model was fitted with panel level homoscedasticity. In order to complete the test, degrees of freedom were also needed and were computed by retrieving the number of panels and number of constraints from STATA. These were then stored in a local macro. Finally, the results from the likelihood ratio test could be obtained.

In the likelihood ratio test, Regression 4 was classified as heteroscedastic. In order to correct for the problem with heteroscedasticity, robust standard errors (Gujarati, 2003, s. 417) had to be used when programming the regression in Stata. Robust standard errors, or White's heteroscedasticity-corrected standard errors as they are sometimes called, can be estimated so that sample statistical inferences can be made about the true parameter values. Depending on the data, robust standard errors can be larger or smaller than the uncorrected standard errors.

5.3.3 Omitted Variable Bias

In panel data, if there is some unknown variable that affects the dependent variable in an ordinary multiple regression, the estimates of the coefficients may have an omitted variable bias. It is possible to control for some types of omitted variables in panel data.

If there is one or more omitted variables that differ between cases but are constant over time, a fixed effects regression can be used in order to control for this kind of omitted variables (Princeton University, 2009). The fixed effects regression is the main technique used for analyses of panel data, since it always gives consistent results. Fixed effects regressions use changes in the variables over time to estimate the effects of the exogenous variables on the endogenous variable. To use fixed effects is equivalent to generating dummy variables for each of the cases and including them in a standard linear regression. Each of the dummies remove one degree of freedom, since there is an extra error term associated with adding one more variable.

Between effects can be used in a panel regression when wanting to control for omitted variables that change over time but are constant between cases, so it is in a way the opposite of fixed effects (Princeton University, 2009). It uses variation between cases to estimate the effect of the omitted exogenous variables on the endogenous variable. In practice, between effects alone are not used very often, but are mainly useful as a step towards producing the random effects estimator. Random effects are used when some omitted variables may be constant over time but vary between cases and, simultaneously, other omitted variables may be constant between cases but vary over time. The random effect is a method that uses a weighted average of the fixed and between effects.

The Hausman test was used in order to choose if fixed effects or random effects should be used for the OLS-regression, Regression 4. The fixed effects regression is a consistent but not always efficient model to run, while the random effect is a more efficient estimator that can result in higher P-values for the estimates of the coefficients, but is not always correct to use. The Hausman test's null hypothesis is that the coefficients estimated by the random effects regression are the same as the coefficients estimated

by the fixed effects regression. To use random effects is accurate to do if the Hausman test does not reject the null hypothesis, otherwise fixed effects should be used. The Hausman test shows that fixed effects should be used in Regression 4.

5.3.4 Summary of Test Results

In Table 3, the test results for autocorrelation, heteroscedasticity and omitted variable bias are summarized. As has already been discussed, autocorrelation was present in Regression 2 and Regression 3. In order to correct for the presence of autocorrelation and potentially also heteroscedasticity, FGLS is used in Regression 2 and Regression 3. In Regression 4, the null-hypothesis of no autocorrelation in the regression could not be rejected at a 5% significance level, and hence FGLS would not have to be used in Regression 4. Therefore, Regression 4 was tested for heteroscedasticity and omitted variable bias. The test results show that heteroscedasticity is present in Regression 4, and therefore robust standard errors are used in this regression. The test results also show that Regression 4 should be a fixed-effects regression.

Table 3: Test Results for Autocorrelation, Heteroscedasticity and Omitted Variable Bias

Regression	Test	The Lowest Significance Level where the Null Hypothesis can be Rejected
Regression 2	Autocorrelation	0.0000
Regression 3	Autocorrelation	0.0000
Regression 4	Autocorrelation	0.1985
Regression 4	Heteroscedasticity	0.0134
Regression 4	Omitted Variable Bias	0.0061

6. Analysis

The results of this study are presented below and the implications of these are discussed. More specifically, in Section 6.1 the regression results are presented, significant linkages between explanatory variables and performance are identified, and potential model specification problems are dealt with. A deeper analysis of the results and how they relate to the different hypotheses is presented in Section 6.2. A 10% significance level is used consistently throughout the discussion in the analysis.

6.1 Regression Results

In Table 4, Table 5 and Table 6, results from Regression 2, Regression 3 and Regression 4 are presented, where the first table shows the regression results of the explanatory variables (i.e. Totfunds, Swedfunds, Swedshare, Empperfund and Wealth) for Jensen's Alpha, the second table for the Sharpe ratio and the third table for the Treynor ratio.

Table 4: FGLS Regression where Jensen's Alpha is regressed against Swedfunds, Totfunds, Swedshare, Empperfund and Wealth (Regression 2)

JENSEN'S ALPHA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Swedfunds	0.0034	0.0070	0.48	0.633	-0.0104	0.0171
Totfunds	-0.0013	0.0013	-1.04	0.297	-0.0038	0.0012
Swedshare	-0.0276	0.0538	-0.51	0.608	-0.1331	0.0779
Empperfund	-0.0007	0.0031	-0.23	0.815	-0.0068	0.0053
Wealth	5.68E-07	4.74E-07	1.20	0.230	-3.6E-07	1.5E-06
Intercept	0.0471	0.0303	1.55	0.120	-0.0123	0.1066

Table 5: FGLS Regression where the Sharpe Ratio is regressed against Swedfunds, Totfunds, Swedshare, Empperfund and Wealth (Regression 3)

SHARPE RATIO	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Swedfunds	-0.0477	0.0198	-2.41	0.016	-0.0866	-0.0089
Totfunds	0.0037	0.0036	1.04	0.298	-0.0033	0.0108
Swedshare	0.1549	0.1519	1.02	0.308	-0.1428	0.4526
Empperfund	-0.0095	0.0087	-1.09	0.276	-0.0266	0.0076
Wealth	1.34E-06	1.34E-06	1.00	0.315	-1.3E-06	3.96E-06
Intercept	0.0858	0.0856	1.00	0.317	-0.0821	0.2536

Table 6: Fixed-Effects Regression with Robust Standard Errors, where the Treynor Ratio is regressed against Swedfunds, Totfunds, Swedshare, Empperfund and Wealth (Regression 4)

R-sq: 0.1656

TREYNOR RATIO	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Swedfunds	-0.0113	0.0041	-2.74	0.007	-0.0196	-0.0031
Totfunds	0.0002	0.0008	0.27	0.785	-0.0013	0.0018
Swedshare	0.0453	0.0279	1.63	0.107	-0.0099	0.1005
Empperfund	-0.0045	0.0022	-2.07	0.040	-0.0088	-0.0002
Wealth	3.98E-07	2.11E-07	1.88	0.062	-2.1E-08	8.17E-07
Intercept	0.0127	0.0196	0.65	0.518	-0.0261	0.0515

As is seen in the output describing the estimated regressions, some significant coefficients for the explanatory variables were obtained.

First, for Regression 2, where the explanatory variables were aimed at explaining differences in Jensen's Alpha, Table 4 shows that none of the coefficient estimates are significantly different from zero.

For Regression 3, where the explanatory variables were aimed at explaining differences in the Sharpe ratio, Table 5 shows that the coefficient estimate for the explanatory variable Swedfunds is significantly different from zero. The negative coefficient estimate for Swedfunds indicates that an increased number of Swedish equity funds offered by an FMC will have a negative impact on fund performance of the FMC as measured by the Sharpe ratio.

For Regression 4, where the explanatory variables were aimed at explaining differences in the Treynor ratio, Table 6 shows that the Swedfunds, Empperfund and Wealth variables have significant coefficient estimates. Firstly, the negative coefficient estimate for Swedfunds indicates, again, that an increased number of Swedish equity funds that an FMC offers decreases performance, but this time as measured by the Treynor ratio. Secondly, the negative coefficient estimate for the Empperfund variable indicates that an increased number of employees per fund, decreases performance as measured by the Treynor ratio. Finally, the positive coefficient estimate for the Wealth variable indicates that an increase in the total fund wealth managed by an FMC, increases performance as measured by the Treynor ratio.

It should be noted, that two of the five explanatory variables chosen for this study, Totfunds and Swedshare, did not yield any significant coefficients for any of the three performance measures examined in the analysis. The lack of significant results for these variables implicates that it is not possible to determine in what direction and to what extent, if any at all, these two variables explain the performance measures in the models examined.

