Swedish Mutual Funds Performance
2000-2007

Master Degree Project in Economics and Finance
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Preface

In the past, business was on short scale and was easily managed by a common person but with the passage of time this activity has become vast and complicated. Now a day, it is impossible for a common person to run the business especially in this period of competition. The situation demands energetic duly qualified and experienced investment management specialist who could meet the challenges of this age of global modernization. Department of Economics and Finance at University of Skövde undertake to produce financial management specialist fully aware of ins and outs of the business management and capable of meeting the competition.

Master thesis is an indispensable part of Master in Finance and Master in Economics and Finance program. The philosophy behind this is to orient the master students with insights, experiences with and improvement of skills in practical scientific business and management research. Students does research a problem related to academic field of their degree program, from problem formulation, analysis to describing findings, conclusions and future research proposals.
Acknowledgement

We would like to express our heartfelt thanks to all people involved in this research thesis. Special thanks are due to our thesis coordinator, Hans Mörner, for his support, enthusiasm, advice and encouragement. We also want to thank Max Zamanian who taught us the course of Portfolio Investment. We want to thank the Morningstar Team who supplied us with helpful statistics, and to those mutual fund companies who facilitate us on requests regarding fund statistics. We also like to thank the Swedish Investment and Fund Association whose previous research and updated statistics of last years were easily accessible and helpful to add the facts of Swedish Mutual Funds. We would like to thank to Jakob working in Morningstar Sweden and Pia Nilsson working at Fondbolangens Sweden, they provide us very useful information about the mutual funds returns, their inception dates, their net asset value (NAV), fund age, costs etc. At the end, we would like to thank to Louise Holmn, her moral support, motivation and timely follow up helps us to complete this task.

Skövde Sweden, June 2008

__________________               _________________
Arshad Ali Javed           Azhar Iqbal
Abstract

Mutual funds are the common name for the open-end investment companies. This is the dominant investment company today, accounting for roughly 90% of investment comply assets. Assets under management in the mutual fund industry in United States surpassed $12.068 trillion by the end of April 20081.

Mutual funds performance is one of the most frequently studied topics in investment area in most countries. The reason for this popularity is availability of data and the importance of mutual funds as vehicles for investment in stock market for both individual and institutions. Since mutual funds have become popular the research has also started to include the ways of finding the right mutual funds. Although the price shares and the income from them may go down as well as up but choosing the right mutual funds can have considerable effects on investors ending wealth. The thesis examines the past performance of mutual funds as a criterion for investors' future choices. In particular, it examines if mutual funds which invested in the Swedish stock market. Swedish funds assets have passed the trillion kronor mark in March 2005, and it is rapidly increasing. We started our analysis by the funds attributes influenced the returns. In our study hypotheses are the fund characteristics i.e. popularity growth cost and management variables are included. These attributes are most frequently used by finance academies to simple and multiple regression analysis is used to test these hypotheses. We do not find any strong evidence that the past performance is a guide to future performance. As most of the results studies, our results may be subject to survivorship bias, because we have included only 33 funds in our sample during the last eight years 2000-2007.

Mostly data is collected from Morningstar Sweden, the Swedish Investment fund association and secondary data from some of the mutual funds annual reports. We analyze the data for last eight years from 2000-01-01 to 2007-12-31 and the funds which are invested mostly in Swedish securities.

Before and during our thesis different research studies and financial articles were studied relevant to our research thesis. Our research study results shows that the attributes which have some impact on mutual funds returns are risk, fund size, age, fund turnover and management tenure. The results indicate that the hypothesized relationship between mutual funds performance and the explanatory variables are generally upheld. The study provides a comprehensive examination of recent Swedish mutual funds performance by analyzing the funds returns and funds attributes affecting the funds performance and an effort to link performance to funds specific characteristics.

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1 Investment Company Institute (Official survey of mutual fund industry)


**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IPS</td>
<td>Individual Pension Savings</td>
</tr>
<tr>
<td>NAV</td>
<td>Net Asset Value</td>
</tr>
<tr>
<td>PB</td>
<td>Price to Book Ratio</td>
</tr>
<tr>
<td>PC</td>
<td>Price to Cash Flow</td>
</tr>
<tr>
<td>PE</td>
<td>Price Earning Ratio</td>
</tr>
<tr>
<td>PPM</td>
<td>Premium Pension Authority</td>
</tr>
<tr>
<td>TER</td>
<td>Total Expenses Ratio</td>
</tr>
<tr>
<td>TKA</td>
<td>Total Cost Proportion</td>
</tr>
<tr>
<td>EcoWin</td>
<td>A Database developed by Reuters</td>
</tr>
<tr>
<td>SIX Pro Trader</td>
<td>A data base developed by SIX</td>
</tr>
</tbody>
</table>

_Keywords:_ Mutual funds, Mutual funds characteristics, Mutual funds performance
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1) Introduction

How can we evaluate of a portfolio management? A central problem in finance (and especially portfolio management) has been that of evaluating the “performance” of portfolios of risky investments.

