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Performance Evaluation Of Swedish Equity Mutual Funds

An empirical study on retail bank fund performance compared to other actors

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Abstract: This thesis aims to study differences in fund returns between actively and passively managed Swedish equity mutual funds, relating the performances of Sweden's four major retail banks to other actors over the period 01/31/2001 to 12/31/2015. Dividing the sample into large- and small/mid cap funds in evaluation and analysis, we find that actively managed funds on average yield negative alphas. For the large cap segment we also find, with statistical significance, that the average major retail bank fund is generating inferior alphas in comparison to other actors. The results found are similar to relevant studies regarding mutual fund performance, but make an explicit distinction in fund capitalization given different indices. Concluding upon our findings, we propose regulations of fund transparency relating to its performance and activeness, as well as fund distribution in general.

Keywords: *Mutual Funds, Performance Evaluation, Alpha, Retail Bank, Retail Investor*

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1 Introduction

Almost all Swedes have some kind of saving through a mutual fund: 8 out of 10 individuals between 18 - 74 years old in 2014 (Fondbolagen, 05/15/2014). In December 2015, savings in the Swedish Equity Mutual Funds¹ (SEMF's) we analyze in this report reached SEK 375 bn, compared to total savings in mutual funds for Swedes reaching SEK 3,150 bn (Fondbolagen, 03/31/2016). Saving through a mutual fund is one of the most common ways of saving (SBAB, 02/06/2013). The major retail banks in Sweden today are SEB, Handelsbanken, Nordea and Swedbank. They manage about 40% of the total assets that are invested in SEMF's.

The retail banks exhibit a dominant market position within the fund industry in Sweden, given the oligopolistic structure for retail banking, and they practically control fund distribution. Lately, they have met criticism in national media on several accounts, partly as to the performance of their respective SEMF's. Funds branded as actively managed have pursued investments closely tracking their relevant benchmark index, which implies that they, as a matter of fact, are passively managed.

Instead, this would be common practice in an index fund, where holdings are supposed to mirror their relevant benchmark index. In these, returns are highly correlated with the development of the index being tracked before a management fee is taken out. This management fee is however often in the lower zero bound, and investors pay a low charge for the passive management. Actively managed funds, on the other hand, are in the position of charging higher management fees for their work in actively picking stocks with the ability of beating the index.

This implies that investors are paying for the fund manager's experience in deciding which companies to have in the fund, that would possibly yield a higher return than the benchmark index. As this has not been the case in some equity mutual funds, it is said that managers have not engaged in proper active management. The term coined for marketing and selling active management, but in reality pursuing an index strategy is "closet indexing". Cremers and Petajisto (2009) find strong evidence of closet indexing on the Swedish fund market.

In 2013, the industry association Aktiespararna sued Swedbank's Robur funds after their former CEO Tomas Hedberg confessed selling actively managed funds that lacked the possibility

¹ Continuously referred to as SEMF's in the paper

to beat their relevant benchmark index (Privata Affärer, 12/16/2013). Aktiespararna have built a case, stating that investors have paid for active management in SEMF's, but received another product, a passively managed index fund. Media grasped up on the events, and several publications have been presented on the topic. The book *Sammansvärjningen* by Joel Dahlberg embarks upon the topic, targeting the retail bank sector, stating "5 million Swedes have been cheated on by the major retail banks" (Dahlberg. J, 2015). The statement indicates that mutual fund performance in Sweden is something that affects more than half of the country's population.

1.1 Thesis intents

There are indications that Swedish household investors are being misguided and overcharged by their funds, possibly even paying for a service they never had a chance of receiving. The mentioned influence over fund distribution by the retail banks has been adding fuel to the fire. As of this influence, we find it interesting to evaluate if household investors been cheated on by their retail banks equity mutual funds, judging from a performance perspective?

In this paper we conduct a performance evaluation of actively managed SEMF's distributed by the four big retail banks in comparison to funds managed by others². The results will be contrasted to established index funds. The time span of the evaluation is on a monthly basis, during the period from 01/31/2001 to 12/31/2015. Analysis is thoroughly conducted on an "apples to apples"-basis, where large and small/mid cap funds are separated given their different benchmark indexes. Furthermore, the thesis intends to investigate if there have been persistent differences over time, and within the sub samples of our data.

The analysis is based on the perspective of investors seeking exposure to the Swedish equity market. We conduct various adjustments to create a suited sample for analysis, explained in detail in the section regarding data, 3.1.

1.2. Differentiation to previous work

Previous research within SEMF performance for the Swedish equity market was somewhat limited until Flam & Vestman (2014) published two papers during the year of 2014. Their research is described in the section on previous work. Our thesis aims to take on a focused retail

² "Others" refers to funds that are not managed by one of the major retail banks: SEB, Handelsbanken, Nordea or Swedbank.

investor perspective when analyzing large and small/mid cap funds as well as contrasting big retail bank funds versus independent player.

Consequently, our research is trying to perform a more faceted approach towards mutual equity fund performance evaluation. Household investors often lack comprehensive understanding of finance and financial securities in general, and our goal is to decrease some of the discrepancy in information.

Potential implications from our research might arise if there is persistent underperformance in the sample of funds provided by the major retail banks, that also exhibit a competitively dominant position within fund distribution. In assuming that this persistency is characterizing for the group, it is to be argued that current fund regulation is non-advantageous for retail investors.

Households are distributed to a concentrated group of major retail banks. Hence, conflicts of interest might arise from in-house fund counselling at retail banks, where the focus naturally is skewed towards placement in the banks in-house products. When seeking equity exposure in Sweden, this would often be the banks own Swedish large or small/mid cap mutual equity fund.

1.3. Results of thesis and their implications

In the thesis we find results that are in line with previous research. SEMF's on average do not show significant evidence on being able to beat their respective benchmark index. This is continuously evident when looking at fund performance net of fees.

Comparing performance of the major retail banks large- and small/mid cap funds to relation to other actors, using equally weighted OLS regressions, we find results that reinforces our thesis. For the large cap segment, retail bank funds underperform on an average level compared to other actors. This is statistically significant with a confidence of 99%, when performing a t-test to compare the segments.

Having invested in an average retail banks fund in the large cap segment would have yielded tangible differences in returns for the retail investor, when compounding over time. None of the segments investigated have over time been able to beat the benchmark index SIX PRX.

Not being able to prove significant differences in average alphas for the small/mid cap segment, we do, however, find similar indications for the years 2011-2015. A cumulative analysis yields that returns of the average retail bank fund in comparison to other actors almost perfectly

converges over the time period, being an indicator of the groups performing likewise. They have not been able to beat their index CSRXSE over time.

Findings for the large cap segment could imply implications for the current structure of the mutual fund industry. There are conflicts of interest arising from the major retail banks dominance in fund distribution and in-house counselling, where retail investors are in a position of dependence.

We conclude that there are areas within the sector that might need regulation, hopefully decreasing information discrepancies and conflicts of interest. The average fees being charged for active management are questioned in the thesis, given the chronic underperformance and average net negative alphas for the large cap segment.

2 Literature review

To determine the performance of mutual equity funds, and if excess returns (alphas) are created, they are often examined by the Capital Asset Pricing Model (CAPM) model. This can be complemented by the Fama and French (1993) 3-factor and Carhart (1997) 4-factor model to explain fund performance. Publications as well as research has been published on the topic regarding fund performance evaluation, especially for the US market.

When investigating the mutual equity market in the US, Fama and French (2010), find that funds marketed as actively managed perform very close to the relevant market index. They investigate mutual equity funds and exclude index funds during the time period of 1983-2006. In the paper, they look at equally- and value weighted gross and net performance of funds. When investigating if the general investor has received alphas due to satisfactory performance after risk adjusting the funds, there are very few that create an excess return. In most cases the management fees eradicate the gross alpha created, and as funds trail the market it is hard to generate excess returns net of fees. The negative alphas are often similar to the cost for the investor in the fund, as the gross return on average is close to zero, or slightly negative. This publication also conducts regressions with Fama and French (1993) 3- and Carhart (1997) 4-factor model, with the ambition to explain returns.

Vestman and Flam (2014), as mentioned earlier, have investigated the SEMF market, and compared actively managed funds with index funds. Examining 124 funds marketed as actively managed and 20 passively managed index funds from 1993-2013. As the market benchmark index they used SIX PRX for the actively managed funds, for the index funds they employed individually tracked indexes. Their conclusions are that index funds create a less negative alpha than the actively managed funds on average, and from an investor's perspective it would have been better to invest in index funds than in SEMF's. They have built their main conclusion on the CAPM- model. They also developed their own approach towards conducting tests with the Fama and French (1993) 3- and Carhart (1997) 4-factor model, for which data was only available to 2009.

Conclusions from the additional tests were that the factors did not explain much more of the SEMF performance. On the subject of multi-factor regressions, they state “a comparison of 1-, 3- and 4- factor alphas in 1999-2009 does not reveal any large differences”. Using time series regression to find if any alphas were created, they conclude that the performance differs

significantly after 2001, compared to previous years. They find that during 2002-2013 the average net and gross alpha had been -1.47% and -0.22% respectively, for mutual equity funds that are actively managed. The net and gross alphas for index funds had been -0.84% and -0.22%, respectively.

3 Data

3.1. Data and delimitation

The data used for our thesis stretched between 01/31/2001 to 12/31/2015, meaning monthly observations over 15 years. It comprises of 126 funds split over large, small/mid cap funds as well as index funds, and shares the characteristic of being a SEMF (64 large cap, 46 small/mid cap, 16 index funds). The data was generously provided by the leading player on fund data in Sweden, Morningstar. Hence, Morningstar's characterization of the funds being grouped as either large or small/mid cap was applied.

The sample also contained Net asset value (NAV), Assets under management (AUM), monthly return data net of fees and the on-going charge from the funds Key Investor Information Document (KIID), i.e. yearly investor costs. The SEMF's provided are regulated by either the UCITS directive (EU Parliament and council, 2014) or AIFMD directive (EU Parliament and council, 2013), as legislated by the European Parliament. Presented in table 1 below are descriptive statistics over the observations, monthly, of the funds we decided to include in our analysis. The adjustments made are explained in the coming section.

Table 1: Descriptive statistics for sample observations

Large cap 2001-2015									
Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs	N funds	Excluded
38	119	180	180	180	153	44	6,096	40	24
Small/mid cap 2006-2015									
Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs	N funds	Excluded
42	72	120	120	120	98	27	3,542	36	10
Index funds 2001-2015									
Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs	N funds	Excluded
43	84	110	180	180	116	48	1,621	14	2

In table 2, the current distribution of savings in SEMF's is presented for the sample of funds we have decided to investigate. It is obvious that the majority of investments are in the large cap segment of funds.

