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Expected equity fund investor returns and the level of management fees
– a study of Swedish funds and the relationship between management fees and excess returns.

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Abstract

The cost to investors of investing in mutual equity funds through management fees, could be substantial when compared to the return they generate. If the fees are fairly set, they should give investors a high excess return, termed alpha, when compared to a passive benchmark. Management fees have been shown to give negative excess return in the US market, and we regress the excess return of Swedish equity funds as estimated by CAPM on management fees. Our prediction is that higher management fees leads to lower alpha.

Introduction

We looked into the question of whether the risk-adjusted return of equity funds domiciled in Sweden, and investing in the Swedish stock market, has a statistical relationship with their management fees. Using a standard capital asset pricing model, first developed by William Sharpe (1964) and John Lintner (1965), we investigated how the excess net return, or alpha in CAPM terminology, relevant to an investor in the Swedish fund market relate to these fees.

The subject of fund management fees is relevant to most Swedes today, as every working individual will earn fund credits in the state-run pension scheme, and thereby have the option of choosing funds themselves. At the end of 2013, 6.9 million Swedes were part of this pension scheme. The cost to investors through management fees could be substantial over long time periods when compared to the return they receive. If the fees are set in a way that takes both the interest of the investor and the interest of the fund manager into account, the fees attributable to the latter should give investors a high excess return when compared to the return of a passive index benchmark.

Fund managers and banks will argue that private investors receive a service when investing in their fund: an active management that both increases the return they receive and decreases the risk doing so. Passive index funds will only follow their benchmark regardless of market conditions. The first argument will logically lead you to believe that higher fees are better than lower fees. The more you pay for someone handling your investments, the more likely it is that this manager is more skilled than other market participants, and that banks and other financial institutions therefore provide a highly valuable service to their

costumers. On the other hand, lower fees are better for costumers since more of the return will go back directly to them. There seems to be diverging logic which on the one hand tells you that high fees might be good for you, and on the other hand the logic that lower fees, or costs, naturally are preferable to rational individuals.

A number of studies in this field have shown that management fees negatively impact investor return on at least a one-to-one relationship (see for example: Carhart, 1997; Elton, Gruber, Das & Hlavka, 1993; Fama & French, 2010; Jensen, 1968), but those studies have for the most part been conducted on the US stock market. We will on the other hand study Swedish equity funds during the time period of 2000 until 2014, to see whether the same conclusions can be made in a different market. The excess return of our sample of funds will be estimated using a standard capital asset management model, and will then be regressed on the management fees of each fund to show the statistical relationship between the two variables.

The mutual fund industry serves several purposes: it allows small private investors easy access to financial markets at low costs, it gives them a broadly diversified investment allocation with a relatively small investment, and it provides investors with the professional skills and decision making of fund managers (Anderson & Ahmed, 2005). When evaluating fund performance, the total return might at first sight be the best criterion, but selecting investment vehicles will also depend on the individual risk aversion of the investor and the relative risk that he or she will have been exposed to in gaining those returns. In financial literature, this is called the risk-adjusted return, which indicates that

high returns are not always better than low returns when the volatility of the underlying asset prices are taken into consideration.

Mutual funds charge management fees for the services they provide. Whether the investment objective or the size of the fund, a certain percentage will be deducted from the value of the fund for the benefit of the fund operator. Over time these fees will, *ceteris paribus*, make a dent to investors' returns, given they are not indicative of some sort of a higher utility or service provided from the fund company. For example, the Swedish Pensions Agency (2015, p. 38) has calculated that, holding everything else constant, a management fee of just 0.5 per cent will reduce one's pension by 15 per cent when compared to a completely free fund.[1] The alternative investment to an actively managed fund, which are usually more expensive to invest in, are passively managed mutual funds, which statically selects its investments' proportions in accordance to a value-weighted index of assets. In the case of equity indices, they are usually composed of the biggest companies listed on a certain stock exchange. Were the more expensive actively managed funds not better than these passive portfolios net of fees, investors should on average prefer to invest in passive funds, and know that their returns will be very close to the return of the tracked index.

Swedish private investors have a high proportion of their savings in equity-related investment vehicles. In 2014, the fund companies of three of the major Swedish banks, Handelsbanken, SEB and Swedbank, reported total income after taxes of 1.6 billion SEK, with a mean EBITDA-margin of 34 per cent and a mean return on equity of 78.7 per cent.[2] Such return metrics indicate that the banks

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[1] Average investment period of 31.8 years
[2] Adjusted for group contributions

are making large profits in a business where they do not have to invest a lot of capital, and where competition is lacking. It seems these profits are possible because the average private investor places a high degree of trust in his or her bank, in that actively managed funds will have a good chance of beating the index. We will therefore investigate whether expensive equity mutual funds provide a statistically higher alpha to its investors or whether it is a false claim and that higher fees are mainly beneficial to the fund manager. This study investigates the divergent propositions that high management fees will be beneficial to you since it will give you higher return, and that lower fees will be better because rational individuals will seek to minimize costs.