How different managerial attributes, fund characteristics affect the performance of mutual funds industry in Sweden? To answer this question we begin our empirical study with the problem discussion, hypothesis, problem definition and justification of the study. We discuss the Swedish pension system and their financing. From there we move to the history of mutual funds in Sweden, their net assets, net savings, funds savings by categories. In methodology, we have discussed about the literature review, selection of sample size of mutual funds, data collection, and data processing, selection of appropriate benchmark, statistical methodology and validity and reliability of data.

In the chapter of frame of reference we discussed the theoretical foundation of efficient market hypothesis and portfolio management, fund characteristics influencing the performance of mutual funds. We then turn into the empirical results from the regression analysis and finally made analysis and finally conclusion and future research study.

a) Background

The 21st century began in dramatic fashion with the bursting of stock market and IT bubble in March 2000. This has been preceded by seven years of upturn in the stock market, but the actual bubble has been inflated over a period of only a few months. The result was one of the longest and deepest downturns ever, with concerns rising to particularly high levels after the terrorist attack on the USA on 11th September 2001.

Equity stocks are primarily invested in stocks although they might be on the discretion of portfolio manager. They can also hold fixed income or other type of securities. Funds usually hold between 4% and 5% of the total assets in money markets securities to provide the liquidity necessary to meet the potential redemption of shares.

Mutual funds accomplish diversification by collecting funds from a wide group of investors and investing them in many securities all over the world. Mutual funds implement two types of investment strategies; Active strategies invest in a variety of financial products, whereas passive strategies invest in a market index, Elton and Gruber, (1995); Sharp, Alexander and Bailey, (1995).

The idea of diversification is age-old. The phrase “don’t put all your eggs in one basket” existed long before modern finance theory. It was not until 1952, however, that Harry Markowitz published a formal model of portfolio selection embodying diversification principles. His model is precisely step one of portfolio management: the identification of the efficient set of portfolios, or, as it is often called, the efficient frontier of risky assets. His model shows that investors should require greater expected return for greater risk and over the time they will be rewarded against the risk factors. Methods of risk adjusted
performance evaluation using mean-variance criteria came on stage simultaneously with the capital asset pricing model (CAPM). Jack Treynor\(^1\), William Sharpe\(^2\), and Michael Jensen\(^3\). (Bodie Investments 2002).

Over recent years, many economic researchers have done research on mutual funds. Usually, individual investors do not have the necessary knowledge concerning different firms and the investment prospects associated with their securities. There are thousands of stocks, bonds and other more complicated financial instruments in international capital and money markets that demand specialized knowledge in order to have profitable performance. Thus, individual investors are not able to invest in those markets because they do not have the correct information and the expenses are large. Because of this, individual investors are unable to diversify optimally their portfolio. The Swedish market is home to a wide range of investment funds, a large number of which offer a variety of investment orientation, risk levels and prices (fees). Recent years have seen both the establishment of numerous foreign fund management companies in the Swedish market and the launch of several new Swedish fund management companies.

### b) Problem Discussion

Early mutual fund studies (i.e. Jensen 1968, Sharpe 1966, Treynor 1965) support the efficient market while denying the fund manager ability to beat the risk adjusted market portfolio; however challenged by Inppolito 1993, which reached the opposite conclusion. Due to volatile nature of individual funds performance, the identification of superior performing funds remains a controversial topic and still can’t resolved with a lot of academic research. Long way investors are finding the successful investment strategy to beat the market but were unsuccessful due to the efficient market. Previous studies have also found that investment objective significantly influence the fund returns in a given year, although the direction of the impact may change from year to year. (Laurie Prather, William J. Bertin, Thomas Henker 2002)

Blake, Lehmann, and Timmerman (1999) demonstrate that asset allocation for multiple asset class portfolios is an important determinant of the total return achieved by portfolio managers. Wermers (2000) finds evidence that a mutual fund managers’ stock-picking talent is a significant determinant of a fund’s overall performance. Portfolio configuration, which defines the composition of the fund’s portfolio with reference to the stocks held, is therefore a critical element explaining fund performance and tracking error (Keim 1999).