Table 2: Descriptive statistics over Assets under management (AUM), end of 2015 in SEK m

	Total	Retail banks	Others	Retail banks %	Others %	N funds
Large cap	254,123	93,332	160,790	37%	63%	40
Small/mid cap	119,124	55,895	63,229	47%	53%	36
Index	101,332	62,997	38,335	62%	38%	14

In table 3 we display descriptive statistics over average AUM for the funds in our sample from 2006-2015. There are notable differences in assets managed, whereas the large cap and index segment are quite similar in characteristics.

Table 3: Descriptive statistics over fund size 2006-2015, SEK m

	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N funds
Large cap	8	729	2,452	7,435	38,657	5,031	6,129	40
Small/mid cap	1	184	921	3,175	18,854	2,105	2,783	36
Index	42	1,304	3,328	7,403	31,164	5,286	5,351	14

In determining the fund categories relevant benchmark indexes, the SIX Portfolio Return Index (SIX PRX) was chosen for the large cap segment, being the most righteous market index. The index is adjusted for restrictions that mutual equity funds have regarding investments. Further, it is adjusted for reinvested dividends and shows the development of the Stockholm Stock Exchange. For the small/mid cap funds the Carnegie Small Cap Return Index (CSRXSE) is used, as it reflects the market of small/mid cap companies in the Swedish stock market with reinvested dividends.

When evaluating upon benchmark indexes for Swedish index funds, it requires a matching to the respective index being tracked. Hence, there were three different indexes included: SIX Return Index (SIXRX), OMX Stockholm 30 Gross Index (OMXS30GI) and OMX Stockholm Benchmark Capped Gross Index (OMXSB Cap GI). The three benchmarks are adjusted for dividends, thus following the previous methodology. As a proxy for the risk-free interest rate for each month of our sample, we decided to use the 1-month STIBOR (Stockholm Interbank Offered Rate). The indexes and the risk-free rate proxy, STIBOR, were provided by Bloomberg and the Central Bank of Sweden's (Riksbanken) archives.

Based on the premise of our more focused private investor perspective, we wanted to adjust our sample for specific parameters. There are various aspects and characteristics to be

taken into account. Hence, the sample provided by Morningstar was adjusted based on the below standards. Funds with return observations of less than 36 months were not to be included in the analysis, in order to maintain quality in the observations analyzed. Funds with few data points might inflict biases in return estimates.

From the remaining fund sample, dividend distributing funds and charity funds were excluded, given that these features distort reported performance. Funds that started off as being actively managed, later changing style into passive management or similar have also been excluded, as the period of change is hard to determine. Further, only one fund per fund share class was included. Funds that were closed down, merged or filed for bankruptcy under our time period are included to overcome a potential survivor bias. However, funds that went bust within 36 months of their opening, and funds that today are new to the market did not qualify for analysis. Index funds have been delimited in a similar fashion as above: serving as a proxy for household investors seeking exposure to the Swedish equity market, under passive management.

Funds that are marketed and characterized as SEMF's might have a certain percentage of their holdings located abroad. The funds we investigate are those whose investments have a minimum of 80% of their holdings located in Sweden, thus some of our funds can have some exposures abroad in their portfolio. However, special funds with the mandate of having up to 25% of the fund's assets in one holding, in contrary to the regulated maximum of 10% (Riksdagen, 2014), as well as ETF's (Exchange traded funds), were outside the scope of our analysis and consequently excluded. Morningstar categorizes funds with a first deposit of at least SEK 100,000 as being funds for institutional investors, and therefore we found them not being relevant for analysis.

Large cap funds can have some small exposure to small/mid cap companies, and vice versa. Therefore, there might also be a bias arising when portfolios are not perfectly matched against the relevant index, but this is a complicated issue to overcome and must be simplified. Morningstar keeps no records of the historical ongoing charges for fund management, and therefore the most recent investor fees have been used as a benchmark for the historical charges for each fund over time. There can be a bias present in the gross alpha calculations, as the ongoing charge has some historical fluctuation. It is to be mentioned that Flam and Vestman (2014) analyzed the TER (Total Expense Ratio) of their analysis to find an almost perfect correlation over time, meaning that yearly charges are highly persistent.

In table 4 we find descriptive statistics for the adjusted data samples expense ratios, which consists of 40 large cap funds, 36 small/mid cap funds and 14 index funds. In the small/mid cap segment we can see that the expense ratio is higher than in the large cap segment. Also, we see that index funds are relatively low of charge. We make out a discrepancy in costs for active, versus passive, management. There has not been any exclusion of funds based on the management fee within the different categories.

Table 4: Descriptive statistics over total expense ratio for the funds data set during 2015

	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N funds
Large cap	0.19%	1.10%	1.32%	1.50%	1.77%	1.21%	0.42%	40
Small/mid cap	0.61%	1.37%	1.53%	1.60%	2.03%	1.48%	0.29%	37
Index	0.00%	0.20%	0.40%	0.52%	0.65%	0.35%	0.21%	14

3.2. Potential data bias

As touched upon briefly above, we find it essential to discuss risks associated with the gathering of data and the final sample used throughout our analysis. Based on our delimitation, we are restricting the analysis to quite the narrow sample of funds with a stated exposure to the Swedish equity market. This is, as mentioned, premised upon taking the perspective of household investors, and their potential limitation in choosing funds.

Fundamental adjustments, such as restricting the sample for one asset class and the non-distribution of dividends, are made in order to create a homogenous sample. These are fundamental to conducting the performance evaluation as such, aligning the figures in a comparable manner. This is something worth emphasizing, as it imposes difficulties in comparing a large cap segment and a small/mid cap one. Thus, the scope of our analysis is based in making a distinction between large- and small/mid-capitalization.

Further adjustments conducted might enhance risk factors in biased results, as they are contingent upon our focused scope of analysis. The original sample of 126 funds is stripped down to 90, being a risk factor when decreasing the number of observations. As earlier mentioned, the statistical significance is decreased when the sample is reduced.

Assessing a survivor bias, the minimum observation rule is meant to tackle this potential issue. As results serve as a proxy for fund performance evaluation, free of luck, we find a potential bias arising from funds with few observations. E.g., a fund that has been active for only

one year might have performed abnormally well due to randomness. However, this might also present optimistic performance results, as funds going bust might have the tendency to be short lived.

During the time period, there are also major market disturbances, e.g. the great recession of 2007-2009 that might deploy a skewing of the produced results. The recession had a significant impact on markets during the time of analysis, however, as it affects all parameters employed, it ought not to pose significant risks for individual funds. Also, this is something we try to overcome, when splitting the sub-samples into different time periods, assessing potential differences in results over time.

3.3. Hypotheses

Against the background and criticism of Swedish retail banks mutual equity funds, and their potential underperformance, we construct hypotheses to evaluate the allegations. Previous studies claim that mutual equity funds in the fund industry are creating negative alphas on average, e.g. Flam and Vestman (2014).

The main hypothesis is testing for significant differences between major retail banks and others; specifically, if the independent actors have yielded an average alpha in excess of the retail banks SEMF's. Being able to reject the null hypothesis, $H_0: \alpha = 0$, we must find statistically significant evidence that the alphas created are differing from zero, otherwise funds will have created sufficient returns. This is based on the CAPM framework, which is explained in detail in the following section on the undertaken methodology.

H₁: Actively managed mutual equity funds deviate from the CAPM model, yielding an alpha on the average level, positive or negative in the large cap segment.

H₁₋₂: The sample of funds managed by retail banks deviate from the other fund actors in the large cap segment.

H₂: Actively managed mutual equity funds deviate from the CAPM model, yielding an alpha on the average level, positive or negative in the small/mid cap segment.

H₂₋₂: The sample of funds managed by retail banks deviate from the other fund actors in the small/mid cap segment.

4. Methodology

We conduct analysis on the groups of funds as such, while making a distinction of being managed by a retail bank or others. The distinction in capitalization segments³ according to Nasdaq Inc. (12/20/2015), is continuous in the forthcoming analysis, which entails our “apples-to-apples”-approach. The index funds serve as a proxy for market exposure at a lower cost during the analyzed time periods. These are not split into sub-groups as all these funds are passively managed.

When analyzing the large and small/mid cap samples separately, the analysis is testing if abnormal returns (Alpha) are created in comparison to the relevant benchmark index and the funds respective risk exposure. This is undertaken by assessing the CAPM framework to explain expected returns, and the risk-reward trade off facing investors. Looking at only absolute measures of performance, such as the monthly absolute return in percentage, retail investors do not assess the risk exposure of funds, which is incorporated in the CAPM as the Beta (β). The expected return of a fund is based on the monthly benchmark index return, adjusted for a funds risk, and the current risk-free rate (equaling STIBOR.)

We assume that the adjustment term of alpha (α), a constant in the framework, arises when the actual return does not match the expected one, thus being a proxy for asset managers’ skill. When the discrepancy is positive, the fund is producing an excess return versus what is expected given the risk adjustment and current market performance, and vice versa.

$$r_{fund_n} - r_{fSTIBOR1M} = \alpha + \beta(r_{Index} - r_{fSTIBOR1M}) + \varepsilon \quad (1)$$

In the left side of the above equation we find the r_{fund} , being a funds return in a certain period, minus $r_{fSTIBOR}$, i.e. the risk-free rate. This expression should equal the right hand side, where the beta term is adjusting the market risk premium for the funds respective level of risk. The market risk premium is the benchmark index’ return minus the risk free rate. If the sides don’t balance, α is created.

When estimating persistency over time we divided our analysis into three time periods, with an equal five years in each part. These are 2001-2005, 2006-2010 and 2011-2015. However,

³ Distinction is made depending on the market capitalization of firms: Large cap if market capitalization > EUR 1 bn, otherwise small/mid cap

when accessing the CSRXSE data it was only provided from the end of 2005, effectively restricting our analysis of small/mid cap funds to the latter two periods, 2006-2015.

When calculating for respective fund betas, they were estimated on a rolling 36-month basis to their relative benchmark index. As we do not have historical observations for all funds, and some started during the time frame, the betas for the first 36 months are equal to the first rolling estimation. This could yield a potential bias in our analysis when assessing risk, as a funds market premium is risk-adjusted for every month. However, we find it to be righteous enough for the scope of our thesis, and all funds are treated equally. The betas are calculated on the basis of each funds benchmark index, as previously stated, and follow the definition of:

$$\beta_{fund_n} = \frac{Covar (Fund_n; Index)}{Var (Index)} \quad (2)$$

The above expression defines Beta of fund n, which is estimated on a rolling 36-month basis. It incorporates the respective funds volatility in comparison to the market, where a measure of 1 is implying equal movements. Above and under 1 is equal to higher and lower volatility, respectively, which we define as being risk.