The reason as to why a chosen variable does not yield a coefficient significantly different from zero can vary. For a correctly specified model, one reason could be multicollinearity among the variables. In such a case the regression could have a high R-square testifying to a high explanatory power of the model, but still few significant coefficient estimates of the variables, indicating a difficulty to determine the individual impact of the different explanatory variables. A misspecified model, however, would also yield

insignificant results. To determine whether a model is misspecified one can investigate deeper into economic theory to find rationale behind why some variables that are included in the model should not fit in. Another way of obtaining an indication of whether or not a model is misspecified is to remove the variables which are believed to be incorrect from the model. The re-specified model is then regressed and the extent of change in the regression output, mainly in the R-square value, is observed. As previous research on implications of FMCs' characteristics' on performance has been very sparse, it is not unlikely that the economic theory behind the Totfunds and Swedshare variables presented in this thesis may be flawed. To examine whether or not this is the case, the models used in this study were re-specified by removing Totfunds and Swedshare, then regressions were run for the re-specified models (these regression equations are presented through Regression 5, Regression 6 and Regression 7). Tests for autocorrelation, heteroscedasticity and omitted variable bias was conducted in order to determine how to fit the re-specified regressions. The tests confirm that the same treatment was appropriate for the re-specified regressions as for their corresponding original regressions (for test results, see Table 1 in Appendix).

Regression 5

$$Alpha_{i,T} = \hat{\beta}_{0_{A,Respec}} + \hat{\beta}_{1_{A,Respec}} * Swedfunds_{i,T} + \hat{\beta}_{4_{A,Respec}} * Empperfund_{i,T} + \hat{\beta}_{5_{A,Respec}} * Wealth_{i,T} + \varepsilon_{A,Respec_{i,T}}$$

Regression 6

$$Sharpe_{i,T} = \hat{\beta}_{0_S} + \hat{\beta}_{1_{S,Respec}} * Swedfunds_{i,T} + \hat{\beta}_{4_{S,Respec}} * Empperfund_{i,T} + \hat{\beta}_{5_{S,Respec}} * Wealth_{i,T} + \varepsilon_{S,Respec_{i,T}}$$

Regression 7

$$Treynor_{i,T} = \hat{\beta}_{0_{T,Respec}} + \hat{\beta}_{1_{T,Respec}} * Swedfunds_{i,T} + \hat{\beta}_{4_{T,Respec}} * Empperfund_{i,T} + \hat{\beta}_{5_{T,Respec}} * Wealth_{i,T} + \varepsilon_{T,Respec_{i,T}}$$

In Table 7, Table 8 and Table 9, the regression estimates describing the new models, not containing Totfunds and Swedshare, are presented.

Table 7: FGLS Regression where Jensen's Alpha is regressed against Swedfunds, Empperfund and Wealth (Regression 5)

JENSEN'S ALPHA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Swedfunds	-0.0013	0.0055	-0.24	0.814	-0.0120	0.0094
Empperfund	-0.0012	0.0028	-0.45	0.654	-0.0066	0.0042
Wealth	3.81E-07	4.39E-07	0.87	0.385	-4.8E-07	1.24E-06
Intercept	0.0349	0.0210	1.66	0.096	-0.0062	0.0761

Table 8: FGLS Regression where the Sharpe Ratio is regressed against Swedfunds, Empperfund and Wealth (Regression 6)

SHARPE RATIO	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Swedfunds	-0.0356	0.0155	-2.31	0.021	-0.0659	-0.0053
Empperfund	-0.0058	0.0078	-0.75	0.454	-0.0211	0.0094
Wealth	1.77E-06	1.24E-06	1.43	0.152	-6.6E-07	4.2E-06
Intercept	0.1506	0.0593	2.54	0.011	0.0344	0.2669

Table 9: Fixed-Effects Regression with Robust Standard Errors, where the Treynor Ratio is regressed against Swedfunds, Empperfund and Wealth (Regression 7)

R-sq: 0.1507

TREYNOR RATIO	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Swedfunds	-0.0105	0.0034	-3.04	0.003	-0.0173	-0.0037
Empperfund	-0.0040	0.0022	-1.78	0.077	-0.0084	0.0004
Wealth	3.49E-07	2.01E-07	1.74	0.085	-4.9E-08	7.48E-07
Intercept	0.0306	0.0144	2.13	0.035	0.0021	0.0591

As can be seen from the output describing the estimated new regressions, the results for the coefficient estimates are almost identical between the re-specified models and the initial models. The explanatory power of the two sets of models seem to be close to the same, indicated by the very slight change in R-square. Table 10 provides an overview on the differences between the original and re-specified regressions regarding significant explanatory variables and explanatory power.

Table 10: Summary of Significant Regression Outputs

Performance Measure	Significant Explanatory Variable	Coefficient[1]	Coefficient[2]	P-value[1]	P-value[2]	R-sq[1]	R-sq[2]
Sharpe	Swedfunds	-0.0477	-0.0356	0.016	0.021	-	-
Treynor	Swedfunds	-0.0113	-0.0105	0.007	0.003	0.1656	0.1507
Treynor	Empperfund	-0.0045	-0.0040	0.040	0.077	0.1656	0.1507
Treynor	Wealth	3.98E-07	3.49E-07	0.062	0.085	0.1656	0.1507

1 = original regressions, 2 = re-specified regressions

Since the coefficient estimates for the significant variables are very similar in the two sets of models and the change in explanatory value, R-square, is close to nil, there is a strong indication that the re-specified models describes reality more accurately than the original model, and that the initial models were misspecified. However, cautiousness in drawing such conclusions should be taken, since this can be an effect stemming from the specific sample data in the study and not from reality itself.

6.2 How the Regression Results relate to the Hypotheses

6.2.1 Number of Funds

As discussed in Section 3.1, the number of funds offered by an FMC, and the number of Swedish equity funds offered, is hypothesized to have a negative impact on fund performance (Hypothesis 1 and 2). For Swedish equity funds, as denoted by the Swedfunds variable in the regressions, there is strong indication that the hypothesis is confirmed. This is because the variable had a significant negative coefficient both when regressed against the Sharpe and Treynor ratios.

For total funds offered by an FMC, as denoted by the Totfunds variable in the regressions, there is indication that the variable may be invalid and leads to a misspecified model when included in the regression. The first indication of this was the coefficient of the variable not being significant. The second, stronger indication emerged when the Totfunds variable, along with the Swedshare variable, was removed from the models. Since the re-specified models had very similar regression estimates and explanatory power, there is reason to believe that the re-specified model is correct and that Totfunds thus is an invalid explanatory variable.

It is interesting to note the difference in results between the Swedfunds and Totfunds variables as the same theoretical background supports both. However, a deeper analysis from a theoretical point of view provides some possible explanations for the difference in results that can be found. Previous research has shown that firms seem to expand their product lines when industry barriers are low and market opportunities perceive to exist. It is not unlikely that this phenomenon is greater in the market for domestic funds where access in many ways is obtained more easily for industry players (Putsis & Bayus, 2001). For example, a new Swedish FMC probably invest its first fund in the Swedish market, testifying to the relatively lower barrier of the domestic market for Swedish FMCs. In addition, advertising efficiency effects are elevated when there is similarity between the extension and other products affiliated with the brand (Smith & Park, 1992). This would imply that it may be easier to market a variety of domestic funds that are fairly similar to each other, rather than advertising funds that focus on a wide range of different international markets. Previous research also indicates that advertising efficiency and market share is elevated when the brand extension competes in markets where consumers have limited knowledge of the product class, something which is especially true among retail investors when buying financial products. The above reasoning makes the product line extension and brand extension theories to be more strongly applicable on the Swedfunds variable than on the Totfunds variable. However, there seems to be no reason as to why the Totfunds variable should not affect performance in the same direction as the Swedfunds variable does, but only to a smaller extent. In a limited data sample it can be more difficult to capture small effects from the explanatory variables, and it is likely that this is the reason why the coefficient estimate for Totfunds is not significantly different from zero, rather than the models being misspecified.

When considering the negative direction in which the Swedfunds variable impacts performance, it should be noted that this is well in accordance with the theoretical background and results from earlier research. As is shown by Johnson and Myatt (2003) a company may prune its product line in order to preserve quality. Thus, there might be a conflict between the incentives to protect investor interest by

focusing on a few good quality funds and FMC interest in capturing a large part of the market by offering many funds. Furthermore, an extended product line seems to increase both market share and supply cost (Bayus & Putsis, 1999). This leads to decreasing returns to product line length in at least some industries (Draganska & Jain, 2005). As the quality of a fund is hard to determine for a retail investor, it is not unlikely that the potential increased cost of product line length is passed on to investors in terms of too high management fees in comparison to performance.

6.2.2 Domestic Focus

As discussed in Section 3.2, we hypothesize that the domestic focus of an FMC has a negative impact on performance (Hypothesis 3). Empirically the regression results, for the variable Swedshare (aimed at measuring domestic focus of the FMCs), indicates that the variable may be invalid, and when included in the models leads to misspecification. The estimated coefficient of Swedshare was not significantly different from zero in the original regressions, and when the Swedshare variable, along with the Totfunds variable, was removed, the re-specified regressions showed very similar coefficient estimates and explanatory power as the initial regressions. This is an indication that Swedshare does not help in explaining FMC performance.