In our research, we tried to identify that either integration of fund characteristics influence the return of equity mutual funds. Academics research claims that different fund characteristics are useful devices in selecting the top-performing funds or eliminating the worst. According to Laurie Prather, William J. Bertin, and Thomas

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Henker 2002, they have divided the fund attributes and/or fund characteristics into four broad categories i.e. popularity variables, growth variable (risk), cost variables and management variables.

i) **Popularity Variables**

This measures for demand for fund or fund category which reflects the buying and selling pressure and the funds ability to adapt that pressure. The popularity of funds may be conditional relative to its past performance; either it meets the investment objectives outlined in its prospectus. Thus the popularity variables include total fund size, funds market capitalization and net asset value (NAV).

ii) **Growth Variables**

Growth (risk) variable measures those factors which impact the future performance or grown prospects of a fund with the general expectation being that growth factors positively influence performance. We included price earnings ratios (PE), price to book ratio (PB) and price to cash ratio (PC), there are some other factors of diversification level and relative holdings can also be considered. Price earning, price to book, and price to cash flow compare the share price to value-impacting accounting variable, such as earnings, book value and cash flow.

iii) **Cost Variable:**

Cost variables measures the expenses of the funds incurred during the normal course of business. These measures include the expenses ratio (TKA), front end load, deferred load and assets of funds complex. Expenses ratio represents the percentage of fund assets paid as management fee including manager’s compensation and operating expenses such as research support, administrative fees and all other asset-based cost incurred by the fund excluding brokerage charges.

iv) **Managerial Variables**

Managerial variables attempt to capture managerial and organization attributes as well as monitoring mechanism that bind manager to stated funds investment objectives which ultimately affect the performance of fund. Managerial attributes includes turnover, funds under management, management tenure, fund age, minimum initial purchase, and management structure.

c) **Problem Definition**

We have discussed about the background, current situation of Swedish funds market and variables which are affecting the mutual funds performance. Managerial attributes affecting the mutual funds performance has been studied by different academics and they have suggested how efficiently investment strategies can be made to gain a profit on stocks and mutual funds. Although past performance is not indicating the future gains, but the previous studies shows that fund characteristics affect the performance of mutual
funds. Some academics have studied the Swedish mutual funds industry and fund characteristics affecting the mutual funds performance. We also have added our research analysis for the last eight years of performance of funds industry and special focus is on the mutual fund characteristics affecting the performance. We have tried to answer the following question.

*How the mutual funds characteristics influence the Swedish mutual funds industry?*

d) **Purpose of Study**

Our purpose is to investigate whether managerial attributes and mutual funds characteristics affecting the funds performance and either it best indicate the future performance. Different variables are used and tested by using the regression analysis.

e) **Hypothesis Testing**

In our study dependent variable is mutual fund return and factors affecting (popularity, growth, cost and managerial variables) the performance are independent variables.

H0: Risk does not influence the return.
H1: Funds including the high risk generate higher return then funds including the low risk.

H0: Fund size does not influence performance of mutual funds.
H2: Big funds perform worse than small funds.

H0: Market capitalization does not influence the return of mutual funds.
H3: Mutual funds return influenced with the market capitalization.

H0: NAV does not impact the return.
H4: NAV does impact the return.

H0: Growth variables (PE, PB and PC) influence the return of mutual funds.
H5: Growth variable does influence the return.

H0: Expenses has no impact on the returns of mutual funds.
H6: Funds with high expenses generate higher return than low expenses.

H0: Turnover does not influence the return.
H7: Funds turnover impacts return of mutual funds.

H0: Management tenure has no impact on the return of funds.
H8: Management tenure impact the return.

H0: Fund age does not influence the performance of mutual funds.
H9: Fund age impact the return of mutual funds.
We will accept the null hypothesis if managerial attributes does not influence the performance and alternatively reject the null hypothesis if these managerial attributes impact the return of mutual funds.

**f) Justification of Study**

We analyzed how these funds characteristics influencing the mutual funds, their correlation, comparison with the previous research studies and future research proposals.