4.3. Regressions

When determining alphas, we conduct ordinary least squares, OLS, regressions on the sample and its sub samples. Using dummy variables, we have the ability to perform regressions for specific parameters, and time periods. As these variables are taken into account, the performed regressions are yielding the average monthly deviation from the CAPM, i.e. α , for the different sample groups.

$$r_{fund_n} - rf_{STIBOR1M} = \alpha + \beta(r_{SIX PRX} - rf_{STIBOR1M}) + \varepsilon \quad (3)$$

$$r_{fund_n} - rf_{STIBOR1M} = \alpha + \beta(r_{CSRXSE} - rf_{STIBOR1M}) + \varepsilon \quad (4)$$

The regressions give each fund an equal weight in the calculation, not taking into account the size of the fund's assets under management. We primarily compute the average net excess returns for specific time periods and groups of funds, as of the investor perspective: receiving returns net of fees. However, we also analyze the gross performance to determine if there on average is evidence of management skill, before fees are paid.

As previously elaborated regarding the CAPM, we find risk-adjust individual funds respective market premium in each period. If a fund takes on a higher level of risk, they should also produce higher returns, which is the risk-return trade off characterizing for the CAPM.

When testing for our hypotheses, not being able to reject the null hypothesis would imply the constant in the regression is zero. That is, funds have been delivering satisfactory results given the parameters of risk and prevailing market conditions. When conducting our OLS regressions we have continuously performed these on a robust basis, given their superiority over standard regressions, assuming that the variance of each funds returns is individual.

4.4. T-test

When testing our main hypothesis, regarding differences in average alphas between the groups of funds, we have conducted unpaired, unequal t-tests. In our ambition to produce statistically valid statements regarding the differences in samples, retail bank funds versus others, we are to prove that the differences in their respective alphas are separated from zero. The T-test will imply if alphas created by retail bank funds are significantly separated from the others, and if one sample has performed better, relatively speaking.

4.5. Choice of methodology

When conducting regressions for excess returns, we explicitly focus on 1-factor regressions. This methodology is in line with the study performed by Jensen (1968), using ordinary least squares regressions to determine alphas, i.e. Jensen's Alpha. The tests are executed on a net and gross level for the individual funds, and dummy-variable constructed samples. A classic benchmark in fund performance evaluation is conducted by Carhart (1997). In the paper he implies that fund underperformance is to be derived from the size of fees, where a gross alpha is often very close to zero, the net being negative by the amount of fees.

Our tests as such are, however, not conducted in order to explain the returns, prioritizing focus on the sub-sample performance evaluation, and potential differences between groups. The benchmark analysis performed by Vestman and Flam (2014) does not find significant differences when incorporating multi-factor regressions. This was done while testing for the Fama and French (1993) 3- and Carhart (1997) 4-factor model, and hence we find it to be outside the scope of our analysis.

In the robustness section of our presented results, we have adjusted our dataset for extreme observations and outliers, in the attempt to righteously produce statistically robust conclusions. We also split the retail bank funds into individual portfolios to determine if the retail banks performance varies considerably from each other. The additional t-test aims to prove statistically significant findings, in order for us to state qualitative conclusions upon sub sample performance differences.

5 Results

5.1. Descriptive statistics

5.1.1. Absolute returns

In the coming section we display absolute net returns of funds not adjusted for risk, which in turn will be presented in later sections. We do, however, find it important to analyze and visualize the absolute net performance as this is what investors receive after fees. Also, retail investors tend to investigate these numbers when choosing funds, even though it is not the most righteous measure of performance. When investigating if there are clear signs of performance differences in the sample on this somewhat shallow level of analysis. If so, it would imply that a thorough analysis is justified.

Large cap

In table 5 we present results of the net monthly returns in percent from 2001-2015 of the mutual equity funds in the large cap segment. We have a total of 6,136 observations, of which 1,909 observations are retail bank funds, and the remaining 4,227 observations are other actors. In the large cap fund segment we can see that the retail banks are performing worse on both the median and average level compared to the other actors.

Table 5: Absolute net performance on monthly basis in %

2001-2015	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Large cap all	-21.40	-1.92	1.10	3.97	33.88	0.76	5.65	6,136
Retail banks	-20.50	-2.05	0.99	4.05	30.57	0.64	5.83	1,909
Others	-21.40	-1.86	1.14	3.95	33.88	0.79	5.56	4,227
SIX PRX	-17.77	-1.64	1.07	4.08	21.95	0.80	5.60	180
Index funds	-18.79	-1.56	1.32	3.88	27.01	0.88	5.34	1,623
STIBOR1M	-0.04	0.09	0.18	0.30	0.44	0.19	0.12	180

On a yearly basis the average return for a retail bank's mutual equity fund is 7.68% compared to a fund provided from one of the others, yielding an absolute 9.48% net return. This is a significant difference, implying a spread of 1.8% on average per year, further amplified when compounding over years of saving. The retail banks have on average also been performing below their benchmark index SIX PRX, with a monthly difference of -0.16%, which on a yearly basis

yields a spread of 1.92%. Given fees payed for the active management of a fund, one can interpret the results as remarkable – or yet worse – as fraudulent.

Small/mid cap

Table 6 presents the performance for 2006-2015 for the small/mid cap funds. In the small/mid cap segment we have a total of 3,543 observations of which 898 are retail banks and 2,645 remaining actors. For this segment as well, it is to be derived that the retail banks on average are performing worse than the other actors. The yearly average difference of retail bank performance compared to other actors in the small/mid cap segment is 0.84% per year, which is less of a difference than in the large cap segment corresponding to 1.8% per year. On average, the funds in this segments did not outperform its respective benchmark index.

Table 6: Absolute net performance on monthly basis in %

2006-2015	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Small/mid cap all	-22.09	-1.85	1.37	4.16	30.16	1.13	5.32	3,543
Retail banks	-22.09	-2.01	1.38	4.24	26.91	1.08	5.63	898
Others	-20.89	-1.77	1.37	4.08	30.16	1.15	5.20	2,645
CSRXSE	-17.53	-1.51	1.24	4.22	25.02	1.17	5.70	120
Index funds	-18.79	-1.41	1.38	3.62	27.01	0.94	5.10	1,373
STIBOR1M	-0.04	0.05	0.12	0.20	0.44	0.15	0.12	120

Comparing the average index funds with the small/mid cap segment we can conclude that the performance has been greater for the actively managed funds. Important to take into consideration is that the index funds are a group of funds closely tracking their respective index. The most appropriate way to do the analysis is to compare the performance of the actively managed fund compared to its relevant market index. However, we find it righteous to show the performance of index funds, as the index funds' goal is to provide equity market exposure, while pursuing passive management and charging lower fees. In table 4, section 3.1., we found that the average fee for an index fund was 0.35 %. This number can be put in relation for the average fee for large and small/mid cap funds of 1.21% and 1.48%, respectively.

Net performance for a shorter time period for both the large and small/mid segments is presented in table 7. It displays performance for 2011-2015, a time period in the wake of the

financial crisis. We noted that the market exhibited more fund actors during this time period, potentially meaning higher competition. It is, however, prominent that the retail banks have not yielded an exceeding net performance compared to the index in either the large cap or small/mid cap segment.

Judging on this analysis, we find that none of the SEMF segments on average performed better than their respective relevant benchmark index. Retail banks have in all time periods generated net returns worse than the average mutual equity fund. This implies funds managed by retail banks are in the lower bound of the overall performance distribution of SEMF's.

Table 7: Absolute net performance on monthly basis in %

2011-2015	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Large cap all	-13.41	-1.64	1.26	3.27	16.24	0.84	4.22	2,367
Retail banks	-10.70	-1.76	1.28	3.26	13.26	0.78	4.17	660
Others	-13.41	-1.57	1.25	3.27	16.24	0.87	4.23	1,707
SIX PRX	-10.49	-1.39	1.15	3.61	8.90	0.92	4.01	69
Small/mid cap all	-13.00	-1.62	1.33	3.97	15.61	1.21	4.39	2,115
Retail banks	-11.69	-1.83	1.31	3.81	14.48	1.19	4.49	478
Others	-13.00	-1.59	1.33	4.03	15.61	1.22	4.36	1,637
CSRXSE	-8.69	-1.08	1.12	3.70	11.08	1.35	4.39	60
Index funds	-11.03	-1.48	1.37	3.29	11.90	0.86	4.08	815
STIBOR1M	-0.04	0.02	0.09	0.16	0.20	0.09	0.07	60

Furthermore, average absolute returns are presented in the appendix: table 1, 2 and 3, showing the net performance over the time periods 2006-2015, 2001-2005 and 2006-2010. These detail similar indications of performance as the time periods in the tables above. Retail banks have on average performed worse than the average other actor in all time periods in both the large cap and small/mid cap segment judging on absolute returns. In the average segment the actively managed funds has not produced absolute returns in excess of their relevant benchmark market index.

SIX PRX and CSRXSE have been performing better than the average fund, thus one can argue that the average fees previously discussed are not justified. As portrayed in table 2, the AUM at the end of 2015 are huge amounts of investments. Of these, the major retail banks

manage 37% in the large cap segment and 47% in the small/mid cap segment. Could the potential relative underperformance of bank funds propose conclusions upon the control over fund distribution; if so, what are the implications?

Presented in table 8, we intend to visualize the fees that retail banks charged their investors during the most recent year, 2015. They charged SEK 1,159 m from the large cap segment, and SEK 820 m from the small/mid cap segment. We can also conclude that the ratio of total fees charged, in the large cap segment of our sample, is higher for retail banks than their ratio of AUM in the market. This, however, is not prevalent in the small/mid cap categorization.

Table 8: Total expenses charged from investors during 2015, SEK m

	All	Retail banks			Other actors		
	Fee charged	Fee charged	% of total fees	% of AUM	Fee charged	% of total fees	% of AUM
Large cap	2,636	1,159	44%	37%	1,477	56%	63%
Small/mid cap	1,777	820	46%	47%	957	54%	53%
Index	371	302	82%	62%	68	18%	38%

In table 4 in the appendix we also detail the descriptive statistics of average absolute gross performance for the different time periods. In line with the above presented results, the retail banks performed less of a gross return than other fund actors in the large cap segment. On a yearly basis the difference is around 2% from 2001-2015 between the segments. The retail banks funds have on average not even been able to beat the SIX PRX index on a gross level.

In the small/mid cap segment in table 5 in the appendix, we find that the retail banks produce inferior gross results compared to other fund actors, however the difference not being as dominant as in the large cap segment. From 2006-2015 the yearly difference is around 1.2% on average per year. For this group, we also conclude that the absolute gross performance for the retail banks is below the CSRXSE index.