The lack of significance of the Swedshare variable's estimated coefficients is not as big a surprise as the lack of significance of the Totfunds variable's coefficients. Firstly, research conducted earlier on the implications on performance from foreign investors in comparison to local investors show inconsistency in results. The study by Shukla and Inwegen (1995) indicated a home advantage where foreign mutual funds performed worse than domestic funds. Their conclusion was that the relationship and information disadvantages contributed to the worse performance of foreign funds. When the study was redone by Otten and Bams in 2007, however, the link had ceased to exist. They found no significant difference in performance between foreign and local funds. The inconsistency in the results from these studies could, in light of the lack of results for the domestic focus advantage in this study, indicate that the statistically significant relationship obtained by Shukla and Inwegen (1995) is spurious.

Since it is notably difficult to determine, based on earlier research, which strategy regarding domestic focus that actually protects investor interests the most, the variable Swedshare loses some of its edge. If some FMCs believe that the international diversification strategies protect investor interests in the best way while other FMCs believe that there is a home advantage, it is possible that the differences in domestic focus between FMCs simply stems from confusion on what will actually protect investor interest the most. If so, the assertion that the domestic focus strategy could be seen as an indication of how strong the culture of protecting investor interest is within an FMC, becomes invalid. This reasoning in combination with the empirical results from the Swedshare variable in the regressions in our study, accentuates the risk that the initial models were misspecified. We, therefore, conclude that it is likely that domestic focus of FMCs does not have any impact on average fund performance of FMCs.

6.2.3 Employees per Fund

In Section 3.3, we hypothesized that the average amount of employees per fund that an FMC has employed, should have a positive impact on performance (Hypothesis 4).

The impact on performance of the employees per funds variable, Empperfund, is significantly different from zero in the regressions where performance is measured by the Treynor ratio. The coefficient estimate is negative, and even though this is the only case where the coefficient is significantly different from zero, the coefficient estimates in the regressions where performance is measured by Jensen's alpha and the Sharpe ratio also take on negative numbers. Hence, we consider the hypothesis to be rejected, and that rather the opposite is true.

The result is interesting as it implies that an increased number of employees destroy investor value. Another way to phrase it would be that; on average when deciding to hire one more employee for the same amount of funds, the cost for that employee will be greater than the value he/she will create, at least in terms of investor value. This is under the assumption that the cost of the employee translates into higher management fee of the fund, and that the value he/she creates translates into higher performance of the fund.

The results further implies that, at least in the fund management industry, adding additional labor does not contribute to value creation for investors. This is in opposition to traditional macro-economic growth models where additional labor yields value. One reason why this conflict arises may be, as McCrae (1996) points out, the disbelief among fund managers in beating the market index. The result of this disbelief is that many fund managers invest in portfolios similar to market index. This can contribute to a possible explanation of why an increased amount of employees per fund would raise the cost of the fund while not increasing the performance to the same extent. This could mean that, while in general the idea that increases in labor also yields value is not flawed, for the fund management industry in specific, output may be so detached from fund managers' active performance and so affected by occurrences outside of fund managements' control, that additional labor is useless.

In our view, our study provides an interesting contribution to the results of Chevalier and Ellison (1999) on the effect of human capital quality on fund performance. Their study found some significant results, in particular that managers who attended a higher-SAT undergraduate institution yielded systematically higher risk-adjusted excess returns. When interpreting the results of this thesis in light of the results found by Chevalier and Ellison one might conclude that while on average additional labor does not produce more value than what it costs, individual employees may still do so.

6.2.4 FMC Fund Wealth

As we hypothesize in Section 3.4, the total fund wealth under the administration of an FMC, should have a positive impact on performance due to economies of scale (Hypothesis 5).

The impact on performance of the FMC fund wealth, denoted as Wealth, is significantly different from zero in the regressions where performance is measured by the Treynor ratio. The coefficient estimate is positive. Though this is the only case where significance is observed the coefficient estimates in the regressions where performance is measured by Jensen's alpha and the Sharpe ratio also display positive numbers for the coefficient estimate of the Wealth variable. Hence, there is indication that the hypothesis can be confirmed.

Merely the fact that there is a significant relationship reinforces the assertion that the data set used in this thesis provides an opportunity to isolate the economies of scale effect that drives wealth from a different angle than what has been done by earlier research. This is not only because other variables that may correlate with the fund wealth administrated by an FMC, such as the number of funds, can be controlled for. It is also because the data set examines FMCs rather than individual funds, which allows the study to examine the economies of scale aspect on an FMC level rather than on an individual fund level. Since many costs such as inventory, office space and SG&A, are shared by multiple funds within an FMC, we argue that this data set provides a more exact capturing of the economies of scale effect than what datasets on individual funds would do.

When considering the positive direction of the impact of FMC fund wealth on performance, we note that it is not only in line with the hypothesis developed in this thesis, but also with the results from most other research conducted earlier on economies of scale effects in fund management. Latzko (1999) established the occurrence of economies of scale in mutual fund administration. This was later challenged in an article by Chen et al. (2004), who found indications of a negative relationship between fund wealth and returns. However, Chen and his coworkers concluded that even though a negative relationship between fund wealth and return may be established, performance of funds increases with the wealth of other funds under the management of the same FMC. This is supported by the findings of this thesis as it means that economies of scale advantage exist at least on an FMC-level.

Other research that concerns a more general relationship between fund wealth and fund performance, suffers, as pointed out in Section 3.4, from that a large number of factors driving fund wealth often have contradictory impacts on performance. It is thus understandable that with many factors influencing the wealth and performance of a fund at the same time, it is hard to distinguish which effects are the dominant ones without controlling for other factors or at least looking at an FMC level instead of at an individual fund level. For that reason, the category of research aimed at the more general relation between fund wealth and fund performance provides little guidance on how to interpret the results of this thesis.

7. Concluding Remarks

7.1 Conclusion

The purpose of this thesis has been to contribute to an increased understanding of how characteristics attributable to FMCs affect fund performance. More precisely the study has aimed to explain how performance relates to the number of employees per fund, the total number of funds, the number of domestic funds, FMC fund wealth and domestic focus of FMCs.

A general conclusion that can be drawn from the results is that the fund performance of a fund is not only affected by characteristics attributable to the fund itself, but is indeed also affected by characteristics of the FMC by which it is managed.

The conclusions can be reviewed from an investor perspective and an FMC perspective, since the implications of the results may give practical guidance both when investors decide on where to place their wealth and when FMCs make strategic decisions. Subsequently, the practical implications that can be drawn to benefit investors will be presented and after that the results are reviewed from an FMC perspective.

From an investor perspective, the results suggest that the investor is probably better off choosing an FMC that does not manage a lot of funds. Especially if the FMC manages a lot of domestic funds, there is reason to believe that this is done by the FMC in order to gain a high market share and that focus on fund performance is not such a high priority for the FMC. Although, the negative impact of the number of funds was significant only for the number of Swedish funds and not for the total number of funds, the theoretical framework suggests that the linkage is still a more general one. Therefore, there is reason to be cautious in general when an FMC is among the ones in the industry that manages the most funds.

Our results also indicate that on average, adding additional labor does not contribute to higher fund performance. Instead, the opposite seems to be true. As most fund managers do not outperform the market index anyway, adding extra labor in terms of research etc seems to destroy more investor value than it creates. Interpreting these results in the light of the findings of Chevalier and Ellison (1999) whose study showed that fund managers with certain educational background could add value, we conclude that while adding more labor in general does not create value, finding the right labor in individual cases do. Thus, from an investor perspective, investors are probably better off by identifying individual managers that create value, rather than relying on a higher amount of personnel resources per fund to generate value.

From the investor perspective the results further indicate that there are economies of scale effects in fund management. This has a somewhat troublesome implication for investor decisions since it suggests that an investor is better off by investing in a fund which belongs to an FMC with high total fund wealth as this would yield an economies of scale advantage. The draw-back of this, however, is that FMCs that manage more fund wealth also manage relatively more funds. The scale effect on performance thus contradicts with the product and brand extension phenomenon which, through an increased number of funds may destroy investor value. However, as the number of funds only showed significant impact for

the number of Swedish funds and not for the total number of funds, it may be expected that an investment in a fund that belongs to an FMC managing many funds, but only few domestic ones, might leverage the insights both on how economies of scale and how product extensions has an impact on performance.

To summarize the investor perspective, the results from our study indicate that investors are better off by investing in funds that belong to FMCs with few domestic funds, few employees per fund and large total fund wealth. So, what are the practical implications of the conclusions from an FMC perspective?