**g) Study Methodology**

We used Microsoft Excel to analyze the data and simple regression analysis, correlation coefficients are calculated. We used the data of mutual funds for the last eight years 2000-2007.

**h) Scope of the Study**

We included 33 mutual funds out of 192 different categories of mutual funds operating in Sweden. The data is included for the last eight years about the returns and other managerial attributes i.e. market capitalization, turnover, management tenure, fund age etc.

**i) Plan of Study**

The study is divided mainly into six chapters and then subdivided into different sub sections. Chapter one includes introduction, background, problem discussion, problem definition, purpose of study, justification of study, study methodology, scope of study, plan of study. Chapter two gives the overview of Swedish pension system and Swedish funds trends. Chapter three discuss about the methodology, literature review, selection process and statistical methodology used to analyzed the data and discuss about the validity and reliability of data.

Chapter four discuss frame of reference, efficient market hypothesis, portfolio management and funds characteristics influencing the performance of mutual funds. Chapter five includes the analysis by using the descriptive statistics and regression analysis. The last chapter six is about the conclusion and recommendations and then finally references and appendix at the end of the thesis.

**j) Type and Source of Data**

We used secondary data which is collected from the Morningstar, EcoWin pro trader, The Swedish Investment Funds Association. Monthly mutual funds returns, market capitalization, fund size, price to book ratio, price to cash flow, price to earning ratio, fund age, management tenure, and management structure are included and discuss how these variables influence the mutual funds returns.
2) Overview of Swedish Pension System and Swedish Funds Trends

   a) Swedish Pension System

Sweden has a long history of social security. Over the last century the system has grown. Nowadays the costs of the total welfare system, health care and social services included, correspond to about 36 per cent of the Gross Domestic Product. The social insurance system, including the unemployment insurance and family benefits, accounts for approximately 20 per cent of the GDP.

At the end of 2006, the premium pension system included 779 funds, administered by 83 different fund managers. When an insured person retires, the PPM sells shares in the retiree’s funds, and the proceeds are paid out as a pension. Out of 779 funds 571 equity funds are in 2006, which has been continuously increased form 61 in the year 2004.

Table 2.1 Funds in the Premium Pension System 2006

<table>
<thead>
<tr>
<th>Number of Registered Funds 2006</th>
<th>Managed Capital (SEK billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec-06</td>
</tr>
<tr>
<td>Equity Funds</td>
<td>571</td>
</tr>
<tr>
<td>Mixed Funds</td>
<td>53</td>
</tr>
<tr>
<td>Generation Funds</td>
<td>30</td>
</tr>
<tr>
<td>Interest Funds</td>
<td>124</td>
</tr>
<tr>
<td>Premium Saving Fund (Equity Fund)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>779</strong></td>
</tr>
</tbody>
</table>

Data for the early years 2000-2003 is not available.

When the opportunity to invest premium pensions arose two out of three choose mutual funds actively. Why holding equity mutual funds, a number of articles are written by the researchers. The list of includes (Gurber 1996):

- Customer Service- Including recordkeeping and the ability to move money around among funds
- Low transaction costs
- Diversification
- Professional Management-Security Selection

The first three reasons of holding mutual funds are provided by both active mutual and index funds but the professional management distinguishes an active mutual funds.
b) Swedish Funds Trends

In this section we discuss the history of mutual funds industry, the trend of funds assets, funds assets by categories, net saving trends, funds assets and net savings by categories.

In Swedish funds markets these are the major events happened in the period from 2000 to 2007:

- Funds assets have increased from SEK 855 billion to SEK 1,571 billion, passing the trillion kronor mark in March 2005.
- Equity funds’ share of fund assets has fallen from 69 percent to 57 percent, while fixed income funds’ share has increased from 14 percent to 23 percent.
- Interest in hedge funds and funds has increased. SEK 16 billion was invested in funds of funds between January 2004 and June 2005, corresponding to 15 percent of new savings.
- The autumn of 2000 saw the first investment in premium pension funds. The opportunities for choosing funds in fund-based insurance for occupational pensions have also increased. Pension saving (fund insurance, IPS and PPM) now accounts for half of households’ fund assets, compared with 25 percent in 2000.
- The percentage of the Swedish population (aged 18 to 74) who save in funds, excluding PPM, has increased from 66 percent to 74 percent and to 94 percent if PPM is included. And 2 out of every 3 children have funds.
- Competition has increased. The number of funds on the Swedish market has increased from approximately 1,400 to 2,400. The four banks’ investment fund companies’ share of fund capital has fallen from 85 percent to 68 percent.
- A new Investment Funds Act came into force in 2004, followed by new regulations and a new code of conduct for investment fund companies.
- The 21st century began with a severe downturn in the stock market, which lasted for three years before a new upturn occurred in 2003.
- The interest market has been characterized by low interest rates, which have fallen still further during the period. The repo rate of Riksbanken (Sweden’s Central Bank), for example, has been cut from 3.25 percent to 1.50 percent.
- Fluctuations in the US dollar exchange rate have had a major impact on funds that invest in foreign securities. The exchange rate against the Swedish kronor has varied between SEK 6.50 and SEK 11.