The possible conclusion to this investigation is fundamentally an evaluation of the rational options available to a Swedish private investor. Will he or she be better off trusting their bank or should they conclude that cheaper is always better? In a recent survey of Swedish individuals, 27 per cent of the respondents said they are very or quite worried about their future economic status as a retired (Collectum). The end result lies a long way into the future, and the impact from the choices one makes today will not be clear for many years.

In this article, we build on some of the techniques that have been developed in the fund evaluation literature, see the following section for a description of this development, but applied these to the specific situation of whether high management fees could indicate a higher than expected return to its investors. We will also examine whether there are differences between funds of different sizes. In the end, we expect to find similar results to studies conducted in other markets, namely that high management fees will lead to lower fund returns.

Firstly, we will present the current theoretical framework (section one). In the following section, there will be a discussion about the steps undertaken to gather relevant data for this investigation. The sources will be presented and commented upon. Thereafter, our estimations, statistical and others, are given, and after this our results are presented. Lastly, our findings are concluded with an analysis and a comparison with previous studies.

The theoretical framework

Following the development of the efficient market hypothesis in the mid 1900s, Sharpe (1964) and Lintner (1965) individually developed methods of valuing financial assets according to the inherent risk they bore to the investor. Sharpe argued that any investor wishing to obtain higher return must also expect to be subjected to higher risk, or volatility, in asset prices. In equilibrium, he states, there will be a "consistent relationship" between the expected return on individual assets and the systematic risk of that asset for pricing to be efficient. (Sharpe, 1964, p. 436) The expected return an investor will receive will be a direct function of the asset's "covariance of its return with the market return divided by the variance of the market return" (Fama and French, 2004, p. 28). The usual proxy for the total market is a broad U.S. common stock index, such as S&P 500, though Richard Roll argued that such a proxy is too narrow, and that the true representation of the market may never be fully implemented in the model. This is known as Roll's critique (Roll, 1977; Fama and French, 2004).

Lintner also studied the link between risk and return, adding the assumption that investors must have the same outlook regarding the expected mean and variance concerning return. For some time, the standard capital asset pricing

model was unchallenged, only supplemented by Black (1972), who added unlimited short-selling to the model as a way to obtain a mean-variance efficient market portfolio, instead of unlimited borrowing and lending as in the Sharpe-Lintner model.

The CAPM of Sharpe and Lintner states that the expected excess return of an asset is completely explained by the beta variable, or the asset' systematic risk premium, and that the risk-return intercept of each asset is zero. Michael C. Jensen (1968) added the last piece to our model when he identified the excess return above the expected return given by market beta, consequently named Jensen's alpha (hereafter simply called alpha). If an investor earns positive alpha return on an asset or a portfolio of assets, it could point to that investor possessing superior skills compared to the market. If, on the other hand, an investor earns negative alpha, the investor is not doing as well as a simple buy-and-hold the market strategy according to CAPM.

Roll's critique about the impossibility of mirroring the market index and the difficulties in empirically proving the CAPM for individual assets, led researchers to apply it to portfolios of assets, where it has proven useful. Fama and French (1993) further developed the model, identifying three explanatory factors common to stock return: book-to-market valuation of equity, the size of firms in terms of market valuation, and an overall market return factor. Carhart (1997), in a much-cited paper, adds a fourth factor, called momentum, mimicking the excess return earned from investing in winners from the previous period.

From the pricing question of individual assets also follows the problem of evaluating portfolios of investment assets. As described above, risk and price move hand in hand, and portfolios of assets will display the same relationship,

albeit in aggregate. Sharpe (1966) further extended his analysis by measuring the risk of mutual equity funds as a function of its volatility. He found that US funds from 1954 until 1963 showed a high return correlation with each other, with most difference in performance depending on expense ratios and other costs rather than the individual fund manager's ability to find incorrectly priced securities. Summing up, fund performance gross of fees was worse than the Dow Jones index and good performance was associated with low expense ratios.

These findings point to an interesting conclusion about the seemingly divergent logic surrounding high fees introduced earlier: those investors who trusted their banks and fund managers actually received less return than had they blindly invested in a passive benchmark. Higher management fees did not indicate a higher future return, and in these cases they only benefited the manager. These fund managers did not manage to provide a service worth paying for.