The results indicate that firstly, an FMC has reason to examine its revenue streams to ensure that the amount of funds that is managed by the FMC is optimal in relation to the performance of the funds. If for example the FMC's revenues are purely based on asset value of the funds, it has an incentive to increase the number of funds to attract more wealth. If on the other hand the revenues are based purely on performance of the managed funds, the FMC has an incentive to decrease the number of funds to a level where each fund is given the optimal amount of attention to maximize performance.

Secondly, there is reason for an FMC to review the number of employees and examine whether employees yield the amount of value that the company expects. This is important since the study indicates that on average, an increased number of employees per fund does not increase fund performance.

Thirdly, the results indicate that an FMC does capture value through economies of scale in fund wealth. Thus, there is reason for an FMC to review the product line that it offers and evaluate in what ways it could attract additional capital.

Moreover, to the best of our knowledge this thesis is the first of its kind to address the linkages between fund performance and easily observable characteristics of FMCs such as the number of funds and total fund wealth managed. It is thus our hope that the results will contribute to the academic debate, both internationally and in Sweden.

7.2 Further Research

This study has had the ambition to do an initial exploration into how fund performance is affected by characteristics of the FMCs by which they are managed. Our results show that characteristics attributable to FMCs do affect fund performance. For this reason, and because of the overwhelming interest of retail investors in mutual funds, an increased amount of research on the links between fund performance and FMC characteristics is justified.

The natural building blocks that this thesis provides for further research within the research field of links between FMC characteristics and fund performance, would be to more closely examine the variables from this thesis that did not yield a significant result. For the Swedshare variable, further research and a stronger theoretical background are needed to determine the relationship, if any, between domestic focus of FMCs and performance.

For the relationship between the total product line of an FMC and fund performance it would be interesting to continue research examining more precisely in what segments of funds that an increased product line has the greatest impact on performance. It is possible that the domestic fund segment is one where product line extensions are easy to make and attractive for retail investors. However, there may be other segments, based on factors other than geography, where the same conditions hold. For example, it is possible that funds profiled at certain popular and well-known industries experience a similar phenomenon.

Moreover, the time period covered in our study stretches from the beginning of 2004 to the end of 2008, which means that it includes data from before the onset of the current financial crisis and to some extent also during the crisis period. The stock market has recently been much more volatile than normally, and it has also seen extreme value depreciations. This may have biased our results towards pointing out links between performance and characteristics that are relevant just before and during a major crisis, but necessarily not during more ordinary circumstances. Therefore, an additional area of interest is to investigate if, and how, links between performance and FMC characteristics changes over time. To determine if the relationships between characteristics of FMCs and fund performance were affected by the financial crisis would be especially interesting to study in the future. This would indicate whether or not the crisis significantly changed the dynamics of investor behavior and FMC strategies.

Another area that could be examined further is how characteristics of FMCs relate to fund performance in a global perspective. This study builds on data from Swedish FMCs, and the average performances of the FMCs' funds are approximated by the average performances of the FMCs' Swedish equity funds. It could be of interest to include the performances of all funds managed by the FMCs, and it would also be relevant to see if the same relationships as has been found in the empirical results of this study also hold in other geographical areas.

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Appendix

Table 1: Test Results to determine Autocorrelation, Heteroscedasticity and Omitted Variable Bias in the Original Regressions and in the Re-Specified Regressions

Performance Measure	Test	The Lowest Significance Level where the Null Hypothesis can be Rejected[1]	The Lowest Significance Level where the Null Hypothesis can be Rejected[2]
Jensen's Alpha	Autocorrelation	0.0000	0.0000
Sharpe Ratio	Autocorrelation	0.0000	0.0000
Terynor Ratio	Autocorrelation	0.1985	0.2061
Terynor Ratio	Heteroscedasticity	0.0134	0.0153
Terynor Ratio	Omitted Variables	0.0061	0.0009

1=original regressions 2=re-specified regressions

Table 2: Summary Statistics for the Data Set of FMC Performance Measures used in the Original Regressions and the Re-Specified Regressions

Variable	Mean	Std. Dev.	Min	Max
Jensen's Alpha	0.0375	0.1423	-0.0125	1.5047
Sharpe Ratio	0.0543	0.4077	-0.9502	0.9273
Treynor Ratio	-0.0060	0.0303	-0.0638	0.2010

Table 3: Summary Statistics for the Data Set of FMC Characteristics used as Explanatory Variables in the Original Regressions and the Re-Specified Regression

Variable	Mean	Std. Dev.	Min	Max
Swedfunds (#)	3.64	2.81	1.00	14.00
Totfunds (#)	18.35	18.72	1.00	98.00
Swedshare	0.37	0.31	0.07	1.00
Empperfund (#)	1.77	4.37	0.00	29.00
Wealth (MSEK)	24611	34485	65	181190

Table 4: Descriptives of Panel Data used in the Original Regressions and the Re-Specified Regression

Descriptives of Regression Data	#
Obs	146
Groups	31
Obs/Group Min	2
Obs/Group Average	4.71
Obs/Group Max	5

Table 5: Data Set on Characteristics and Performance of FMCs

FMC	Year	Swed Funds	Tot funds	Swed share	Emp /fund	Wealth (MSEK)	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
Aktie-Ansvar	2004	1	5	0.20	0.60	2729	-0.0003	0.3075	0.0122
Aktie-Ansvar	2005	1	5	0.20	0.80	3827	0.0792	0.2135	-0.0152
Aktie-Ansvar	2006	1	6	0.17	0.83	5990	0.0029	0.4059	0.0207
Aktie-Ansvar	2007	1	7	0.14	1.00	7260	0.0019	-0.1601	-0.0066
Aktie-Ansvar	2008	1	7	0.14	1.43	3658	-0.0047	-0.6005	-0.0503
Aktieinvest	2004	1	1	1.00	22.00	2143	0.0001	0.3758	0.0129
Aktieinvest	2005	1	1	1.00	22.00	3093	0.0661	0.2120	-0.0153
Aktieinvest	2006	1	1	1.00	20.00	3928	-0.0024	0.2876	0.0148
Aktieinvest	2007	1	1	1.00	27.00	4514	0.0006	-0.1827	-0.0078
Aktieinvest	2008	1	1	1.00	29.00	2440	0.0029	-0.4985	-0.0424
Alfred Berg	2004	2	19	0.11	1.05	1357	-0.0042	0.2625	0.0088
Alfred Berg	2005	2	19	0.11	3.79	1416	0.0643	0.2015	-0.0152
Alfred Berg	2006	2	19	0.11	3.95	3058	-0.0025	0.2858	0.0150
Alfred Berg	2007	2	20	0.10	3.45	2842	0.0021	-0.1577	-0.0065
Alfred Berg	2008	2	20	0.10	3.90	1183	-0.0023	-0.5700	-0.0476
AMF Pension	2004	2	8	0.25	0.13	25333	0.0062	0.5873	0.0205
AMF Pension	2005	2	8	0.25	0.25	37222	0.1063	0.2256	-0.0148
AMF Pension	2006	2	8	0.25	0.38	55364	0.0067	0.4570	0.0251
AMF Pension	2007	2	9	0.22	0.33	67211	0.0007	-0.1829	-0.0078
AMF Pension	2008	2	10	0.20	0.40	36707	-0.0024	-0.5656	-0.0476
Avanza	2007	1	1	1.00	1.00	2490	0.0039	-0.1072	-0.0045
Avanza	2008	1	1	1.00	2.00	1583	0.0035	-0.4922	-0.0418
Banco	2004	11	40	0.28	0.58	24440	-0.0019	0.3116	0.0108
Banco	2005	11	37	0.30	0.32	28722	0.0757	0.2110	-0.0150
Banco	2006	11	37	0.30	0.22	32309	0.0001	0.3307	0.0176
Banco	2007	11	32	0.34	0.31	34532	0.0016	-0.1692	-0.0070
Banco	2008	11	21	0.52	0.43	17354	-0.0021	-0.5697	-0.0481
Carlson	2004	4	12	0.33	0.00	12767	-0.0026	0.2411	0.0097
Carlson	2005	4	14	0.29	0.07	14983	0.0776	0.5442	0.0053
Carlson	2006	4	20	0.20	0.10	11960	0.0055	0.4396	0.0249
Carlson	2007	5	27	0.19	0.07	11759	-0.0028	-0.2522	-0.0110
Carlson	2008	5	27	0.19	0.07	6295	-0.0112	-0.6113	-0.0638
Catella	2004	3	10	0.30	0.90	13433	-0.0003	0.3465	0.0124
Catella	2005	4	11	0.36	1.00	17434	0.0669	0.4766	0.0064
Catella	2006	4	11	0.36	1.09	23149	0.0053	0.4327	0.0241
Catella	2007	4	12	0.33	1.17	29497	0.0024	-0.1529	-0.0064
Catella	2008	6	17	0.35	0.82	15453	-0.0033	-0.5839	-0.0493
Cicero	2004	1	5	0.20	0.40	66	-0.0045	0.1942	0.0064
Cicero	2005	1	6	0.17	0.50	212	0.0980	0.2315	-0.0157
Cicero	2006	1	6	0.17	0.67	250	-0.0002	0.3132	0.0173
Cicero	2007	2	10	0.20	0.40	177	0.0049	-0.0967	-0.0044
Cicero	2008	3	10	0.30	0.60	72	-0.0002	-0.5448	-0.0454
Danske Invest	2004	3	14	0.21	0.71	3634	-0.0014	0.2191	0.0084
Danske Invest	2005	3	16	0.19	0.63	6825	0.0443	0.7134	0.0184
Danske Invest	2006	3	15	0.20	0.80	9758	0.0088	0.9019	0.0423
Danske Invest	2007	3	17	0.18	0.94	8974	-0.0022	-0.2835	-0.0115
Danske Invest	2008	3	16	0.19	1.06	6179	0.0026	-0.5045	-0.0426
Didner & Gerge	2004	1	1	1.00	5.00	26159	-0.0030	0.2966	0.0105
Didner & Gerge	2005	1	1	1.00	6.00	37428	0.0000	0.8247	0.0255
Didner & Gerge	2006	1	1	1.00	6.00	43262	-0.0103	0.3910	0.0136
Didner & Gerge	2008	2	2	1.00	3.00	22484	-0.0095	-0.5846	-0.0514
Eldsjäl	2004	2	3	0.67	0.00	285	-0.0007	0.3526	0.0119
Eldsjäl	2005	2	3	0.67	0.67	372	0.0716	0.2076	-0.0154