c) Funds Assets Trend

Swedish fund assets have increased from SEK 855 billion to SEK 1,571.7 billion since the start of the new millennium. This positive trend has not come from a consistent annual increase, however; rather it has been characterized by the initial downturn and subsequent upturn in the stock market.

1“In the wake of the stock market bubble” Fund Saving 2000-2005 by Pia Nilsson, The Swedish Investment Fund Association
At their peak in the March 2000, before the downturn began, fund assets totaled SEK 916 billion, but after the subsequent fall, it would take four years for fund assets to return to the same level. At their lowest in September 2002, fund assets totaled as little as SEK 672 billion. March 2005 saw fund assets pass the trillion kronor mark (SEK 1,000 billion) for the first time ever and currently at the end of December 2007 it is SEK 1,571.7 billion.

**Graph 3.1: Fund Assets by type of fund, SEK billion**

Equity funds currently account for 57 percent of fund assets, compared to 69 percent at the turn of the century. The previous high percentage was due to partly to historically high net savings in equity funds and partly to an extremely positive stock market value trend during 1990s. Interest in fixed income funds has increased during the period, with fund assets held in fixed income funds more than doubling since 2000 to their current level of approximately SEK 353 billion.

**Graph3.2: Fund Assets by type of Fund**

Source: The Swedish Investment Fund Association

Equity funds currently account for 57 percent of fund assets, compared to 69 percent at the turn of the century. The previous high percentage was due to partly to historically high net savings in equity funds and partly to an extremely positive stock market value trend during 1990s. Interest in fixed income funds has increased during the period, with fund assets held in fixed income funds more than doubling since 2000 to their current level of approximately SEK 353 billion.

Source: The Swedish Investment Fund Association

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2 Ex. Sjunde AP-fonden’s Premium savings fund (SEK 53 billion as of 30th June 2005).
d) The Net Savings’ Trend

Savings have remained at a high and relatively consistent level throughout the period. Annual net savings in funds are on the order of SEK 60 billion, approximately SEK 13 billion of which invest via PPM (ex. Sjunde AP-fonden). The high level of savings in 2000 was due to the investment of four years’ accumulated premiums for premium pensions at that time.

**Graph 3.3: Net Savings, SEK billion**

Net savings during 2007 have totaled SEK 27 billion. At first glance, the stock market turbulence does not seem to have affected new saving in funds, but the statistics show that the last five years have been eventful ones.

In 2000, virtually all new savings were made in equity and balanced funds. This was due partly to the fact that a large part of the new savings went to premium pension (approximately SEK 34 billion), which are dominated by equity funds and partly to many people being attracted by the sharp upturn in the stock market in the late 1990s. When the market downturn began in 2000, savings in equity funds initially remained unaffected and it was not until a year later, when it became apparent that the downturn would be longer and deeper than many had previously believed that savers began to redirect their savings. As a result, money market funds became the investment of choice for funds savers’ new savings in 2001 and 2002. Net savings in equity funds remained positive throughout the stock market downturn, largely due to households’ pension savings in equity. In this year net savings in equity funds decreases and remained only 9 percent of the total net savings, while interest in funds with lower risk levels has remained constant. The interest in funds of funds that picked up during the autumn of 2003 when several of the major players introduced this type of funds in another sign of savers’ increased risk.