We looked into whether these earlier findings on CAPM are valid in Sweden as well as in the US, and regressed excess return on management fees. In the current Swedish private economic debate, there has been a strong negative attitude towards high management fees, claiming they add nothing of value to an average private investor. These journalists have seized on financial writings that have been describing the negative impact management fees have on excess return, and consequently the return from investing in funds. Especially the so-called savings-economist representing one of Sweden's largest Internet brokers, Claes Hemberg, has taken a clear stance against high fees (Mölne, 2015). Though clearly not as unbiased as he himself might claim, his blogs and tweets have had a resounding impact on traditional media, where journalists often connect the earnings from over-priced funds to the, in their eyes, excessive profits that

Swedish banks have generated over the last couple of years ("Fondjätte sänker sina avgifter"; Andersson, 2016). Though every actor has his or her own reason for arguing for low-cost index funds, Swedish private investors have taken notice of their advice since the share of invested capital in index funds has risen lately. From 2010 to 2015, the total amount of net savings in equity index funds was 85 billion SEK, while traditional, actively managed equity funds experienced a net outflow of 11 billion SEK. The share of assets allocated to index funds increased from six to eleven per cent during the same time period (Fondbolagens förening, p. 6, 2016). Because of the increased share of index funds, mean management fees have been decreasing year by year (Eriksson, 2014). To evaluate whether the claims that lower fees are better can be substantiated, and whether the previously stated trend towards low-cost index funds is rational from the perspective of return, we have investigated the equity fund returns in Sweden in the following sections.

Whether or not management fees are relevant to a private investor will be presented below. In articles from Fama & French (2010) and Carhart (1997) they have been describing equity fund returns relevant to the US fund market. They build on earlier valuation models from Sharpe and Lintner, adding their own models of factor loadings. The original CAPM is still widely used in financial education and application, partly because of its simplicity, and will be used in this paper. Our main article is Fama and French's *Luck versus Skill in the Cross-Section of Mutual Fund Returns*.

Previous Swedish studies

Swedish fund returns have not been as extensively researched as the returns of funds investing in the US market, but studies by Dahlquist, Engström and Söderlind (2000), Engström (2004), and Flam and Vestman (2014) have estimated the excess return for different samples and time periods, with dissimilar results. Dahlquist *et al.* (2000) studied the time period from 1993 until 1997 and found mixed results depending on the tax treatment of portfolios of funds. There was a positive but statistically insignificant alpha of on average 0.24 for ordinary Swedish equity funds and a statistically significant negative alpha of on average 1.30 for equity funds with preferential tax treatment (*allemansfonder*). The relationship between administrative fees and fund performance was found to be negative, both for ordinary equity funds and money market funds. Also relevant to our study, they found that the size of funds with preferential tax treatment has a strong and negative relation to fund performance.

Engström (2004) uses a sample of Swedish equity funds from 1996 until 2000. He finds an average alpha of 1.7% per year, with an average fund beta of 0.9. The negative relation between fund size and performance found by Dahlquist *et al.* (2000) is suggested to stem from the fact that smaller funds to a higher degree have been able to invest in small cap firms, which have been performing better than large and mid cap stocks during the time period of investigation.

Finally, Flam and Vestman (2014) find positive net alphas for Swedish equity funds at around 2.5 from 1993 until 2002 and negative net alphas of -1.47 during the period of 2002 to 2013, commenting that inferences should be made from the latter period, as there is "much greater competition among funds after the

break." They conclude that there was no evidence of persistent fund manager skills and advocate that investors should invest in index funds.

The Swedish equity fund market

Most Swedes have invested in equity funds, either privately through fund accounts with their bank or broker, or by the mandatory pension system, where the employer places 2.5 per cent of the gross wage with the Swedish Pensions Agency as pension credits. Every individual can then select up to five funds. The premium pension scheme includes more than 800 funds of different types and investment objectives, which comply with certain standards. Non-selectors' credits will be automatically placed with the Swedish state AP7 fund, which initially invests all of the funds in equity, gradually increasing the share of fixed-income assets once the individual turns 55.

Owning equity funds is one of the most common types of investments for Swedes. At the end of 2014, 1 140 billion SEK were invested in Swedish equity funds. Funds within the umbrella of the Swedish state's premium pension agency amount to 529 billion SEK.

Mutual funds charge its investors fees for the service it is providing. Can investors know that a high fee will translate into high returns?

Data

We have used several sources in collecting our data. First of all we specified the universe of our investigation. Since we aim to describe an investment situation relevant to a Swedish private investor, we focused on mutual funds that invest in the Swedish market with a focus on equity assets. The latter criterion means that

a fund needs to hold at least 90 per cent of its assets in equity. As mentioned above, CAPM is often used to evaluate portfolios of assets and relevant here. The fund return is stated net of all fees and costs, though not of private taxes.