FMC	Year	Swed Funds	Tot funds	Swed share	Emp /fund	Wealth (MSEK)	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
Eldsjäl	2006	2	3	0.67	0.33	491	-0.0015	0.2907	0.0148
Eldsjäl	2007	2	3	0.67	0.00	551	-0.0020	-0.2497	-0.0105
Eldsjäl	2008	2	3	0.67	0.33	275	0.0047	-0.4827	-0.0402
Enter	2004	4	7	0.57	1.29	8499	-0.0007	0.3088	0.0103
Enter	2005	4	7	0.57	1.14	10876	-0.0053	0.9273	0.0184
Enter	2007	5	9	0.56	0.89	14890	0.0329	-0.9502	-0.0195
Enter	2008	5	9	0.56	0.89	8268	-0.0065	-0.5684	-0.0594
Erik Penser	2004	1	14	0.07	0.50	4099	0.0003	0.3805	0.0131
Erik Penser	2005	1	14	0.07	0.50	4700	0.0648	0.2106	-0.0152
Erik Penser	2006	1	12	0.08	0.58	5209	-0.0025	0.2834	0.0146
Erik Penser	2007	1	13	0.08	0.46	5842	0.0001	-0.1951	-0.0083
Erik Penser	2008	2	7	0.29	1.14	3076	0.0014	-0.5097	-0.0439
Folksam	2004	5	22	0.23	0.09	32500	0.0007	0.3999	0.0136
Folksam	2005	5	22	0.23	0.09	46002	0.0708	0.2123	-0.0158
Folksam	2006	5	22	0.23	0.09	62501	0.0021	0.3816	0.0200
Folksam	2007	4	19	0.21	0.11	77025	-0.0005	-0.2040	-0.0090
Folksam	2008	4	20	0.20	0.05	45712	-0.0001	-0.5437	-0.0454
Gustavia	2004	1	2	0.50	1.50	173	0.0182	0.6634	0.0327
Gustavia	2005	1	3	0.33	1.67	1481	0.1489	0.2856	-0.0188
Gustavia	2006	1	3	0.33	2.33	2189	-0.0054	0.1762	0.0107
Gustavia	2007	1	4	0.25	2.75	1199	-0.0085	-0.3882	-0.0201
Gustavia	2008	1	5	0.20	2.60	469	-0.0088	-0.6545	-0.0552
Handelsbanken	2004	7	43	0.16	0.70	77511	-0.0011	0.2912	0.0123
Handelsbanken	2005	7	44	0.16	0.77	100030	0.0692	0.3066	-0.0095
Handelsbanken	2006	10	53	0.19	0.62	125918	0.0018	0.3647	0.0196
Handelsbanken	2007	9	52	0.17	1.06	145900	-0.0016	-0.2412	-0.0108
Handelsbanken	2008	9	34	0.26	2.65	71592	-0.0015	-0.5381	-0.0463
HQ	2004	4	7	0.57	1.57	6620	0.0073	0.3688	0.0193
HQ	2005	4	18	0.22	0.72	8299	0.0353	0.4606	0.0035
HQ	2006	4	19	0.21	0.84	12130	0.0060	0.4566	0.0256
HQ	2007	3	21	0.14	0.76	20799	0.0036	-0.1011	-0.0043
HQ	2008	7	23	0.30	0.78	10388	0.0015	-0.5168	-0.0462
Indecap	2004	2	2	1.00	1.50	2592	0.0005	0.2617	0.0098
Indecap	2005	2	2	1.00	1.50	1416	0.0941	0.2067	-0.0142
Indecap	2006	2	5	0.40	0.80	1267	0.0028	0.3667	0.0209
Kaupthing	2004	3	10	0.30	0.40	1754	0.0143	0.2686	0.0134
Kaupthing	2005	3	9	0.33	0.44	1717	0.0933	0.2856	0.0222
Kaupthing	2006	2	5	0.40	0.80	2114	0.1023	0.2607	-0.0054
Kaupthing	2007	2	5	0.40	0.60	2700	-0.0049	-0.2999	-0.0135
Kaupthing	2008	2	21	0.10	0.14	1952	-0.0060	-0.5859	-0.0512
Lannebo	2004	4	9	0.44	1.11	16791	0.3943	0.2126	-0.0375
Lannebo	2005	4	11	0.36	0.91	22475	1.5047	0.4983	0.0046
Lannebo	2006	4	11	0.36	0.91	28470	0.5683	0.4909	-0.0134
Lannebo	2007	4	11	0.36	1.00	36737	-0.0041	-0.2987	-0.0130
Lannebo	2008	3	7	0.43	1.86	20435	-0.0034	-0.5726	-0.0496
Länsförsäkringar	2004	3	34	0.09	1.15	24378	0.0405	0.2832	0.0148
Länsförsäkringar	2005	3	32	0.09	0.66	32854	0.1284	0.2910	0.0377
Länsförsäkringar	2006	3	30	0.10	0.40	40810	0.1210	0.2722	-0.0048
Länsförsäkringar	2007	3	31	0.10	0.71	44072	-0.0048	-0.3158	-0.0135
Länsförsäkringar	2008	3	28	0.11	0.61	23110	-0.0051	-0.5778	-0.0515
Nordea	2004	5	55	0.09	0.64	24590	-0.0028	0.2904	0.0099
Nordea	2005	5	54	0.09	0.76	31028	0.0495	0.3198	-0.0100
Nordea	2006	6	57	0.11	0.84	34841	-0.0004	0.3322	0.0171
Nordea	2007	6	55	0.11	0.87	39570	0.0022	-0.1511	-0.0064