Source: The Swedish Investment Fund Association
awareness. The distribution of new savings between equity and interest-related funds has been relatively even in 2003 and 2004.

e) Fund Assets and Net Savings by Category

Table 3.1: All Type of Funds Assets by Category

<table>
<thead>
<tr>
<th></th>
<th>2000 (SEK Million)</th>
<th>%</th>
<th>2007 (SEK Million)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedish households, direct inv.</td>
<td>495,180</td>
<td>56</td>
<td>543,191</td>
<td>33</td>
</tr>
<tr>
<td>IPS (Individual Pension Saving)</td>
<td>22,998</td>
<td>3</td>
<td>51,149</td>
<td>3</td>
</tr>
<tr>
<td>Unit linked</td>
<td>175,161</td>
<td>20</td>
<td>407,894</td>
<td>25</td>
</tr>
<tr>
<td>PPM (The Premium Pension Authority)</td>
<td>50,298</td>
<td>6</td>
<td>312,173</td>
<td>19</td>
</tr>
<tr>
<td>Non profit institutions serving households</td>
<td>41,359</td>
<td>5</td>
<td>58,831</td>
<td>4</td>
</tr>
<tr>
<td>Swedish corporations</td>
<td>84,869</td>
<td>10</td>
<td>224,129</td>
<td>14</td>
</tr>
<tr>
<td>Others</td>
<td>18,191</td>
<td>2</td>
<td>56,294</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>888,056</td>
<td>100</td>
<td>1,653,661</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The Swedish Investment Fund Association

Households’ direct savings make up the largest part-approximately 33 percent-of funds assets. Households’ direct savings have however declined as a percentage of funds assets since the start of 2000, when they accounted for approximately 56 percent. IPS, PPM and fund insurance have collectively increased from SEK 248 billion at the beginning of 2000 to their current level of SEK 770 billion, corresponding to a percentage increase from 29 percent to 47 percent. Premium pension savings now account for 19 percent of fund assets. Companies and other sectors have increased their share of fund assets during the period.

Households’ direct savings in equity funds make up the largest part-approximately 60 percent but it has been decreased by half at the end of this year. Share of PPM has increased from SEK 107 billion approximately 7 percent to SEK 255 billion 26 percent at the end of 2007.

Table 3.2: Equity Funds Assets by Category

<table>
<thead>
<tr>
<th></th>
<th>2000 (SEK Million)</th>
<th>%</th>
<th>2007 (SEK Million)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedish households, direct inv.</td>
<td>362,452</td>
<td>60</td>
<td>315,382</td>
<td>32</td>
</tr>
<tr>
<td>IPS (Individual Pension Saving)</td>
<td>18,176</td>
<td>3</td>
<td>37,732</td>
<td>4</td>
</tr>
<tr>
<td>Unit linked</td>
<td>107,848</td>
<td>18</td>
<td>193,542</td>
<td>20</td>
</tr>
<tr>
<td>PPM (The Premium Pension Authority)</td>
<td>43,461</td>
<td>7</td>
<td>255,086</td>
<td>26</td>
</tr>
<tr>
<td>Non profit institutions serving households</td>
<td>16,893</td>
<td>3</td>
<td>19,776</td>
<td>2</td>
</tr>
<tr>
<td>Swedish corporations</td>
<td>43,251</td>
<td>7</td>
<td>133,371</td>
<td>13</td>
</tr>
<tr>
<td>Others</td>
<td>10,241</td>
<td>2</td>
<td>37,046</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>602,321</td>
<td>100</td>
<td>991,935</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The Swedish Investment Fund Association

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3 Source: The Swedish Investment Fund Association’s quarterly statistics, which include the Association’s members and Sjunde AP-fonden. The statistics were first kept in 2000, and 31st March 2000 was hence the first time that fund assets were divided up by category.
As the table below shows much of the net savings total during the period has come via, PPM (SEK 233 billion) and unit linked (SEK 213 billion), while households’ direct savings in funds i.e. “ordinary” fund savings has accounted for SEK 22 billion. The difference was greatest during the first three years of period while households’ direct savings via unit linked have remained more or less high in 2007.

It is possible that one of the reasons for this inability of savings in unit linked to maintain the high new savings level of the first few years was the reduced level of interest in endowment insurance. Saving in endowment insurance was in part motivated by tax benefits in offered for transfers of capital between generations but the abolition of inheritance and gift tax at the end of 2004 eliminated this motivation. The taxation of unit linked whereby an annual standard income tax is paid irrespective of the value trend of the fund units is unfavorable when the market is in a downtown and this may also have affected interest in this type of saving.