Given these findings upon average absolute net/gross performance over time, the fees charged for active management can be questioned. We find these first descriptive hinting about the outcome of forthcoming regressions and statistical tests, where we will conduct a more orderly study, incorporating both the risk and market conditions.

5.1.2. Alphas

Large cap

In conducting a statistically righteous performance evaluation of the funds in our sample, we assess the presented methodology in 4.3.

In table 9 we present descriptive statistics over the alphas, gross and net, over the time period 2001-2015 for the large cap segment. On average, an actively managed mutual fund has yielded a negative alpha of -0.085% per month. More specifically the retail banks yield an alpha of -0.173% while other actors yield an alpha of -0.052% per month. On a yearly basis, this implies a spread of 1.452% in generated average alpha between the groups. We derive that the average actively managed fund in the large cap segment does not outperform the market as it yields a negative alpha.

The third quantile show a positive net alpha for all funds, but when splitting the funds, we can see that the third quantile for the retail banks yields a negative alpha of -0.139%, compared to the other actors' positive alpha of 0.026%. Thus, the retail banks create an inferior net and gross alpha compared to the remaining firms' funds over the time period 2001-2015.

Table 9: Descriptive statistics over Alpha in large cap segment, 2001-2015

Large cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.358%	-0.162%	-0.116%	0.007%	0.337%	-0.085%	0.155%	7,200
Gross	-0.252%	-0.070%	-0.015%	0.110%	0.356%	0.016%	0.150%	7,200
Retail banks								
Net	-0.358%	-0.212%	-0.158%	-0.139%	0.009%	-0.173%	0.091%	1,980
Gross	-0.252%	-0.169%	-0.043%	-0.021%	0.138%	-0.065%	0.099%	1,980
Others								
Net	-0.349%	-0.147%	-0.072%	0.026%	0.337%	-0.052%	0.162%	5,200
Gross	-0.240%	-0.070%	0.037%	0.144%	0.356%	0.046%	0.154%	5,200
Index funds								
Net	-0.233%	-0.118%	-0.089%	-0.045%	0.009%	-0.086%	0.062%	2,520
Gross	-0.200%	-0.096%	-0.045%	-0.023%	0.050%	-0.056%	0.062%	2,520

When elaborating upon alphas created on a gross level, adding back management fees to net performance, we investigate if managers show skill in stock picking. On average the actively managed mutual equity fund creates a positive gross alpha, at a level of 0.016% per month in the

large cap segment, see table 9. This would imply that actively managed funds create an abnormal return on average, but as fees are deducted the alphas turn negative. This suggests that investors on average are paying excessive fees for active management. Further, results show that the retail banks monthly gross alpha is -0.065% on average compared to the other actors, who yield an alpha of 0.046%. Retail banks funds do not even create positives alphas on the gross level, before fees. In the large cap segment we can conclude, as in the net performance analysis, that the retail banks mutual equity funds perform worse than their peers.

Small/mid cap

Looking at the small/mid cap segment in table 10, we present net and gross alpha for the sample period 2006-2011. In this sample, we find the average net and gross alpha being -0.012% and 0.112% respectively, on a monthly basis. On average the net alpha for the small/mid cap segment is less negative than in the large cap segment. As stated, however, we do not compare the groups to a great extent since they have different benchmark indices.

We find that the average retail bank produced a net alpha of -0.058% compared to the other actors' positive net alpha of 0.002% per month. Both the retail banks and the other fund actors yielded a positive gross alpha on average. Yet again, the retail banks are performing worse than the remaining independent actors, but in contrast to the large cap analysis, the monthly average gross alpha is positive.

Table 10: Descriptive statistics over Alpha in small/mid cap segment, 2006-2015

Small/mid cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.410%	-0.142%	-0.021%	0.102%	0.534%	-0.012%	0.189%	4,320
Gross	-0.282%	-0.012%	0.101%	0.228%	0.671%	0.112%	0.193%	4,320
Retail banks								
Net	-0.274%	-0.180%	-0.028%	0.071%	0.082%	-0.058%	0.133%	960
Gross	-0.167%	-0.062%	0.116%	0.195%	0.201%	0.066%	0.141%	960
Others								
Net	-0.410%	-0.142%	-0.020%	0.144%	0.534%	0.002%	0.200%	3,360
Gross	-0.282%	-0.012%	0.098%	0.274%	0.671%	0.125%	0.204%	3,360
Index funds								
Net	-0.233%	-0.102%	-0.069%	-0.048%	0.009%	-0.080%	0.055%	1,680
Gross	-0.200%	-0.073%	-0.034%	-0.022%	0.009%	-0.051%	0.053%	1,680

In the appendix: table 6, 7, 8 and 9 we can find an extended visualization of the descriptive statistics for alphas over the time periods of interest. With those tables in mind, we conclude upon similar results as presented above on net absolute performance. Retail banks yield less of an alpha than the other fund actors, within the groups examined. In table 7 in the appendix, we have presented alphas for a more recent time period, 2011-2015. We can see that not even the third quantile of the retail banks yield a positive gross alpha on a monthly basis (-0.013%), as other actors yield a positive gross alpha of (0.054%) in the large cap segment. We conclude upon weak performance both gross and net of fees for the major retail banks, which show distinctive and persistent characteristics in differences when compared to peers.

The scatter plots, figure 1 and 2, visualize net average alphas for specific funds within the different segments. Dark circles are retail banks' mutual equity funds, and the respective average alpha created. From the large cap segment, figure 1, we can derive that there is just one dark circle that on average yields a positive net alpha, and that the remaining are below zero on the vertical axis. Please note that the scatter chart details the performance between 2001-2015.

Figure 1: Scatter plot for average net alphas large cap and samples

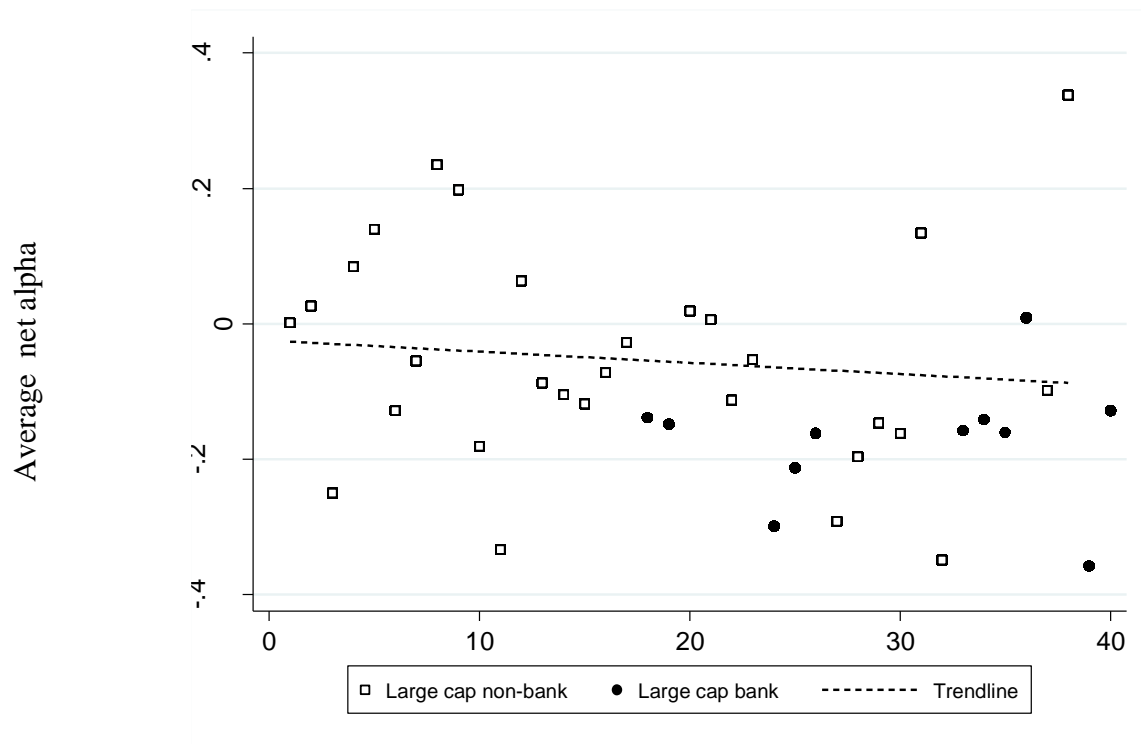


Figure 1 scatters the average monthly net alpha for the funds in the large cap sample we analyse. The dark circles are major retail banks funds, the white squares represent funds that are not major retail banks.

The plot of the average net alphas for the small/mid cap group, figure 2, differs from the above results, during the time period of 2006-2015. It is harder to conclude whether or not the retail banks on average have performed worse within this segment, as the dark circles are more evenly distributed around zero on the vertical axis.

This follows return statistics presented for the different groups of funds, and implies that further analysis for the small/mid cap segment might yield less significant results when comparing the groups of funds. In general, this group of funds is more evenly distributed around zero.

Figure 2: Scatter plot for average alphas small/mid cap and samples

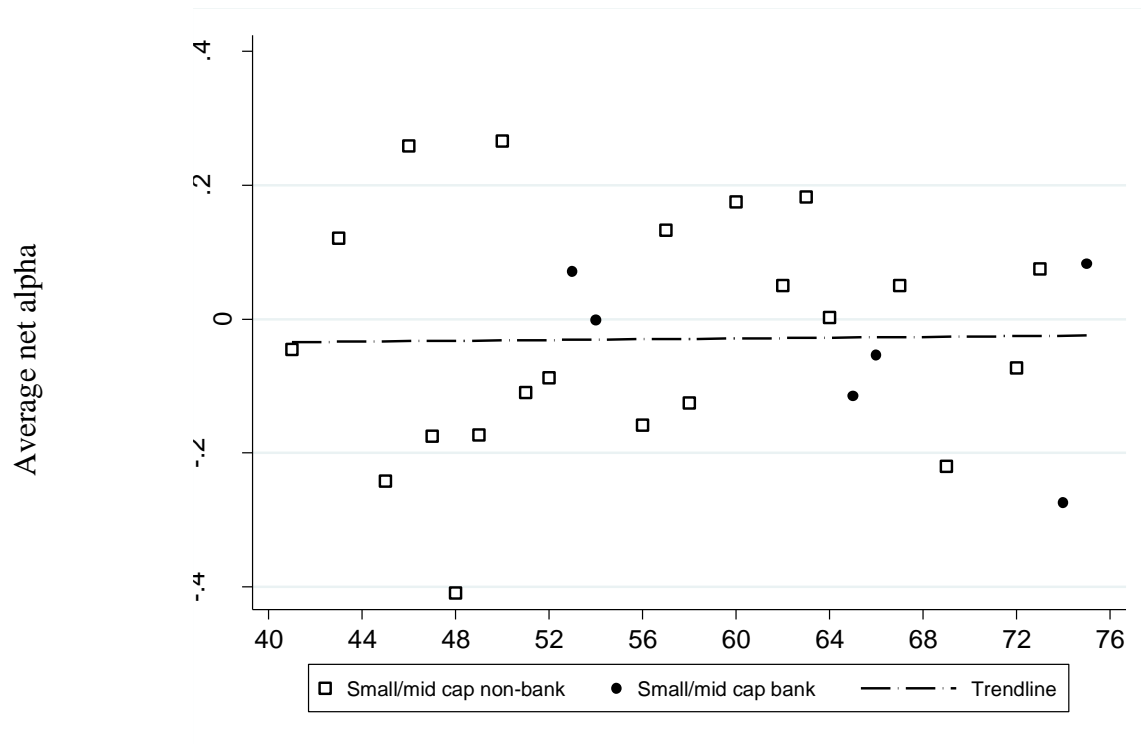


Figure 2 scatters the average monthly net alpha for the funds in the small/mid cap sample we analyse. The dark circles are major retail banks funds, the white squares represent funds that are not major retail banks.