FMC	Year	Swed Funds	Tot funds	Swed share	Emp /fund	Wealth (MSEK)	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
Nordea	2008	6	53	0.11	0.77	19707	-0.0008	-0.5500	-0.0534
SEB	2004	6	52	0.12	0.02	106858	0.1403	0.3341	-0.0267
SEB	2005	8	55	0.15	0.04	134232	0.4001	0.3643	-0.0065
SEB	2006	9	55	0.16	0.04	168454	0.1261	0.4071	0.0090
SEB	2007	8	52	0.15	1.35	181191	-0.0024	-0.4529	-0.0208
SEB	2008	14	57	0.25	1.46	97951	0.0005	-0.5457	-0.0453
Skandia	2004	4	21	0.19	0.29	16804	-0.0040	0.2290	0.0079
Skandia	2005	4	26	0.15	0.15	23644	0.0639	0.4007	0.2010
Skandia	2006	4	26	0.15	0.12	35265	0.0112	0.3298	-0.0159
Skandia	2007	4	28	0.14	0.18	32340	0.0002	-0.1934	-0.0082
Skandia	2008	11	27	0.41	0.19	16942	0.0066	-0.4817	-0.0410
Spiltan	2004	2	2	1.00	0.50	495	0.0040	0.4256	0.0202
Spiltan	2005	2	2	1.00	1.00	629	0.0760	0.2014	-0.0147
Spiltan	2006	2	2	1.00	1.50	1045	0.0063	0.4616	0.0256
Spiltan	2007	3	4	0.75	0.75	1124	0.0011	-0.2386	-0.0102
Spiltan	2008	4	5	0.80	0.80	936	-0.0125	-0.6998	-0.0636
SPP	2004	2	17	0.12	0.29	9498	-0.0019	0.3064	0.0105
SPP	2005	2	17	0.12	0.24	12625	0.0753	0.2124	-0.0148
SPP	2008	2	14	0.14	0.00	10830	0.0040	-0.4941	-0.0415
Swedbank	2004	7	70	0.10	0.03	51978	0.0008	0.4806	0.0171
Swedbank	2005	8	70	0.11	0.30	71156	0.0879	0.2188	-0.0153
Swedbank	2006	8	70	0.11	1.13	98516	0.0056	0.4572	0.0239
Swedbank	2007	10	73	0.14	1.04	111637	-0.0007	-0.3462	-0.0143
Swedbank	2008	11	98	0.11	0.86	60486	0.0061	-0.4811	-0.0398
Västernorr.fonden	2004	1	1	1.00	2.00	149	0.0052	0.5823	0.0234
Västernorr.fonden	2005	1	1	1.00	3.00	393	0.0778	0.2328	-0.0175
Västernorr.fonden	2006	1	1	1.00	3.00	562	0.0004	0.3377	0.0179
Västernorr.fonden	2007	1	1	1.00	1.00	745	-0.0001	-0.2008	-0.0085
Västernorr.fonden	2008	1	2	0.50	1.50	561	0.0043	-0.4919	-0.0405
Xact	2004	2	2	1.00	1.00	25293	-0.0011	0.3510	0.0117
Xact	2005	3	4	0.75	0.50	39661	0.0886	0.2224	-0.0160
Xact	2006	3	6	0.50	0.50	67793	-0.0012	0.3156	0.0162
Xact	2007	4	8	0.50	0.50	61882	0.0018	-0.2362	-0.0092
Xact	2008	4	7	0.57	1.00	34004	0.0081	-0.4678	-0.0385
Öhman	2004	2	17	0.12	0.47	1682	-0.0064	0.1859	0.0063
Öhman	2005	2	18	0.11	0.94	2088	0.0394	0.6203	0.0129
Öhman	2006	2	17	0.12	0.65	3245	0.0006	0.3641	0.0196
Öhman	2007	2	18	0.11	0.56	2886	0.0010	-0.1705	-0.0073
Öhman	2008	3	28	0.11	0.46	1485	0.0097	-0.4513	-0.0368

Table 6: Number of Funds contributing to Performance Measures of FMCs

Total number of funds in the data set: 108

	2004	2005	2006	2007	2008
Number of funds contributing to performance measures	84	88	87	96	107

Table 7: Fund Performance

	2004			2005			2006			2007			2008		
	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
Aktie-Ansvar															
Aktie-Ansvar Sverige	-0.0003	0.3075	0.0122	0.0044	0.7837	0.0274	0.0029	0.4059	0.0207	0.0019	-0.1601	-0.0066	-0.0047	-0.6005	-0.0503
Aktieinvest															
Aktiespararna Topp Sv. (i)	0.0001	0.3758	0.0129	0.0036	0.7304	0.0268	-0.0024	0.2876	0.0148	0.0006	-0.1827	-0.0078	0.0029	-0.4985	-0.0424
Alfred Berg															
Alfred Berg Sverige	-0.0059	0.2139	0.0074	0.0022	0.7260	0.0252	-0.0050	0.2333	0.0125	0.0013	-0.1739	-0.0072	-0.0023	-0.5703	-0.0475
Alfred Berg Sv. Referens	-0.0025	0.3111	0.0103	0.0032	0.7767	0.0263	0.0001	0.3383	0.0175	0.0029	-0.1415	-0.0057	-0.0023	-0.5698	-0.0476
AMF Pension															
AMF P. Aktiefond - Småb.	0.0099	0.7185	0.0247	0.0130	0.9404	0.0374	0.0105	0.5109	0.0295	-0.0008	-0.2090	-0.0091	-0.0096	-0.6432	-0.0545
AMF P. Aktiefond Sverige	0.0025	0.4561	0.0164	0.0059	0.8105	0.0297	0.0030	0.4032	0.0206	0.0022	-0.1567	-0.0065	0.0048	-0.4879	-0.0408
Avanza															
Avanza Zero (index)							-0.0028	0.5125	0.0237	0.0039	-0.1072	-0.0045	0.0035	-0.4922	-0.0418
Banco															
Banco Etisk Sverige Special	-0.0038	0.2672	0.0090	0.0034	0.7797	0.0273	-0.0028	0.2778	0.0145	0.0048	-0.0949	-0.0039	-0.0012	-0.5597	-0.0464
Banco Hjälp	-0.0026	0.2998	0.0101	0.0035	0.7943	0.0271	-0.0005	0.3207	0.0167	0.0021	-0.1578	-0.0065	-0.0017	-0.5676	-0.0469
Banco Human Pension	-0.0018	0.3265	0.0109	0.0041	0.8191	0.0281	-0.0010	0.3112	0.0162	0.0029	-0.1393	-0.0057	0.0003	-0.5448	-0.0451
Banco Humanfonden	-0.0018	0.3155	0.0108	0.0034	0.7687	0.0270	-0.0023	0.2754	0.0147	0.0033	-0.1339	-0.0055	-0.0005	-0.5532	-0.0457
Banco Ideell Miljö	-0.0021	0.3137	0.0105	0.0080	0.9482	0.0330	0.0040	0.4331	0.0224	0.0021	-0.1585	-0.0065	0.0003	-0.5498	-0.0450
Banco Kultur	-0.0022	0.3110	0.0104	0.0036	0.7964	0.0272	-0.0006	0.3202	0.0167	0.0025	-0.1499	-0.0061	-0.0013	-0.5634	-0.0465
Banco Samarit Pension	-0.0018	0.3264	0.0109	0.0042	0.8207	0.0281	-0.0010	0.3116	0.0163	0.0029	-0.1397	-0.0057	0.0002	-0.5454	-0.0451
Banco Samaritfonden	-0.0020	0.3089	0.0106	0.0034	0.7689	0.0270	-0.0022	0.2761	0.0147	0.0033	-0.1351	-0.0056	-0.0005	-0.5531	-0.0457
Banco Småbolag	-0.0007	0.2891	0.0121	0.0125	0.8140	0.0340	0.0045	0.3697	0.0228	-0.0099	-0.4261	-0.0178	-0.0175	-0.7211	-0.0703
Banco Svensk Miljö	-0.0002	0.3584	0.0125	0.0083	0.9574	0.0334	0.0032	0.4111	0.0212	0.0022	-0.1564	-0.0064	0.0011	-0.5392	-0.0442
Carlson															
Carlson Småbolagsfond	-0.0041	0.1832	0.0084	0.0139	0.8487	0.0364							-0.0335	-0.7514	-0.0971
Carlson Sweden Micro Cap	-0.0007	0.2590	0.0121	0.0190	1.0244	0.0511	0.0077	0.4297	0.0278	-0.0062	-0.3224	-0.0139	-0.0190	-0.7091	-0.0759
Carlson Sverige Koncis	-0.0031	0.2390	0.0087	0.0163	1.1931	0.0458	0.0086	0.5508	0.0292	-0.0010	-0.2141	-0.0094	0.0034	-0.4926	-0.0416