Table 3.3: All Type of Funds Net Savings by Category (SEK million)

<table>
<thead>
<tr>
<th></th>
<th>Swedish households, direct inv.</th>
<th>IPS (Individual Pension Saving)</th>
<th>Unit linked</th>
<th>PPM (The Premium Pension Authority)</th>
<th>Non profit institutions serving households</th>
<th>Swedish corporations</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>4,834</td>
<td>3,689</td>
<td>38,277</td>
<td>52,644</td>
<td>2,061</td>
<td>13,752</td>
<td>2,910</td>
<td>118,167</td>
</tr>
<tr>
<td>2001</td>
<td>9,048</td>
<td>3,422</td>
<td>26,863</td>
<td>17,446</td>
<td>1,460</td>
<td>11,599</td>
<td>1,869</td>
<td>71,708</td>
</tr>
<tr>
<td>2002</td>
<td>14,312</td>
<td>2,984</td>
<td>24,611</td>
<td>19,159</td>
<td>-553</td>
<td>9,186</td>
<td>1,602</td>
<td>71,301</td>
</tr>
<tr>
<td>2003</td>
<td>21,900</td>
<td>3,325</td>
<td>18,599</td>
<td>20,024</td>
<td>3,624</td>
<td>14,263</td>
<td>3,659</td>
<td>85,394</td>
</tr>
<tr>
<td>2004</td>
<td>17,777</td>
<td>3,528</td>
<td>21,784</td>
<td>21,655</td>
<td>1,691</td>
<td>9,334</td>
<td>91</td>
<td>73,921</td>
</tr>
<tr>
<td>2005</td>
<td>10,837</td>
<td>3,546</td>
<td>28,618</td>
<td>22,452</td>
<td>3,364</td>
<td>23,753</td>
<td>6,782</td>
<td>99,351</td>
</tr>
<tr>
<td>2006</td>
<td>-19,207</td>
<td>2,430</td>
<td>25,219</td>
<td>49,048</td>
<td>4,661</td>
<td>20,899</td>
<td>1,620</td>
<td>84,671</td>
</tr>
<tr>
<td>2007</td>
<td>-37,232</td>
<td>1,946</td>
<td>30,483</td>
<td>30,283</td>
<td>-2,118</td>
<td>3,985</td>
<td>679</td>
<td>28,026</td>
</tr>
<tr>
<td>Total</td>
<td>22,269</td>
<td>24,869</td>
<td>212,513</td>
<td>232,713</td>
<td>14,191</td>
<td>106,771</td>
<td>19,213</td>
<td>632,538</td>
</tr>
</tbody>
</table>

Source: The Swedish Investment Fund Association

Just over SEK 232 billion of net savings during the period have been made in premium pension. In 2000 introduction of the premium pension system shows that approximately SEK 49 billion invested in year 2006 and 30 billion in 2007 via PPM.
Table 3.4: Equity Funds Net Savings by Category (SEK million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Swedish Households, Direct Inv.</th>
<th>IPS (Individual Pension Saving)</th>
<th>Unit Linked</th>
<th>PPM (The Premium Pension Authority)</th>
<th>Non profit institutions serving households</th>
<th>Swedish Corporations</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>950</td>
<td>3,236</td>
<td>28,306</td>
<td>44,609</td>
<td>1,057</td>
<td>7,954</td>
<td>2,198</td>
<td>88,309</td>
</tr>
<tr>
<td>2001</td>
<td>-8,041</td>
<td>2,617</td>
<td>10,353</td>
<td>14,960</td>
<td>249</td>
<td>4,201</td>
<td>1,290</td>
<td>25,630</td>
</tr>
<tr>
<td>2002</td>
<td>-1,950</td>
<td>2,175</td>
<td>5,363</td>
<td>16,487</td>
<td>-558</td>
<td>5,595</td>
<td>1,251</td>
<td>28,364</td>
</tr>
<tr>
<td>2003</td>
<td>1,966</td>
<td>2,523</td>
<td>10,076</td>
<td>17,044</td>
<td>63</td>
<td>8,402</td>
<td>1,431</td>
<td>41,505</td>
</tr>
<tr>
<td>2004</td>
<td>-167</td>
<td>2,467</td>
<td>9,676</td>
<td>16,921</td>
<td>-1,104</td>
<td>3,564</td>
<td>1,256</td>
<td>32,613</td>
</tr>
<tr>
<td>2005</td>
<td>-4,541</td>
<td>2,145</td>
<td>8,506</td>
<td>17,330</td>
<td>700</td>
<td>9,983</td>
<td>4,435</td>
<td>38,558</td>
</tr>
<tr>
<td>2006</td>
<td>-22,347</td>
<td>1,154</td>
<td>1,007</td>
<td>38,743</td>
<td>-1,490</td>
<td>2,613</td>
<td>-1,580</td>
<td>18,100</td>
</tr>
<tr>
<td>2007</td>
<td>-31,054</td>
<td>678</td>
<td>591</td>
<td>20,431</td>
<td>-7</td>
<td>8,526</td>
<td>2,136</td>
<td>1,301</td>
</tr>
<tr>
<td>Total</td>
<td><strong>-65,183</strong></td>
<td><strong>16,996</strong></td>
<td><strong>73,878</strong></td>
<td><strong>186,526</strong></td>
<td><strong>-1,091</strong></td>
<td><strong>50,837</strong></td>
<td><strong>12,416</strong></td>
<td><strong>274,380</strong></td>
</tr>
</tbody>
</table>