5.2. Statistical tests and their significance

In this section we will detail to which extent we have been able to test our hypotheses' presented above. Being able to reject the null hypotheses, H_0 , we will need a certain level of statistical significance. Afterwards, our statistical tests will be strengthened by a T-test to determine our hypothesis $H1-2$ and $H2-2$, where we investigate if the retail banks alphas compared from the other fund actors are differing on a significant level. Ultimately, we draw conclusions upon the major retail banks performance in comparison to their peers.

5.2.1. Regressions

Large cap

In table 11 we detail the equally weighted regressions results for the major time period 2001-2015, and three minor periods, for the large cap sample. The first part of the table, expresses all large cap mutual equity funds together. The second expresses the retail banks own large cap

funds, followed by other fund actors in part three. The left part of the tables shows net performance, the right shows gross performance after adding back fees. The constant in the regressions is the average alpha on a monthly basis, where (*)⁴ indicates the results level of significance.

Regressions on net performance have generated results of high significance, with a total of 6,096 observations, for 2001-2015. For the gross results however, we did not get the same significance, implying that a rejection of the null hypothesis is not possible. This should not be too confusing as we are testing for the CAPM's return predictions to hold. Adding back fees aligns risk adjusted performance and index returns, if they previously were negatively separated. Hence, we can reject the null hypothesis that alpha is zero on the net level, but not on the gross level, for H1: Actively managed mutual equity funds deviate from the CAPM model.

In 2001-2015 the equally weighted monthly alpha for all funds was -0.10786% (***). Splitting the sample and comparing alphas of retail bank funds and other fund actors, we find them being -0.17935% and -0.07537%, respectively (***). The average monthly alpha has clearly been inferior for the retail bank sample compared to other actors in the overall time period, suggesting a difference of 0.10398% on a monthly basis, meaning 1.25% yearly. This is in line with previous research from Vestman and Flam (2014) and Fama and French (2010), implying that actively managed mutual equity funds do not yield a positive alpha after fees.

In our result, we also find that the gross performance for the overall SEMF has been -0.03625% per month in 2011-2015 (*). Revealing that the average actively managed mutual equity fund has not been able to yield a positive gross alpha. This is similarly significant for retail banks gross performance, which was -0.06855% (*) per month in 2011-2015, and -0.07306% (***) for the whole time period. This shows, with high significance, that retail banks lack the ability to generate a positive alpha before fees, in line with the previous critics claiming little or no skill in stock picking, ultimately not outperforming the market.

⁴ Significance of results are annotated as: (***) = $p < 0.01$, (**) = $p < 0.05$, (*) = $p < 0.1$. Implying a significance of 99%, 95% and 90%, respectively.

Table 11: Equally weighted regressions on monthly net and gross performance in the large cap segment

Variable	2001-2015	2001-2005	2006-2010	2011-2015	2001-2015	2001-2005	2006-2010	2011-2015
	Regressions on net performance				Regressions on gross performance			
Beta-adjusted market premium	1.02749*** (0.00381)	1.02893*** (0.00538)	1.02827*** (0.00711)	1.02365*** (0.00623)	1.02746*** (0.00381)	1.02895*** (0.00538)	1.02824*** (0.00712)	1.02358*** (0.00623)
Constant (Alpha) monthly %	-0.10786*** (0.01542)	-0.11935*** (0.02926)	-0.06049** (0.02986)	-0.13768*** (0.02190)	-0.00446 (0.01542)	-0.01384 (0.02927)	0.04345 (0.02987)	-0.03625* (0.02187)
Alpha Yearly %	-1.29432%	-1.4322%	-0.72588%	-1.65216%	-0.05352%	-0.16608%	0.5214%	-0.435%
N	6,096	1,702	2,027	2,367	6,096	1,702	2,027	2,367
R2	0.95325	0.96578	0.95167	0.93468	0.95325	0.96576	0.95164	0.93481

Equally weighted regressions on monthly net and gross performance for the retail banks in the large capsegment

Variable	2001-2015	2001-2005	2006-2010	2011-2015	2001-2015	2001-2005	2006-2010	2011-2015
	Regressions on net performance				Regressions on gross performance			
Beta-adjusted market premium	1.02560*** (0.00562)	1.02529*** (0.00839)	1.02860*** (0.00985)	1.01806*** (0.00991)	1.02561*** (0.00563)	1.02528*** (0.00839)	1.02860*** (0.00988)	1.01807*** (0.00991)
Constant (Alpha) monthly %	-0.17935*** (0.02329)	-0.27015*** (0.04183)	-0.09398** (0.04320)	-0.17596*** (0.03531)	-0.07306*** (0.02331)	-0.16523*** (0.04187)	0.01277 (0.04324)	-0.06885* (0.03530)
Alpha Yearly %	-2.1522%	-3.2418%	-1.12776%	-2.11152%	-0.87672%	-1.98276%	0.15324%	-0.8262%
N	1,908	600	648	660	1,908	600	648	660
R2	0.96950	0.97701	0.96987	0.95133	0.96946	0.97697	0.96982	0.95138

Equally weighted regressions on monthly net and gross performance excluding retail banks in the large capsegment

Variable	2001-2015	2001-2005	2006-2010	2011-2015	2001-2015	2001-2005	2006-2010	2011-2015
	Regressions on net performance				Regressions on gross performance			
Beta-adjusted market premium	1.02837*** (0.00499)	1.03107*** (0.00697)	1.02806*** (0.00946)	1.02580*** (0.00775)	1.02833*** (0.00499)	1.03111*** (0.00698)	1.02803*** (0.00946)	1.02570*** (0.00774)
Constant (Alpha) monthly %	-0.07537*** (0.01974)	-0.03743 (0.03883)	-0.04470 (0.03887)	-0.12294*** (0.02713)	0.02671 (0.01974)	0.06839* (0.03883)	0.05793 (0.03888)	-0.02370 (0.02709)
Alpha Yearly %	-0.90444%	-0.44916%	-0.5364%	-1.47528%	0.32052%	0.82068%	0.69516%	-0.2844%
N	4,188	1,102	1,379	1,707	4,188	1,102	1,379	1,707
R2	0.94519	0.95941	0.94288	0.92848	0.94521	0.95941	0.94285	0.92863

Robust standard errors in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Small/mid cap

In table 12 we present results from regressions for funds in the small/mid cap segment. As data for the CSRXSE index starts in the end of 2005, results for the small/mid cap segment is presented for 2006-2015, and for the latter two minor periods. The tables are constructed in a similar fashion as for the large cap analysis. There are 3,542 observations in total for the sample during 2006-2015.

In the segment we do not find statistically significant results that net alphas deviate from the CAPM for 2006-2015. The alpha constants do, however, share characteristics with the large cap regressions. This would imply that the small/mid cap funds on average have performed in line with CAPM predictions. Thus, we cannot reject the null hypothesis during 2006-2015.

We find that the overall actively managed mutual equity fund yielded a positive gross alpha of 0.09825% (***) per month, as well as for other actors, producing a gross alpha of 0.11666% (***). This shows that the average actively managed mutual equity fund in the small/mid cap segment yielded a gross alpha that was positive, and created abnormal returns against the market before fees were deducted. A low significance of gross retail bank alpha should imply that they on the gross level do not produce an average alpha significantly above zero.

Looking at the most recent time period of 2011-2015, the average net alpha for the whole sample has been -0.10219% (***) per month: -0.12279% (*) for the retail banks and -0.09687% (**) for the other actors. During this time period it is to be said that we reject the null hypothesis, and confirm that funds have deviated negatively on average from the CAPM. Also, the previously confirmed underperformance of retail banks funds compared to others is prevalent.

For the small/mid cap segment, we cannot reject the null hypothesis over the time period 2006-2015 that funds on average deviate from the CAPM. However, for the time period 2011-2015 we can reject the null hypothesis with a significance of 99%. The regressions for this segment are not as statistically significant as the section on large cap, but there are similar indications of performance.

Table 12: Equally weighted regressions on monthly net and gross performance in the small/mid cap segment

Variable	2006-2015	2006-2010	2011-2015	2006-2015	2006-2010	2011-2015
	Regressions on net performance			Regressions on gross performance		
Beta-adjusted market premium	1.02980*** (0.00657)	1.01432*** (0.00842)	1.05733*** (0.01088)	1.02984*** (0.00657)	1.01432*** (0.00843)	1.05761*** (0.01088)
Constant (Alpha) monthly %	-0.02394 (0.03081)	0.05583 (0.05247)	-0.10219*** (0.03765)	0.09824*** (0.03082)	0.17707*** (0.05248)	0.02061 (0.03765)
Alpha Yearly %	-0.28728%	0.66996%	-1.22628%	1.17888%	2.12484%	0.24732%
N	3,542	1,427	2,115	3,542	1,427	2,115
R2	0.88605	0.90789	0.85469	0.88601	0.90787	0.85463

Equally weighted regressions on monthly net and gross performance for the retailbanks in the small/mid cap segment						
Variable	2006-2015	2006-2010	2011-2015	2006-2015	2006-2010	2011-2015
	Regressions on net performance			Regressions on gross performance		
Beta-adjusted market premium	1.02777*** (0.00980)	1.02143*** (0.01116)	1.04279*** (0.01978)	1.02774*** (0.00982)	1.02141*** (0.01119)	1.04277*** (0.01980)
Constant (Alpha) monthly %	-0.06605 (0.05298)	-0.01660 (0.07905)	-0.12279* (0.07080)	0.05815 (0.05300)	0.10727 (0.07907)	0.00170 (0.07086)
Alpha Yearly %	-0.7926%	-0.1992%	-1.47348%	0.6978%	1.28724%	0.0204%
N	897	419	478	897	419	478
R2	0.92402	0.94469	0.88318	0.92395	0.94467	0.88301