	2004			2005			2006			2007			2008		
	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
Carlson Sverigefond	-0.0024	0.2831	0.0097	0.0062	0.8149	0.0306	0.0002	0.3382	0.0176	-0.0012	-0.2200	-0.0096	0.0044	-0.4920	-0.0408
Catella															
Catella Reavinst	-0.0006	0.3503	0.0120	0.0037	0.7502	0.0259	0.0004	0.3121	0.0178	0.0052	-0.0750	-0.0031	-0.0023	-0.5741	-0.0474
Catella Trygghet	0.0000	0.3428	0.0127	0.0097	1.0098	0.0404	0.0069	0.5150	0.0275	-0.0016	-0.2719	-0.0110	0.0001	-0.5425	-0.0451
Team Catella Tennisfond				0.0103	1.0195	0.0456	0.0087	0.4712	0.0271	0.0037	-0.1119	-0.0051	-0.0077	-0.6351	-0.0555
Cicero															
Cicero Focus	-0.0011	0.2763	0.0091	0.0071	0.9175	0.0313	-0.0018	0.2918	0.0153	0.0002	-0.1810	-0.0082	0.0002	-0.5397	-0.0452
Cicero MÖ Sverige	-0.0011	0.2763	0.0091	0.0071	0.9175	0.0313	-0.0018	0.2918	0.0153	0.0002	-0.1810	-0.0082	0.0002	-0.5397	-0.0452
Cicero Sverige Fond	-0.0114	0.0299	0.0011	0.0145	0.9476	0.0382	0.0030	0.3560	0.0212	0.0141	0.0717	0.0030	-0.0008	-0.5550	-0.0459
Danske Invest															
Danske Inv Sverige Fokus				0.0205	1.2178	0.0511	0.0117	0.9828	0.0469	-0.0052	-0.3795	-0.0155	0.0039	-0.4841	-0.0414
Danske Invest SRI Sv. (index)	-0.0014	0.2191	0.0084	0.0063	0.7484	0.0322	0.0060	0.8211	0.0377	0.0008	-0.1876	-0.0076	0.0014	-0.5249	-0.0439
Didner & Gerge															
Didner & Gerge Aktiefond Sv.	-0.0030	0.2966	0.0105	0.0011	0.6574	0.0232	-0.0103	0.3910	0.0136				-0.0095	-0.5846	-0.0514
Eldsjäl															
Eldsjäl Gåvofond	-0.0007	0.3518	0.0119	0.0020	0.6826	0.0244	-0.0018	0.2834	0.0145	-0.0025	-0.2635	-0.0111	0.0041	-0.4900	-0.0409
Eldsjäl Sverigefond	-0.0008	0.3535	0.0119	0.0027	0.7150	0.0253	-0.0012	0.2981	0.0151	-0.0014	-0.2360	-0.0100	0.0054	-0.4754	-0.0395
Enter															
Enter Select										0.0329	-0.9502	-0.0195	-0.0041	-0.6047	-0.0499
Enter Sverige	-0.0013	0.3438	0.0114	-0.0075	0.3331	0.0110							-0.0089	-0.5321	-0.0689
Enter Sverige Fokus	-0.0001	0.2739	0.0092												
Erik Penser															
E.P.Aktieindexf. Sv. OMX	0.0003	0.3805	0.0131	0.0033	0.7174	0.0265	-0.0025	0.2834	0.0146	0.0000	-0.1935	-0.0083	-0.0004	-0.5191	-0.0457
Erik Penser Sverigefond										0.0001	-0.1967	-0.0082	0.0031	-0.5003	-0.0421
Folksam															
Folksam LO Sverige	0.0000	0.3781	0.0128	0.0030	0.7306	0.0257	0.0022	0.3840	0.0202	-0.0007	-0.2109	-0.0093	-0.0005	-0.5467	-0.0458
Folksam LO Västfonden	0.0025	0.4645	0.0157	0.0031	0.7382	0.0257	0.0022	0.3845	0.0201	0.0012	-0.1629	-0.0071	0.0011	-0.5331	-0.0442
Folksams Aktiefond Sverige	0.0004	0.3813	0.0132	0.0027	0.7202	0.0254	0.0019	0.3758	0.0198	-0.0012	-0.2230	-0.0098	-0.0009	-0.5507	-0.0462
Folksams Tjänsteman. Sv.	-0.0001	0.3755	0.0127	0.0029	0.7298	0.0256	0.0022	0.3823	0.0201	-0.0011	-0.2194	-0.0097	-0.0002	-0.5444	-0.0455
Gustavia															
Gustavia Sverige	0.0182	0.6634	0.0327	0.0197	0.9669	0.0397	-0.0054	0.1762	0.0107	-0.0085	-0.3882	-0.0201	-0.0088	-0.6545	-0.0552
Handelsbanken															
HSB 30 i Topp Index	-0.0010	0.3472	0.0117	0.0032	0.7184	0.0262	-0.0017	0.2969	0.0153	-0.0012	-0.2244	-0.0097	-0.0005	-0.5246	-0.0458
HSB AstraZeneca Allem.	-0.0106	0.2233	0.0149	0.0176	1.1629	0.0555	-0.0062	0.1012	0.0076	-0.0105	-0.4754	-0.0239	0.0069	-0.3801	-0.0345
HSB Mega Sverige Index	0.0002	0.3944	0.0130	0.0027	0.7310	0.0252	0.0025	0.3917	0.0203	-0.0032	-0.2710	-0.0125	-0.0079	-0.6002	-0.0540

	2004			2005			2006			2007			2008		
	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
HSB Radiohjälpsfonden	-0.0036	0.2479	0.0083	0.0037	0.7583	0.0266	0.0005	0.3464	0.0179	0.0007	-0.1855	-0.0077	-0.0003	-0.5432	-0.0456
HSB SBC Bofonden	-0.0051	0.2128	0.0071	0.0041	0.7715	0.0270	0.0015	0.3701	0.0192	0.0032	-0.1292	-0.0054	-0.0003	-0.5435	-0.0456
HSB Småbolagsfond	0.0134	0.3215	0.0189	0.0058	0.7917	0.0279	0.0123	0.6190	0.0349	-0.0012	-0.2257	-0.0096	-0.0058	-0.6067	-0.0512
HSB Sverige Index Etisk				0.0021	0.8111	0.0290	0.0037	0.4274	0.0217	0.0013	-0.1769	-0.0072	-0.0024	-0.5682	-0.0477
HQ															
HQ Strategi	0.0078	0.3833	0.0203	-0.0014	0.6007	0.0208	0.0038	0.3782	0.0228	0.0039	-0.0741	-0.0031	-0.0069	-0.6325	-0.0546
HQ Svea Aktiefond							0.0082	0.5349	0.0283	0.0034	-0.1280	-0.0054	-0.0033	-0.5804	-0.0490
HQ Sverige Select													0.0020	-0.5160	-0.0484
HQ Sverigefond	0.0067	0.3544	0.0183	-0.0007	0.5990	0.0213							0.0140	-0.3384	-0.0329
Indecap															
Guide Aktiefond Sv. (Utd)	0.0005	0.2617	0.0098	0.0036	0.7293	0.0261	0.0028	0.3667	0.0209	-0.0008	-0.2000	-0.0094	-0.0014	-0.5555	-0.0467
Kaupthing															
Kaupthing Småbolag	0.0303	0.2103	0.0159	0.1742	0.3529	-0.1716	0.2062	0.2165	-0.0264	-0.0072	-0.3567	-0.0156	-0.0102	-0.6319	-0.0549
Kaupthing Sverige Index 30	-0.0017	0.3269	0.0110	0.0017	0.6645	0.0241	-0.0016	0.3049	0.0155	-0.0025	-0.2430	-0.0114	-0.0019	-0.5398	-0.0474
Lannebo															
Lannebo Småbolag	0.7912	0.2614	-0.0813	-0.0909	-0.1862	-0.0269	1.1351	0.2707	-0.0599	-0.0020	-0.2396	-0.0108	-0.0070	-0.6085	-0.0543
Lannebo Sverige	-0.0025	0.1639	0.0063	-0.0018	0.5891	0.0214	0.0015	0.7111	0.0331	-0.0062	-0.3579	-0.0152	0.0003	-0.5368	-0.0450
Länsförsäkringar															
Länsförsäkringar Småbol.	0.0825	0.2401	0.0185	0.2460	0.3545	-0.1291	0.2425	0.2250	-0.0264	-0.0096	-0.4390	-0.0186	-0.0145	-0.6592	-0.0621
Länsförsäkringar Sv.	-0.0015	0.3264	0.0111	0.0022	0.6931	0.0249	-0.0005	0.3194	0.0167	0.0000	-0.1926	-0.0083	0.0043	-0.4964	-0.0408
Nordea															
Nordea Etiskt Urval	-0.0023	0.2876	0.0099	0.0053	0.5275	0.0183							-0.0031	-0.4901	-0.0612
Nordea Indexfond Sverige													0.0038	-0.6330	-0.0720
Nordea Inst Aktie Sverige Inc	-0.0056	0.2239	0.0075	0.0003	0.6497	0.0225	-0.0038	0.2609	0.0135	0.0020	-0.1512	-0.0064	-0.0063	-0.5954	-0.0522
Nordea Private B. Sv. Portf.	-0.0006	0.3600	0.0120	-0.0022	0.5729	0.0198	-0.0007	0.3251	0.0166	0.0028	-0.1432	-0.0060	-0.0005	-0.5190	-0.0458
Nordea Selekta Sverige	-0.0010	0.3475	0.0116	-0.0017	0.5858	0.0203	-0.0017	0.2995	0.0154	0.0020	-0.1586	-0.0066	-0.0005	-0.5268	-0.0458
Nordea Sverigefond	-0.0043	0.2331	0.0082	0.0020	0.7197	0.0244	0.0046	0.4434	0.0231	0.0022	-0.1514	-0.0065	0.0018	-0.5356	-0.0436
SEB															
SEB Choice Sverigefond 1										-0.0122	-1.0813	-0.0531	-0.0046	-0.5966	-0.0507
SEB Choice Sverigefond 2										-0.0218	-2.2971	-0.1086	-0.0046	-0.6136	-0.0505
SEB Stiftelsefond Sverige	-0.0025	0.2714	0.0097	0.0014	0.6319	0.0240	-0.0003	0.3280	0.0171	-0.0032	-0.2794	-0.0117	0.0074	-0.4629	-0.0383
SEB Swedish Focus Fund Inc										0.0056	-0.0617	-0.0026	0.0069	-0.4741	-0.0382
SEB Swedish Value Fund Inc										0.0027	-0.1395	-0.0059	0.0111	-0.4263	-0.0349
SEB Sv. Chans/Riskfond Utd	0.0003	0.3819	0.0131	0.0008	0.6680	0.0231	-0.0036	0.2632	0.0136	0.0012	-0.1621	-0.0071	0.0022	-0.5140	-0.0431
SEB Sverigefond	-0.0016	0.3194	0.0109	0.0022	0.7219	0.0250	-0.0004	0.3286	0.0170	0.0002	-0.1907	-0.0082	-0.0021	-0.5717	-0.0476