In order to obtain comparable return data, we also only included funds that are domiciled in Sweden, which among other things mean they operate under the same tax conditions. To include funds domiciled in other countries could potentially disrupt our findings.

The source for all fund data has been the Bloomberg database, which is a comprehensive collection of financial data. It lists 773 funds with a geographical investment focus on Sweden.

From our specifications of funds domiciled in Sweden, which invest in the Swedish stock market, and mainly in equities, there were 123 funds in the sample. Only funds that existed from the beginning of the year 2000 until the end of our period in 2014 were then sampled, which left us with 38 funds. These funds have return data during the whole time period from 2000 until the end of our investigation in 2014 as the Bloomberg database includes all funds in operation as of today (2015). The complete list of sampled funds is presented in Appendix 1.

Because of small glitches in the recording and sampling of the said return data, and to get fund data readily comparable to the returns of many funds, we downloaded the total weekly net returns from the database.

In addition, the choice of benchmark for evaluate the performance of funds is also important. In financial literature, evaluating one's performance in comparison with a benchmark is called the risk-adjusted return.

The proxy for the market return is the SIX PRX, which is a value-weighted total return index of the Stockholm Stock Exchange with portfolio restrictions that comply with UCITS (Undertakings for Collective Investments in Transferable Securities). These restrictions state that a single stock is capped at a maximum of ten per cent of the fund's total assets and that funds cannot hold more than 40 per cent of its assets in stocks where they have invested more than 5 per cent of the fund's total assets. This means that any fund must hold at least 16 stocks. The index is therefore suitable for fund performance comparisons, as similar fund restrictions exist in other market, *e.g.* in the U.S.. All dividends are reinvested in the index. As with the data for fund return, the weekly total return of the SIX PRX was downloaded from the Bloomberg database.

The risk-free rate is Swedish T-bills (*statsskuldsväxlar*) with a maturity of one month. These data were obtained from the Swedish Central Bank. In previous Swedish studies by Engström (2004) and Dahlquist *et al.* (2000), they have used the seven day Stockholm interbank lending rate STIBOR as the risk-free rate of return. Flam and Vestman (2014) on the other hand used the STIBOR 1-month rate. We compared our data to T-bills, because an alternative investment to equity for a Swedish private investor would be a money market mutual fund that invests in Swedish T-bills at low risk.

The return data of the equity funds, the market proxy and the risk-free rate of return were stated on a weekly basis, for reasons of attaining more observations, and therefore a better statistical basis. Weekly data was also used by Engström (2004) and Dahlquist *et al.* (2000). Flam and Vestman (2014) used monthly return data instead.

The management fees of the funds in our sample have also been obtained from the Bloomberg database. These are the current management fees at the time of sampling. The management fees have been assumed to be constant during our sample period because of lacking historical data. To make sure that the management fees had stayed approximately the same over time, we looked up the historical fees of five randomly selected funds every year during our time period. These management fees were then compared to the most recent data and we found that the fees were indeed unchanged. Hence we assumed that the management fees of all funds were stable during these years. We looked at the funds annual reports from previous years to make this test.

Potential biases

We have not been able to include funds that existed in 2000 but have since disappeared from the market, either because of a merger with other funds or the funds now being closed. If there indeed has been an omission of funds, these omitted funds would likely have been poor performing, which if anything would give our estimates an upward bias (Dahlquist, Engström and Söderlind, 2010, Gruber, 1996). Dahlquist *et al.* estimate that surviving Swedish funds perform 0.7 per cent better per year than the average of all funds. U.S. studies have estimated survivorship bias from 0.2 per cent (Carhart, 1997) to 1 per cent per year (Elton, Gruber, Blake, 1996).

As mentioned above, we assumed that management fees have been constant during the sample period after sampling a few historical data. This may, however, not be true for every fund in our sample.

The number of observations for some funds, is quite small which could question the credibility of the OLS regression analysis. As we have conducted an investigation of the funds as a whole, we however, believe there are enough observations.

Model

We use the following standard capital asset pricing model to estimate individual alphas:

$$R_{it} - R_{ft} = \alpha_i + b_i(R_{Mt} - R_{ft}) + e_{it} \tag{1}$$

Where R_{it} is the return of fund i during time period t, R_{ft} is the rate of return of the risk-free asset f during time period t, and R_{Mt} is the return of the market during the same time period. e_{it} is an error term specific to each fund.

α_i is Jensen's alpha measure of excess return for fund i. The beta coefficient is a measure of the fund's systematic risk. Alpha and beta are the explanatory variables in our regression. The error term is a fund specific risk that captures the effects neither explained by the skill of fund managers nor the beta sensitivity to covariance in the market.