Equally weighted regressions on monthly net and gross performance excluding retailbanks in the small/mid cap segment						
Variable	2006-2015	2006-2010	2011-2015	2006-2015	2006-2010	2011-2015
	Regressions on net performance			Regressions on gross performance		
Beta-adjusted market premium	1.03065*** (0.00839)	1.01090*** (0.01127)	1.06248*** (0.01295)	1.03071*** (0.00838)	1.01091*** (0.01128)	1.06260*** (0.01294)
Constant (Alpha) monthly %	-0.00984 (0.03719)	0.08625 (0.06661)	-0.09687** (0.04408)	0.11166*** (0.03720)	0.20639*** (0.06663)	0.02542 (0.04408)
Alpha Yearly %	-0.11808%	1.035%	-1.16244%	1.33992%	2.47668%	0.30504%
N	2,645	1,008	1,637	2,645	1,008	1,637
R2	0.87097	0.89088	0.84598	0.87094	0.89085	0.84595

Robust standard errors in parentheses
*** p<0.01. ** p<0.05. * p<0.1

Index funds

Pursuing equity exposure for the Swedish stock market, retail investors can invest in an index fund. In table 13 we show results for regressions of index funds in our sample, over the different time periods. The table is detailed in similar fashion as above, plotting net and gross vertically. On a monthly period from 2001-2015 we find that the average alpha has been -0.07471% (***) for the index funds. Which in comparison to the actively managed large cap funds, -0.10786% (***), implies a higher alpha of 0.03315% per month.

Focusing on the time period 2011-2015, for which we found significant results for the small/mid cap segment as well, we derive similar characteristics: the yielded net alphas for the indices, large- and small/mid cap were: -0.07644%, -0.13767%, and -0.10219%, respectively (***), on a monthly basis. This would indicate that, as previously described, a SEMF seems to lack the ability to outperform the market on average, after fees. In comparison to a passively managed index fund, a SEMF underperforms when compared on a net alpha basis.

Table 13: Equally weighted regressions on index funds net and gross performance

Variable	2001-2015	2001-2005	2006-2010	2011-2015
Regressions on net performance				
Beta-adjusted market premium	1.03483*** (0.00480)	1.03748*** (0.01250)	1.03097*** (0.00698)	1.03905*** (0.00660)
Constant (Alpha) monthly %	-0.07471*** (0.01834)	-0.09899* (0.05955)	-0.06327** (0.03054)	-0.07644*** (0.02340)
Alpha Yearly %	-0.89652%	-1.18788%	-0.75924%	-1.65216%
N	1,621	249	558	814
R2	0.98215	0.98070	0.98610	0.97671
Variable	2001-2015	2001-2005	2006-2010	2011-2015
Regressions on gross performance				
Beta-adjusted market premium	1.03480*** (0.00481)	1.03752*** (0.01252)	1.03089*** (0.00700)	1.03911*** (0.00662)
Constant (Alpha) monthly %	-0.04330** (0.01835)	-0.06121 (0.05966)	-0.03167 (0.03052)	-0.04716** (0.02341)
Alpha Yearly %	-0.5196%	-0.73452%	-0.38004%	-0.56592%
N	1,621	249	558	814
R2	0.98214	0.98062	0.98611	0.97673

Robust standard errors in parentheses

*** p<0.01. ** p<0.05. * p<0.1

As the results are compared on a risk-adjusted basis, we conclude that our regressions are in line with previous research. Above this, we find that retail bank funds for the large cap segment persistently underperform on a significant level for all years investigated. We do not, however, find persistent evidence of this for the small/mid cap segment, even though there are similar results over certain time periods. The index funds are, on average, performing better than both large- and small/mid cap funds.

Worth mentioning is that the R^2 -term in our regressions is higher for retail bank funds, than for the remaining sample. This term can be seen as an indication of the extent to which the benchmark index regressed upon is explanatory for the returns produced. This would imply that the funds of retail banks engage in less active stock picking, tracking the index more closely than remaining actors.

5.2.2. T-test

Finding significant results in deviations from the CAPM for the split sample, i.e. alphas for the gross and net performance, does not automatically make deviations comparable. Hence, when comparing the average alphas of retail bank funds and other actors, we perform a t-test to make sure they are statistically different from each other.

Table 14 presents results from the t-test for the large cap segment in 2001-2015. The table shows that the alphas are in fact significantly different from each other (***), with a t-value above 2. We note that the underperformance of large cap funds is 0.1201% in monthly net alpha, with quite low standard errors.

Hence, after rejecting our null hypothesis, we find H_{1-2} in this case: The sample of funds managed by retail banks deviate from the other fund actors in the large cap segment. Retail bank funds have on average yielded inferior alphas in comparison to the other independent actors in the large cap segment.

Table 14: T-test between retail banks and other actors in the large cap segment

Large cap 2001-2015						
Variable	Obs	Mean	Std. err.	Std. dev.	[95% Confidence Interval]	
Alpha No Bank	29	-0.0524055	.030596	.1647642	-.1150785	.0102675
Alpha Bank	11	-0.1725259	.0286158	.094908	-.236286	-.1087659
Difference		.1201204	.0418925		.0347151	.2055258
2.8674	= t				Ha: diff != 0	
31.3159	= degrees of freedom				Pr(T > t) = 0.0073	

For the small/mid cap segment we have detailed results from its t-test in table 15. We have, however, not been able to reject the small/mid cap segments null hypothesis that average net alphas deviate from what CAPM projects. Conducting the same approach as above, it is of interest to test for the hypothesis H_{2-2} : The sample of funds managed by retail banks deviate from the other fund actors in the small/mid cap segment.

In line with previous results, we cannot reject the null hypothesis that retail banks and independent alphas are the same on a statistically significant level. The tables results indicate that the high p-value and low t-value, of 0.3578 and 0.9465 respectively, makes us unable to reject the null hypothesis. We find this reasonable given that we could not find statistically significant deviations from the CAPM for the fund segment on average. This is something recurring during other time periods, and so these tests are not displayed.

Table 15: T-test between retail banks and other actors in the small/mid cap segment

Small/mid cap 2006-2015						
Variable	Obs	Mean	Std. err.	Std. dev.	[95% Confidence Interval]	
Alpha No Bank	28	.0017849	.0384432	.2034222	-.077094	.0806638
Alpha Bank	8	-.0581077	.0502584	.1421524	-.17695	.0607347
Difference		.0598926	.0632755		-.0741417	.1939269
0.9465	= t				Ha: diff != 0	
16.1538	= degrees of freedom				Pr(T > t) = 0.3578	

5.3. Robustness section

When testing for robustness in our results, we scrutinize the retail banks' funds individually to investigate if there are group outliers that skew results. If one bank would be performing abnormally worse, it could be argued that the results produced are bank-specific, and not representative for the group.

Studying table 16 for the large cap segment, none of the major retail banks' performed better on average than the others. There are notable differences between the different retail banks' funds though. At the maximum, the difference in average alpha for bank two and three was 1.17% on a yearly basis. The results show weak net alpha performance for the retail banks' funds, much in line with our earlier results.

Table 16: Equally weighted regressions on net performance for each retail bank in the large cap 2001-2015

Variable	Bank 1	Bank 2	Bank 3	Bank 4	All	Retail banks	Others
Beta adj mrkt risk premium	1.0267*** (0.00951)	1.0248*** (0.01051)	1.0208*** (0.01173)	1.0286*** (0.01497)	1.0274*** (0.00381)	1.0256*** (0.00562)	1.0283*** (0.00499)
Alpha % (Monthly)	-0.143*** (0.04225)	-0.224*** (0.04695)	-0.126*** (0.04215)	-0.185*** (0.05896)	-0.107*** (0.01542)	-0.179*** (0.02329)	-0.075*** (0.01974)
Alpha Yearly %	-1.72%	-2.69%	-1.52%	-2.22%	-1.29%	-2.15%	-0.90%
N	360	540	649	468	6,096	1,908	4,188
R ²	0.98146	0.96284	0.96487	0.95772	0.95325	0.96950	0.94519

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The above methodology is conducted for the small/mid cap group in table 17. This does not change the outcome of our results, as the alpha is not significantly different from zero for the retail banks' funds, on average. This implies, as stated before, that we cannot reject the null hypothesis for the small/mid cap segment.

Table 17: Equally weighted regressions on net performance for each retail bank in the small/mid 2006-2015

Variable	Bank 1	Bank 2	Bank 3	Bank 4	All	Retail banks	Others
Beta adj mrkt risk premium	1.0371*** (0.01764)	1.0366*** (0.03811)	1.0206*** (0.01407)	1.0225*** (0.01670)	1.0298*** (0.00657)	1.0277*** (0.00980)	1.0306*** (0.00839)
Alpha % (Monthly)	0.00451 (0.09553)	0.07163 (0.18149)	-0.09703 (0.06252)	-0.14477 (0.09533)	-0.02394 (0.03081)	-0.06605 (0.05298)	-0.00984 (0.03719)
Alpha Yearly %	0.05%	0.86%	-1.16%	-1.74%	-0.29%	-0.79%	-0.12%
N	258	58	262	392	3,542	897	2,645
R ²	0.92172	0.92257	0.96637	0.90158	0.88605	0.92402	0.87097

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Testing our result further we excluded outliers in order to analyze if previously estimated alpha's change. This was conducted by winsorizing the data set for extreme values that might not be representative. Conducting regressions after data adjustment yielded insignificant changes for the results, hence winsorizing our data did not change the outcome significantly. These

regressions and tests are listed in the appendix: table 10 and 11. As previously mentioned, we use robust OLS regressions, not assuming an equal variance in funds when regressing.

Given that we did not come up with major differences, we deem our results for the large cap segment being trustworthy and robust.

5.4 Potential problems in results

Scrutinizing the performance of Sweden's four biggest retail banks is elementary for the thesis. The scope of our thesis might have been extended to include other bank peers, but given their relative size we decided that this would change the investigation at hand. These lack the relative customer base as well as strength in fund distribution. Further, a player such as Danske Bank might have been included but as the firm is either based nor managed in Sweden we have excluded it. Thus, limiting the focus to major Swedish retail banks.

The distinct delimitation of funds to be included in the analysis was also contingent on the perspective of retail investors. There are other funds that have a focus on Swedish equities, but have characteristics that would potentially skew the comparison. Lacking data for the small/mid cap segment for 2001-2005 is a limiting factor in our analysis, as fewer observations might have diminished the significance of our tests.