	2004			2005			2006			2007			2008		
	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
SEB Sv. Småb. Chans/Risk	0.0096	0.4805	0.0235	0.0085	0.9244	0.0333	0.0141	1.1379	0.0519	-0.0005	-0.2090	-0.0089	-0.0126	-0.7078	-0.0595
SEB Sv. Småbolag UL Acc	0.9797	0.3064	-0.2649	-0.0948	-0.1898	-0.0264	0.8810	0.2669	-0.0638	-0.0022	-0.2555	-0.0106	-0.0092	-0.6626	-0.0550
SEB Sverigefond Stora bolag	-0.0016	0.3225	0.0110	0.0018	0.6985	0.0244	-0.0003	0.3293	0.0171	0.0014	-0.1561	-0.0068	-0.0013	-0.5642	-0.0468
SKF Allemansfond	-0.0022	0.2567	0.0094	0.0059	0.7485	0.0288	-0.0080	0.1957	0.0103	0.0028	-0.1490	-0.0060	0.0121	-0.4090	-0.0341
Skandia															
Skandia Aktiefond Sverige	-0.0019	0.2916	0.0101	0.0058	0.8636	0.0296	0.0019	0.3827	0.0195	0.0015	-0.1723	-0.0071	0.0035	-0.5205	-0.0420
Skandia Cancerfonden	-0.0020	0.3031	0.0101	0.0049	0.7970	0.0282	0.0009	0.3514	0.0185	-0.0006	-0.2101	-0.0089	0.0061	-0.4841	-0.0394
Skandia Cancerfonden UL													0.0122	-0.4293	-0.0384
Skandia Småbolag Sverige	-0.0096	0.0403	0.0018	0.0141	1.0291	0.0417	0.0413	0.2417	-0.1197	-0.0009	-0.2126	-0.0092	-0.0058	-0.5933	-0.0511
Skandia Swedish Stars Inc													0.0122	-0.4293	-0.0384
Sk. Swe. Stars SkandiaLink I.													0.0122	-0.4293	-0.0384
Skandia Världsnaturfonden	-0.0024	0.2811	0.0095	0.0051	0.8016	0.0284	0.0006	0.3434	0.0181	0.0008	-0.1784	-0.0076	0.0059	-0.4864	-0.0396
Spiltan															
Spiltan Aktiefond Dalarna										0.0001	-0.4456	-0.0179	-0.0061	-0.6316	-0.0529
Spiltan Aktiefond Stabil	0.0105	0.6784	0.0336	0.0026	0.5542	0.0262	0.0084	0.5470	0.0293	0.0008	-0.1669	-0.0073	-0.0091	-0.6816	-0.0620
Spiltan Aktiefond Sverige	-0.0026	0.1728	0.0067	-0.0016	0.5373	0.0207	0.0041	0.3762	0.0219	0.0023	-0.1033	-0.0053	-0.0196	-0.7834	-0.0695
Spiltan Småland													-0.0151	-0.7026	-0.0700
SPP															
SPP Aktiefond Sverige	-0.0036	0.2469	0.0085	0.0066	0.8593	0.0311	0.0021	0.3810	0.0199	0.0048	-0.1025	-0.0042	0.0030	-0.5110	-0.0424
SPP Aktieindexfond Sverige	-0.0001	0.3660	0.0126	0.0057	0.8172	0.0305	-0.0020	0.2931	0.0151	0.0007	-0.1924	-0.0078	0.0049	-0.4772	-0.0405
Swedbank															
Robur Ethica Miljö Sv. Utd	0.0028	0.5992	0.0209	0.0040	0.7653	0.0274	0.0027	0.4064	0.0206	-0.0001	-0.1986	-0.0085	0.0070	-0.4761	-0.0393
Robur Ethica Sverige MEGA	0.0039	0.6397	0.0224	0.0051	0.8277	0.0282	0.0052	0.4590	0.0232	0.0002	-0.1907	-0.0082	0.0073	-0.4707	-0.0389
Robur Exportfond	-0.0070	0.1416	0.0052	0.0048	0.8086	0.0274	0.0061	0.4609	0.0242	0.0027	-0.1405	-0.0060	0.0080	-0.4745	-0.0388
Robur Hockeyfond	0.0005	0.5246	0.0182	0.0039	0.7887	0.0264	0.0038	0.4284	0.0219	0.0009	-0.1761	-0.0074	0.0041	-0.5020	-0.0416
Robur Indexfond Sverige										-0.0052	-0.9327	-0.0312	0.0089	-0.4541	-0.0370
Robur Småbolagsfond Sv.	0.0039	0.3378	0.0147	0.0112	0.9525	0.0334	0.0103	0.5493	0.0307	-0.0020	-0.2439	-0.0103	0.0003	-0.5378	-0.0450
Robur Stella Sverige										-0.0134	-1.3724	-0.0620	0.0131	-0.3776	-0.0320
Robur Svensk Aktieportfölj							0.0096	0.5141	0.0286	0.0051	-0.0614	-0.0027	0.0048	-0.5039	-0.0413
Robur Sverigefond	0.0000	0.5015	0.0176	0.0041	0.7941	0.0267	0.0037	0.4217	0.0216	0.0006	-0.1819	-0.0078	0.0041	-0.5018	-0.0417
Robur Sverigefond MEGA	0.0008	0.5349	0.0186	0.0049	0.8208	0.0276	0.0046	0.4409	0.0225	0.0018	-0.1554	-0.0066	0.0053	-0.4898	-0.0406
Robur Vasaloppsfond	0.0015	0.5655	0.0192	0.0039	0.7810	0.0265	0.0042	0.4341	0.0223	0.0018	-0.1543	-0.0065	0.0041	-0.5036	-0.0416
Västernorrlandsfonden															
Västernorrlandsfonden	0.0052	0.5823	0.0234	0.0054	0.8176	0.0281	0.0004	0.3377	0.0179	-0.0001	-0.2008	-0.0085	0.0043	-0.4919	-0.0405
Xact															
XACT Bull				0.0073	0.7565	0.0282	-0.0005	0.3348	0.0170	0.0011	-0.1773	-0.0076	0.0065	-0.4942	-0.0409

	2004			2005			2006			2007			2008		
	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio	Jensen's Alpha	Sharpe Ratio	Treynor Ratio
XACT F Sweden (Index)										0.0038	-0.4152	-0.0145	0.0085	-0.4680	-0.0379
XACT OMXS30 (Index)	-0.0014	0.3419	0.0114	0.0040	0.7729	0.0274	-0.0024	0.2865	0.0148	0.0014	-0.1662	-0.0070	0.0089	-0.4488	-0.0371
XACT OMXSB (Index)	-0.0008	0.3601	0.0120	0.0051	0.8147	0.0284	-0.0006	0.3256	0.0168	0.0007	-0.1860	-0.0077	0.0087	-0.4604	-0.0380
Öhman															
Öhman Etisk Index Sverige				0.0064	1.0363	0.0406	0.0041	0.4390	0.0235	0.0024	-0.1455	-0.0060	0.0097	-0.4553	-0.0369
Öhman Sverigefond	-0.0064	0.1859	0.0063	0.0028	0.7483	0.0256	-0.0029	0.2893	0.0157	-0.0003	-0.1955	-0.0086	0.0098	-0.4473	-0.0367