Method

We investigated the rates of return for all 38 funds in our sample during the period from 2000 to 2014. This time period was selected because we wanted to investigate a relatively long period. In fund advertisement material, fund operators must present return over at least five years for equity funds (Fondbolagens förening, 2008, p. 3). Previous Swedish studies have

concentrated in fewer years than we have except for Flam and Vestman (2014) who have looked at twenty full years of data. We believe a longer time period will provide better results.

Our first step was to take our downloaded weekly fund return data and subtract the risk-free rate of return for every week to get the risk-adjusted weekly return for each and every fund. This gave us the left hand side of CAPM in equation (1), Jensen's alpha. We then subtracted the risk-free rate of return from the weekly return of the market proxy SIX PRX, to acquire the excess return of the stock market. Now that we had these data, we could estimate alpha and beta for each fund in Stata according to CAPM, see equation (1). Using the ordinary least squares (OLS) procedure, we ran the regression of the fund excess returns on the risk-adjusted market return as the independent variable, to estimate alpha and beta values. These alpha and beta values can be found in Appendix 1 fund by fund.

In the next step we regressed all of these alphas on the management fees of the corresponding funds using the OLS procedure, as shown in equation (2),

$$\alpha_i = a + b(FEE) \qquad\qquad (2)$$

where FEE are the management fees of that fund.

The line of best fit, the regression line, presents the best linear correlation, if any, between the two variables. Accordingly, beta values capture the coefficient of the variable on the dependent variable, or the return over the risk-free rate, and should be close to one in CAPM. Fund return not explained by the model is captured by the intercept, alpha, and it could be thought of the return attributable to fund investors through the individual or collective abilities of fund managers. As such, alphas would have to be above zero net of fees and

statistically significant to be taken as a sign of the funds providing their investors with services worth paying for.

As a further investigation we also looked into the fund performance during time periods where the stock market returns have been clearly positive, *i.e.* during the upward trends of 2003 until 2007 and 2009 until 2014. We chose these periods to see whether there would be different results during periods of a strong stock market trend, compared with a full business cycle, and what a private investor could infer from this. Flam and Vestman (2014) also divided their study into two time periods, one from 1993 to 2001 and one from 2002 to 2013. These two time periods did not experience as clear upward or downward trends as our time periods did. Their article is interesting in that they find different results in their division.

During the latter time frame, the fund sample has also been divided according to the total net asset values (NAV) of each fund at the start date of each sub-period. The funds were divided into three groups depending on the size of the NAV. The lowest three deciles were assigned to a group of small funds and the highest three deciles were assigned to a group of large funds, and both of the groups consist of 11 funds. The alphas of the funds making up these subgroups were regressed on management fees. The middle group of remaining funds was not compared to the whole sample, as we were more interested in the largest and smallest funds for statistical analysis.

Results

In the sample of 38 funds present during the period from 2000 until 2014, there are 29 716 individual observations of weekly fund return.

In aggregate, fund returns are highly correlated to the market return, which is no surprise since funds should hold a large portion of the market in aggregate. Estimated beta range from 0.90 to 0.98, see Table 1. This points to a fallacy in the argument fund managers often make, namely that actively managed funds will go their own way, and that a private investor is paying for a skilled professional to compose an individually selected portfolio of the best available investment opportunities in the market. These investors have, in aggregate, not received the service they have been paying for.

Table 1. Estimated performance measures						
Time period	Fund category (NAV)	Observations	α (T-value)	β (T-value)	R^2	Management fee coefficient (T-value)
2000-2014	All	38	-0.01 (-1.55)	0.90 (-8.58)	0.013	0.013 (0.69)
2003-2007	All	38	-0.01 (-1,00)	0.94 (-3.81)	0.051	0.04 (1.40)
	Small	11	0.02 (0.74)	0.92 (-2.36)	0.051	0.08 (1.18)
	Large	11	-0.03 (-4.28)	0.97 (-1.93)	0.07	-0.02 (-0.83)
2009-2014	All	38	-0.002 (-0.23)	0.95 (-3.50)	0.073	0.04 (1.68)
	Small	11	0.013 (0.94)	0.95 (-1.65)	0.245	0.06 (1.71)
	Large	11	-0.01 (-1.12)	0.98 (-0.74)	0.002	-0.01 (-0.14)

Net alpha, Jensen's alpha, are all quite close to zero, which also point to there being no overall advantage from investing in funds to achieve excess return above that predicted by CAPM. Interestingly, the alpha values for the categories

of small funds were both positive, while the alpha values for the categories of large funds and for the whole sample were negative.