Not incorporating a multi-factor model for regressions is something that could potentially lead to different results, but for the scope of this thesis it was deemed fit to disregard. Given Flam and Vestman's (2014) results it should not have had major impacts on produced conclusions, but is still worth mentioning as this could explain returns of the fund sample.

6 Implications and conclusions

6.1. Conclusion

In the presented findings we clearly see that on average, actively managed mutual funds underperform compared to their benchmark index after fees. This is proven for the large cap segment on a statistically significant level with 99% confidence, for the time period 2001-2015. We were able to find similar results for the small/mid cap segment for 2011-2015 with a confidence of 99%, but not for 2006-2015. This is highly in line with previous research, saying that actively managed mutual funds lack the ability of generating alphas net of fees.

Also, there are indications that enforce our thesis: that major retail banks underperform in comparison to their peers in the industry for SEMF's. The major retail banks (SEB, Handelsbanken, Swedbank and Nordea) funds have on average performed worse than the other fund actors in the large cap segment, which we find in in our regressions and t-test. This is not confirmed within the small/mid cap segment. Concluding on our findings, we see evidence of the average SEMF underperforming in both segment. Retail bank SEMF's have persistently underperformed in comparison to other actors in the large cap segment, over the time period studied.

The retail banks currently have a dominant position in the retail banking market, where competition could best be described as highly oligopolistic. Sweden has had a vast increase in investments in mutual equity funds during recent years, where banks have been able to provide in-house counselling and advisory. The banks own, actively managed funds are often prioritized, as these equal higher revenues due to higher fees (Financial Times, 05/01/2016). We find this being a conflict of interest, when councilors have an incentive of selling the banks own, actively managed funds. The dependent position of retail investors is to be highlighted in this situation, as they often have little or no knowledge about asset management.

Thus, it is to be questioned if the fund industry's current configuration is structured in a fair manner. Not only does fund distribution possibly direct investments to the banks own funds, but also decreases the competitiveness of independent asset managers. Given the funds relative underperformance in our sample, one can further question whether asset management fees are justified at all.

A relevant question to ask, is how the current situation could have originated in the first place. Looking at a historical perspective, investments in mutual funds in the Swedish equity

market gained traction when the so-called “Allemansfonder”, i.e. everyman funds, were created in the mid 1980’s (Privata Affärer, 05/13/2009). These had explicit tax advantages, and were regulated in this manner for almost twenty years to come; effectively increasing retail investors exposure to mutual funds. During this time, the funds goal was to provide equity exposure for retail investors, tracking the index. If one, however, pays a high fee for active management, one should have the possibility of receiving returns that exceed the benchmark index, otherwise an index fund would be the natural investment. Judging from the mutual funds tenacious underperformance, one might suggest that the industry’s current conditions might be a residual of its past.

We think that the industry needs regulation on transparency, publishing measures on their activeness and created alphas to justify higher management fees. Passive management, or tracking the index on a gross level, cannot by itself justify a yearly fee of around 1.5%. Looking at the statement of Swedbank’s Roburs former CEO which we presented in the beginning of this thesis (Aktiespararna 12/16/2013) we conclude: selling an expensive product, but delivering a cheap one, should be considered fraud.

6.2. Retail investor perspectives

This thesis had the explicit perspective of retail investors, analyzing mainly net returns, and we want to specifically address some findings. Investigating whether there are synergies to staying true to one’s retail bank when investing in SEMF’s, we find clear indications of the opposite. Hence, it would have been advantageous for the average investor to avoid his retail banks funds in the large cap segment, and instead bet on one of the others funds.

In figure 3 below, we make a visual comparison what effect this would have for a retail investor, seeking equity exposure within a large cap fund. The alternatives are betting on the average other actor versus the average retail bank fund. The example is constructed in order to understand the effects of compound interest and Einstein’s renowned explanation of the term: “Compound interest is the eighth wonder of the world. He who understands it, earns it [...] he who does not [...] pays it.”

Table 2 in the data section details that retail banks funds consist of 37% of the capital in the large cap segment. This implies that large sums of savings might have had much higher returns over time if both invested and managed properly. Figure 3 shows the cumulative

difference over 15 years, having invested in an average SEMF in the large cap segment, compared to the average retail bank fund or average other fund. It is derived that not one of the groups of funds has beaten the SIX PRX index.

Figure 3: Cumulative net return index for the large cap sample and its portfolios in %

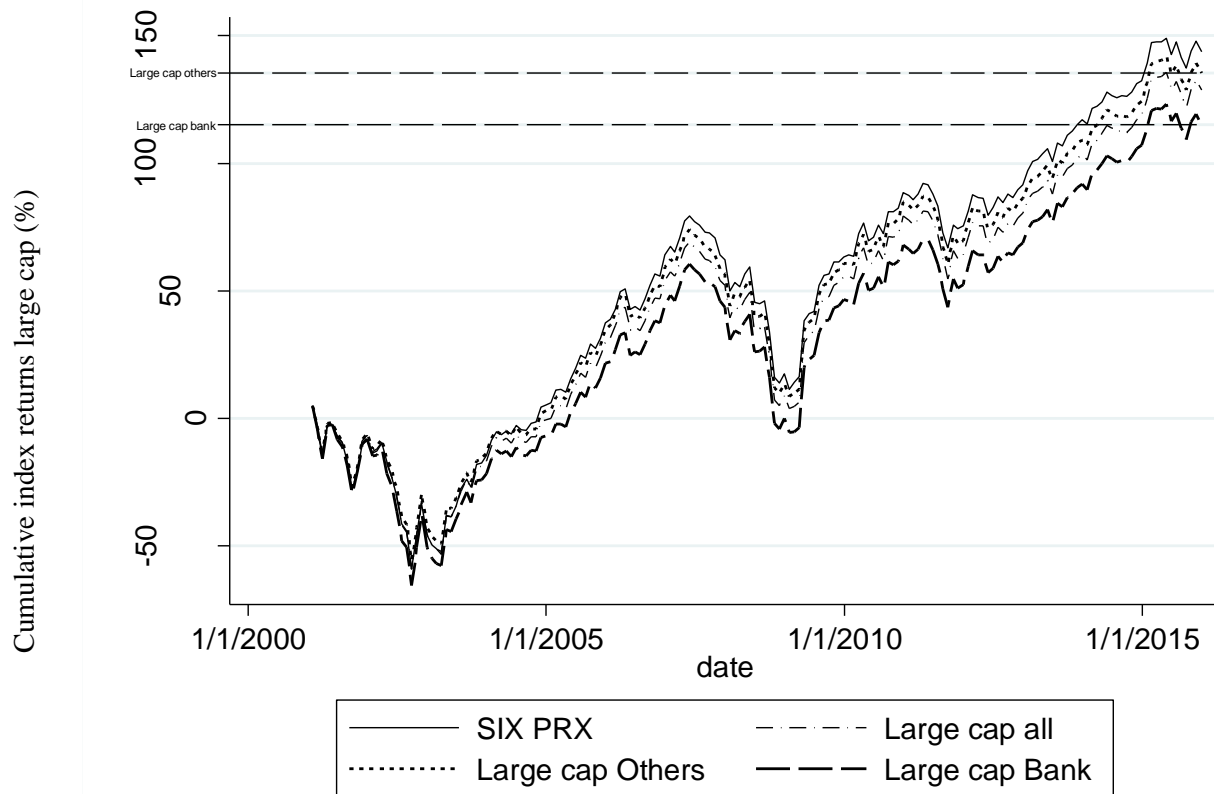


Figure 4 is in line with what we have found in our regressions, and on average for the performance for small/mid cap funds. The discrepancy in absolute returns over time between major retail bank funds and other actors is not as distinctive as the differences for the large cap sample. At the end of the period, December 2015, the average cumulative returns have converged.

This enforces our results, making the performance indistinguishable over time between the groups. Hence, on a non-risk adjusted cumulative basis, the samples have produced similar results. We find the respective benchmark index CSRXSE outperforming both groups of funds.

Figure 4: Cumulative net returns for the small/mid cap sample and its portfolios

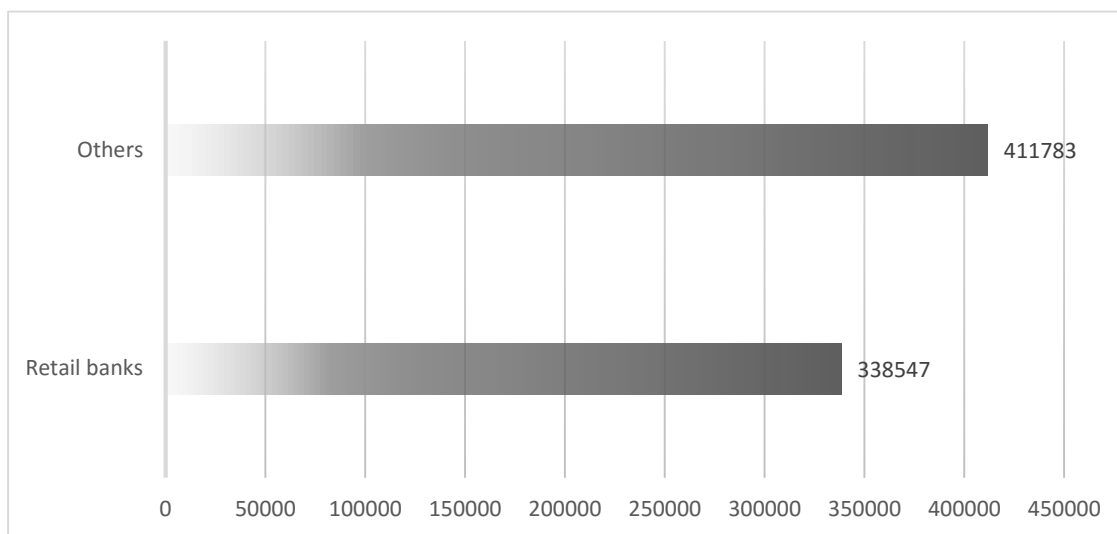


In figure 5 we calculate the difference in total wealth of an individual having saved SEK 1,000 every month for 15 years, 2001-2015. We find a massive discrepancy in savings, having avoided an average retail bank fund compared to the average other actor in the large cap segment.

The difference between investments is 22% comparing SEK 411,783 to 338,547, resulting in a total spread of SEK 73,236. For a retail investor, this is a major amount. We conclude that the choice of SEMF is important for retail investors when pursuing equity exposure.

Referring to table 2 in the data section, we found that a vast amount of investments was put in to large cap funds. Of these SEK 245 bn, the major retail banks control 37%, implying that the above example is applicable on a large amount of retail investors savings.