Figure 1. Alpha and Management fee, all funds 2000-2014
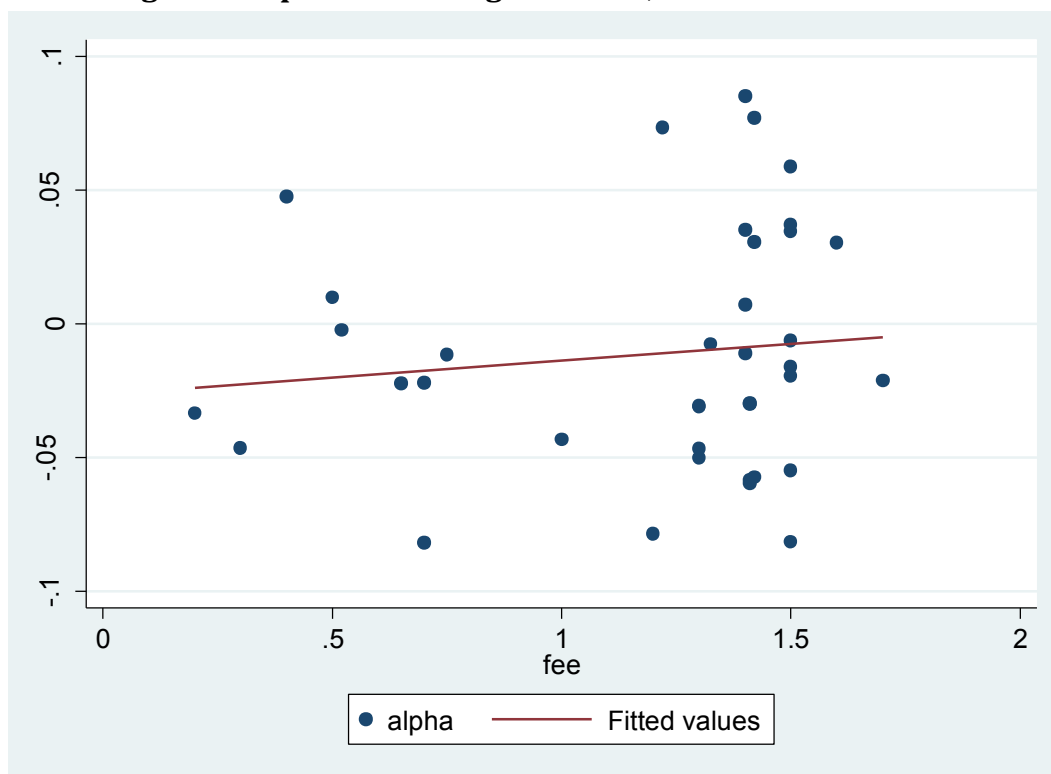
Each dot represents a fund's alpha and management fee in per cent from 2000 to 2014.
The fitted line shows the OLS regression line of best fit.

Alpha does increase with management fee, but alpha is still negative even for funds with higher fees, see Figure 1.

All of the R^2 values are very low, which point to a low explanatory power of the model in these estimations.

The management fee coefficients are also very low. For most categories, they are positive but well under 0.1. The T-values, however, do not show any statistical significance except for many of the beta values. The alphas are too small to point to an aggregate economical significance.

Overall, the model points to there being no significant gains from investing in funds with high management fees. The generally high T-values for beta values mean that in those samples the market proxy return explain above 90 per cent of the return of those funds.

Conclusions

In this paper we looked at whether an investor could expect higher return by investing in funds with relatively high management fees, as this could be seen as a cost of a superior service provided by the management team. We looked at the Swedish fund market, where we sampled funds investing in the Swedish equity market from 2000 until 2014. As a further investigation, we also looked at the results from 2003 until 2007 and from 2009 until 2014, where we also divided the sample into three groups depending on the size of the funds.

Alpha values predicted by CAPM were found to be negative for most time periods and size-groupings during the sub-periods. However, alphas for the groupings of smaller funds were positive, which was surprizing considering that funds operate in economies of scale, where extra assets can be invested practically at no extra costs, barring trading commissions. During these two periods of upward market trends, it could have been more profitable to invest in smaller funds. These results are, however, not statistically significant. We think that the better performance of these smaller funds could come from larger funds being content and from the fact that the sheer size of some funds makes it near impossible for them to compose a portfolio that will not mimic the weight of a market index in such a small market as the Swedish equity market. Engström (2004) found that part of this performance of smaller funds could be explained by them being able

to invest in small cap stocks, which have been performing better. We find similar results as earlier Swedish studies. Flam and Vestman (2014), which may be the one most similar to ours, find negative net alphas of 1.47 from 2002 until 2013. Dahlquist *et al.* (2000) found that the relationship between fees and fund performance for funds with preferential tax treatment was negative, and that the size of funds correlates negatively with performance. Lastly, Engström (2004) found a conflicting average alpha of 1.7% per year, but as Flam and Vestman (2014) comment, this may depend on the specific circumstances of his sample period 1996-2000.

Fama and French (2010) and Carhart (1997) have found that fund managers on average are unable to achieve a higher net return attributable to fund investors than the market index. Carhart finds that fees are negatively and statistically related to fund performance. We expected similar results for the Swedish market, in that higher fund fees do not translate into a higher risk-adjusted fund return. While we have not found statistically significant results supporting our expectations, we have certainly not found tendencies pointing in the opposite direction. The T values for betas point to the return of the general market being a statistically significant determiner for individual fund return. As such we would advocate investing in low fee funds, since higher fees do not seem to point to superior returns, but fund returns depend on the general market conditions.

We have not been able to control for survivorship bias in our sample. As such, fund returns may be overstated and the results could be different if funds indeed have been removed, merged or discontinued during our time period.

As for the generally low R^2 values present in all time periods and sub-groupings of funds, they point to the low explanatory power of the model. There are factors

other than management fee that do a better job of explaining excess return. We conclude that management fees are uncorrelated with fund excess return.

Beta values average 0.90 for the period from 2000 until 2014, which is relatively low when compared with the results from a pure alpha-beta factor CAPM of an equally weighted portfolio of mutual funds used by Fama and French (2010), where betas, as estimated by the model, are 1.01 with a t-statistic of 1.12. However, Engström (2004) found an average beta that is identical to our beta.

The question now is how to apply these findings to a real market situation. Several well-cited American studies have shown that management fees will result in lower return for investors. The manager cannot compensate well enough for this hurdle to generate excess return to his or her investors. We have shown that this seems to apply to the Swedish market as well. High management fees are a poor predictor for future returns, and an average investor should therefore try to avoid them.

Why do private investors not immediately withdraw all of their savings from expensive funds and put them into cheaper index funds instead? There is some kind of inertia here that makes investors uninterested or unwilling to change. One could also imagine that an average individual trusts his or her bank to give objective advice that will primarily benefit the individual, not the bank. Saving for retirement is a long-term project and the changes one makes today will not have a large impact for many, many years, which is why the importance of fair and sound advice early on is so much more crucial.

It is interesting to notice that part of the reason why the Internet brokers try to stress the importance of low fees is that it sets them apart from the old institution, *i.e.* traditional branch-banks and fund managers. This is one point

where they can be seen as the "good guys" that have the investor's interest at heart.

For future research, it would be interesting to look at funds during a downward-trending market, to see whether some funds perform better than others. It could also be interesting to include other factors in the model, than those in a standard CAPM. As we investigated an equal-weighted sample of funds, future research could also look at the question with value-weighted samples.

Also from a behavioural point of view, it would be interesting to look at how an individual about to invest would apply findings such as those presented here, when selecting funds.