Figure 5: Total wealth in SEK, having saved SEK 1,000 every month 2001-2015 based on average net performance in the large cap segment



7 Future Research

Our performance evaluation was limited to a 1-factor model to explain returns, shedding light on major retail banks fund performance over a 15-year period. Also, this was limited to Swedish equity funds, with the explicit focus of investing in firms listed on the Swedish stock exchange. There might be analysis made upon all funds managed by retail banks, looking at investments in e.g. healthcare- or tech funds.

Investigating whether returns can be explained by assessing multi-factor models, such as the Fama and French (1993) 3- and Carhart (1997) 4-factor model, as well as relating this to individual funds activeness, could be highly interesting and relevant. Hence, investigating if e.g. retail banks persistently follow the index to a greater extent than their peers in the Swedish fund industry.

Also, the approach could be applied for other countries, investigating if the results found are country specific, or if this is characterizing for bank funds in general. Generally speaking, it could be of interest to look the Nordic markets compared to e.g. Europe or the U.S.

Furthermore, our analysis is restricted to the CAPM model, analysis conducted over longer periods of time, using other models could yield interesting results.

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9 Appendix

Table 1: Absolute net performance on monthly basis in %

2006-2015	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Large cap all	-21.40	-1.66	1.24	3.71	33.88	0.85	5.28	4,430
Retail banks	-20.50	-1.76	1.24	3.71	30.57	0.77	5.36	1,309
Others	-21.40	-1.57	1.24	3.70	33.88	0.88	5.25	3,121
SIX PRX	-17.77	-1.47	1.24	3.74	21.95	0.89	5.17	120

Table 2: Absolute net performance on monthly basis in %

2001-2005	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Large cap all	-17.28	-2.84	0.48	4.76	19.78	0.55	6.50	1,706
Retail banks	-17.28	-2.90	0.23	4.79	19.78	0.36	6.74	600
Others	-17.07	-2.67	0.57	4.73	17.41	0.61	6.37	1,106
SIX PRX	-15.03	-2.43	0.63	4.91	14.92	0.62	6.38	60
Index funds	-11.03	-1.48	1.37	3.29	11.90	0.86	4.08	815
STIBOR1M	0.14	0.18	0.25	0.34	0.37	0.26	0.08	60

Table 3: Absolute net performance on monthly basis in %

2006-2010	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
Large cap all	-21.40	-1.67	1.21	4.27	33.88	0.85	6.29	2,063
Retail banks	-20.50	-1.76	1.21	4.28	30.57	0.76	6.35	649
Others	-21.40	-1.57	1.21	4.26	33.88	0.89	6.26	1,414
SIX PRX	-17.77	-1.78	1.35	4.33	21.95	0.91	6.11	60
Small/mid cap all	-22.09	-2.24	1.48	4.38	30.16	1.00	6.45	1,428
Retail banks	-22.09	-2.54	1.43	4.84	26.91	0.96	6.71	420
Others	-20.89	-2.13	1.49	4.23	30.16	1.02	6.34	1,008
CSRXSE	-17.53	-2.70	1.47	4.53	25.02	1.04	6.76	60
Index funds	-18.79	-1.33	1.50	4.43	27.01	1.06	6.30	558
STIBOR1M	0.03	0.06	0.19	0.33	0.44	0.20	0.13	60

Table 4: Absolute gross performance in the large cap segment on monthly basis in %

	Large cap all	Retail banks	Others	SIX PRX
2001-2015				
Mean	0.87	0.75	0.92	0.80
StdDev	5.65	5.83	5.57	5.60
N obs	6,131	1,908	4,223	180
2006-2015				
Mean	0.95	0.88	0.98	0.89
StdDev	5.28	5.36	5.25	5.17
N obs	4,429	1,308	3,121	120
2011-2015				
Mean	0.95	0.89	0.97	0.92
StdDev	4.22	4.17	4.23	4.01
N obs	2,367	660	1,707	60

Table 5: Absolute gross performance in the small/mid cap segment on monthly basis in %

	Small/mid cap all	Retail banks	Others	SIX PRX
2006-2015				
Mean	0.95	0.88	0.98	0.89
StdDev	5.28	5.36	5.25	5.17
N obs	4,429	1,308	3,121	120
2011-2015				
Mean	1.34	1.31	1.34	1.35
StdDev	4.39	4.49	4.36	4.39
N obs	2,115	478	1,637	60

Table 6: Descriptive statistics over Alpha in large cap segment. 2006-2015

Large cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.336%	-0.150%	-0.090%	-0.045%	0.337%	-0.088%	0.136%	4,800
Gross	-0.229%	-0.084%	0.012%	0.047%	0.356%	0.013%	0.128%	4,800
Retail banks								
Net	-0.336%	-0.172%	-0.123%	-0.089%	0.009%	-0.136%	0.088%	1,320
Gross	-0.229%	-0.079%	-0.014%	0.015%	0.138%	-0.029%	0.092%	1,320
Others								
Net	-0.292%	-0.141%	-0.082%	-0.013%	0.337%	-0.070%	0.147%	3,480
Gross	-0.163%	-0.089%	0.023%	0.065%	0.356%	0.028%	0.136%	3,480

Table 7: Descriptive statistics over Alpha in large and small/mid cap segment. 2011-2015

Large cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.595%	-0.285%	-0.121%	-0.064%	0.337%	-0.134%	0.185%	2,400
Gross	-0.469%	-0.167%	-0.025%	0.045%	0.421%	-0.033%	0.176%	2,400
Retail banks								
Net	-0.327%	-0.294%	-0.133%	-0.115%	0.027%	-0.177%	0.108%	660
Gross	-0.220%	-0.187%	-0.015%	-0.013%	0.131%	-0.070%	0.105%	660
Others								
Net	-0.595%	-0.226%	-0.114%	-0.046%	0.337%	-0.118%	0.204%	1,740
Gross	-0.469%	-0.133%	-0.035%	0.054%	0.421%	-0.019%	0.195%	1,740
Small/mid cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.603%	-0.224%	-0.094%	0.076%	0.534%	-0.100%	0.254%	2,160
Gross	-0.496%	-0.106%	0.047%	0.197%	0.671%	0.024%	0.257%	2,160
Retail banks								
Net	-0.603%	-0.311%	-0.021%	0.068%	0.145%	-0.123%	0.256%	480
Gross	-0.496%	-0.178%	0.109%	0.197%	0.252%	0.001%	0.263%	480
Others								
Net	-0.576%	-0.224%	-0.104%	0.105%	0.534%	-0.093%	0.253%	1,680
Gross	-0.448%	-0.106%	0.013%	0.205%	0.671%	0.030%	0.255%	1,680
Index funds								
Net	-0.233%	-0.125%	-0.065%	-0.038%	0.002%	-0.080%	0.061%	840
Gross	-0.200%	-0.096%	-0.034%	0.004%	0.013%	-0.050%	0.061%	840

Table 8: Descriptive statistics over Alpha in large cap segment. 2001-2005

Large cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.579%	-0.295%	-0.164%	0.118%	1.968%	-0.041%	0.493%	1,800
Gross	-0.470%	-0.194%	-0.069%	0.251%	2.092%	0.066%	0.497%	1,800
Retail banks								
Net	-0.415%	-0.388%	-0.251%	-0.222%	-0.038%	-0.270%	0.105%	600
Gross	-0.347%	-0.268%	-0.140%	-0.109%	0.068%	-0.165%	0.115%	600
Others								
Net	-0.579%	-0.193%	-0.089%	0.217%	1.968%	0.074%	0.565%	1,200
Gross	-0.470%	-0.091%	0.014%	0.294%	2.092%	0.181%	0.569%	1,200
Index								
Net	-0.403%	-0.370%	-0.081%	-0.003%	0.135%	-0.134%	0.197%	360
Gross	-0.353%	-0.349%	-0.036%	0.027%	0.187%	-0.093%	0.200%	360

Table 9: Descriptive statistics over Alpha in large and small/mid cap segment. 2006-2010

Large cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.490%	-0.128%	-0.057%	0.051%	0.448%	-0.056%	0.203%	2,280
Gross	-0.381%	-0.078%	0.037%	0.120%	0.571%	0.047%	0.203%	2,280
Retail banks								
Net	-0.324%	-0.211%	-0.118%	-0.049%	0.396%	-0.086%	0.173%	660
Gross	-0.218%	-0.091%	-0.005%	0.057%	0.525%	0.021%	0.180%	660
Others								
Net	-0.490%	-0.121%	-0.033%	0.103%	0.448%	-0.044%	0.213%	1,620
Gross	-0.381%	0.000%	0.062%	0.167%	0.571%	0.058%	0.210%	1,620
Small/mid cap	Min	Quantile 1	Median	Quantile 3	Max	Mean	StdDev	N obs
All mutual equity funds								
Net	-0.353%	-0.047%	0.093%	0.230%	2.262%	0.191%	0.473%	1,800
Gross	-0.226%	0.061%	0.211%	0.364%	2.337%	0.311%	0.469%	1,800
Retail banks								
Net	-0.157%	-0.120%	-0.005%	0.079%	0.090%	-0.017%	0.087%	420
Gross	-0.028%	0.009%	0.102%	0.208%	0.250%	0.107%	0.093%	420
Others								
Net	-0.353%	-0.047%	0.132%	0.313%	2.262%	0.254%	0.522%	1,380
Gross	-0.226%	0.061%	0.234%	0.440%	2.337%	0.373%	0.517%	1,380
Index funds								
Net	-0.173%	-0.085%	-0.060%	-0.031%	0.016%	-0.059%	0.049%	720
Gross	-0.139%	-0.043%	-0.029%	-0.004%	0.016%	-0.031%	0.039%	720

Table 10: Winsorized regressions large cap segment 2001-2015

Variable	All funds	Retail banks	Others
Winsorized regressions on net performance			
Beta adj mrkt risk premium	1.01372*** (0.00290)	1.01380*** (0.00376)	1.01334*** (0.00441)
Constant (Alpha) monthly %	-0.10927*** (0.01495)	-0.07566*** (0.01915)	-0.18356*** (0.02249)
Alpha Yearly %	-1.31%	-0.91%	-2.20%
N	6,131	4,223	1,908
R ²	0.95173	0.94345	0.96874

Robust standard errors in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Table 11: Winsorized regressions small/mid cap segment 2006-2015

Variable	All funds	Retail banks	Others
Winsorized regressions on net performance			
Beta adj mrkt risk premium	1.01290*** (0.00630)	1.01380*** (0.00798)	1.01061*** (0.00950)
Constant (Alpha) monthly %	-0.01065 (0.03040)	0.00516 (0.03673)	-0.05772 (0.05201)
Alpha Yearly %	-0.13%	0.06%	-0.69%
N	3,542	2,645	897
R²	0.87320	0.85792	0.91332

Robust standard errors in parentheses

*** p<0.01. ** p<0.05. * p<0.1