Acknowledgements

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Appendix

Appendix 1 – Selection of funds

Ticker	Full name	Alpha (T-value)	Beta (T-value)	R²	n	Management fee
AKSVERA SS	AKTIE ANSVAR SVERIGE-A-ACC	0.007 (0.13)	0.888 (44.41)	0.717	780	1.4
AKTIESV SS	AMF AKTIEFOND SVERIGE	0.048 (0.89)	0.890 (45.7)	0.728	781	0.4
AKTOPSV SS	AKTIESPARARNA TOPP SVERIGE	-0.047 (-0.82)	0.986 (47.64)	0.744	782	0.3
CARCANC SS	SKANDIA CANCERFONDEN	-0.029 (-0.53)	0.913 (44.95)	0.721	782	1.41
CARVARL SS	SKANDIA VARLDSNATURFONDEN	-0.030 (-0.53)	0.904 (44.15)	0.714	782	1.41
CATREAV SS	CATELLA-REAVINSTFOND	-0.006 (-0.10)	0.966 (43.28)	0.706	782	1.5
CATSVPA SS	CATELLA SVERIGE INDEX	-0.012 (-0.25)	0.938 (55.23)	0.796	782	0.75
DGAKTIE SS	DIDNER & GERGE AKTIEFOND	0.074 (1.33)	0.978 (48.77)	0.753	782	1.22
DSVERIG SS	DANSKE INVEST SVERIGE	-0.008 (-0.13)	0.951 (44.45)	0.717	781	1.325
ENTSVER SS	ENTER SVERIGE	-0.021 (-0.41)	0.963 (50.38)	0.764	782	1.7
ENTSVFK SS	ENTER SVERIGE PRO	0.010 (0.18)	0.965 (48.14)	0.748	782	0.5
FOLAKSA SS	FOLKSAMS AKTIEFOND SVERIGE	-0.082 (-1.45)	0.968 (47.28)	0.743	776	0.7
HANDAKI SS	HANDELSBANKEN SVERIGE INDEX	-0.022 (-0.39)	0.908 (43.88)	0.711	782	0.65
HBOFOND	HANDELSBANKEN BOFOND	-0.082 (-1.38)	0.936 (43.60)	0.709	782	1.5
HQSVERA SS	CARNEGIE SVERIGEFOND	0.035 (0.62)	0.848 (41.46)	0.687	782	1.4
HREAVIN SS	HANDELSBANKEN SVERIGEFOND	-0.043 (-0.69)	0.951 (41.89)	0.692	782	1
HSMABOL	HANDELSBANKEN SVENSKA SMABOL	0.037 (0.55)	0.807 (33.10)	0.584	782	1.5
LANSMAB SS	LANSFORSAKRINGAR SMABOLAGSFO	0.030 (0.38)	0.705 (24.38)	0.432	782	1.6
LANSVER SS	LANSFORSAKRINGAR SVERIGE AKT	-0.030 (-0.50)	0.893 (39.73)	0.669	782	1.3
MERNOAL	NORDEA ALLEMANSFOND ALFA	-0.060 (-1.11)	0.856 (44.09)	0.713	782	1.41
MERNOOL	NORDEA ALLEMANS-FOND OLYMPIA	-0.055 (-1.03)	0.857 (44.34)	0.716	782	1.5

MERNOSV	NORDEA SVERIGEFOND	-0.058 (-0.96)	0.944 (42.99)	0.711	754	1.41
OHMSVER	OHMAN SVERIGEFOND	-0.079 (-1.36)	0.961 (45.82)	0.730	780	1.2
ROBAIVA SS	ALLEMANSFOND KOMPLETT	-0.058 (-1.12)	0.810 (43.55)	0.708	782	1.42
ROBEXPA SS	SWEDBANK ROBURS EXPORTFOND	0.031 (0.53)	0.973 (46.45)	0.734	782	1.42
ROBSVMA	SWEDBANK ROBUR SVER FD MEGA	-0.002 (-0.05)	0.948 (49.59)	0.759	782	0.52
SEBSSCR SS	SEB SVERIGE SMABOLAG CHANS/R	0.0589 (0.84)	0.789 (31.12)	0.553	782	1.5
SEBSVA1 SS	SEB SVERIGEFOND	-0.0467 (-0.82)	0.938 (45.20)	0.723	782	1.3
SEBSVA2 SS	SEB SVERIGEFOND STORA BOLAG	-0.050 (-0.87)	0.912 (43.26)	0.705	782	1.3
SEBSVCR SS	SEB SVERIGE CHANS/RISK	-0.031 (-0.46)	0.955 (39.10)	0.662	782	1.3
SEBSVSM SS	SEB SVERIGE SMABOLAGSFOND	0.034 (0.53)	0.778 (33.22)	0.585	782	1.5
SEBSVST SS	SEB SVERIGE STIFTELSEFOND	-0.016 (-0.27)	0.978 (45.83)	0.729	782	1.5
SKAASMS SS	SKANDIA SMABOLAG SVERIGE	0.085 (1.29)	0.800 (33.37)	0.588	782	1.4
SKAASVE SS	SKANDIA SVERIGE	-0.011 (-0.20)	0.911 (46.24)	0.732	782	1.4
SPPAKSV SS	SPP AKTIEFOND SVERIGE	-0.022 (-0.37)	0.939 (43.97)	0.723	742	0.7
SPPAKTS SS	SPP AKTIEINDEX SVERIGE	-0.034 (-0.53)	0.936 (41.02)	0.683	782	0.2
SWSMSVE	SWEDBANK ROB SMABOL SVERIGE	0.077 (1.11)	0.800 (31.74)	0.563	782	1.42
TRETIII SS	NORDEA SWEDISH STARS	-0.020 (-0.35)	0.926 (45.70)	0.728	782	1.5

Appendix 2 – search criteria from the Bloomberg database

Bloomberg data	
Selected screening criteria	**Matches**
Universe criteria	573240
Fund geographical focus: Sweden	773
Fund type: Mutual fund	263
Country of domicile: Sweden	220
Asset class focus: Equity	133
Fund primary share class = Y	123
Analytic criteria	
Total return 10Y	123
Total return 5Y	123
Total return 3Y	123
Total return 1Y	123
History length	123
Fund manager stated fee	123
Fund total assets (mil)	123