Source: The Swedish Investment Fund Association

The above table shows that out of SEK 633 billion of all types of funds net savings the proportion of equity funds net saving is SEK 274 billion. The net savings in year 2003 total net savings were SEK 42 billion which were decreased in corresponding years. And it has dramatically decreased from SEK 18 billion in 2006 and now only SEK 1 billion in 2007.
3) Literature Review

The concept of portfolio “performance” has at least two distinct dimensions:

1) The ability of the portfolio manager or security analyst to increase returns on the portfolio through successful prediction of future security prices, and

2) The ability of the portfolio manager to minimize (through “efficient” diversification) the amount of “insurable risk” born by the holders of the portfolio.

These two dimensions were highlighted by Michael C. Jensen in his studies in May 1968 “The Performance of Mutual Funds in the Period 1945-1964”.

We have studied different articles and thesis before and during our research thesis mainly financial research studies. We have used different software to access the updated information about Swedish funds industry such as EcoWin Pro software developed by Reuters, SIX Pro Trader and also the Morningstar Sweden. Fondbolagens Förening (The Swedish Investment Fund Association) has the updated data of funds assets, net savings, and savings by categories and they also conducted different research analysis of the funds industry which helps us to add that information in the facts of Swedish funds industry. Google search engine was used for searching the literature relevant to our topic. Collected data is used in the opening parts. Mostly the searching words are portfolio performance, funds characteristics, mutual funds, equity mutual funds, funds size, turnover ratio, efficient markets. Some articles bibliography was used while studying the articles for references. Different researcher has given different results for their area of research but we have used only information relevant to our area of interest.

Extensive research study was available in our area of research but academics have attained different results. We have used attributes in our hypothesis, which has already been used by different academics and before starting the next part we will see the earlier studies mainly from the US market in our literature review.

Number of academic study on funds performance increased due to the rapid growth in mutual funds industry. Initially dealing with timing/investment abilities of funds manager there are other factors too which may impact the fund performance including funds expenses, economies of scale and manager personal characteristics. Despite the growth in the mutual fund literature over the past several decades, academics still reach to the contradictory conclusions regarding the ability of fund managers to constantly outperform the market and managerial attributes and fund specific characteristics that impact performance.

Early mutual funds studies (i.e. Jensen (1968) Traynor (1965) support the efficient markets by denying the ability of fund managers to beat a risk-adjusted market portfolio; however these were challenged by Ippolito’s (1993) which reaches the opposite conclusion. Bers and Madura (2000), Dutta (2002, Grinbalatt and Titman (1992),

Wermers (2000) finds that funds’ stock picking ability enables them to cover their costs, while opposite perspective given by Davis (2001) finds poor performance persistence among small-cap funds. Detzel and Weigand (1998) find that investment style and the size of stocks held by funds explains the persistence observed during their study period.

In mutual fund literature there is another controversial topic about the interrelationship and impact of expenses, turnover and load on fund performance. Sharpe (1966) finds that funds with lower expenses comprehend better performance, and more recently, Golec (1996) suggests that fees are generally associated with negative excess returns. Ippolito (1989), however, finds no significant relationship between performance, after expenses, and investment fees and turnover, while in a study of load and no load funds, Hooks (1996) concludes that low expense load funds sufficiently outperform average expense no-load funds. In contrast, Dellva and Olson (1998) find that funds with front-end load charges earn lower risk-adjusted returns, whereas Droms and Walker (1996) find no relation between performance and loads, but a positive relationship between fund expenses and returns.

Addressing the turnover issue, the early work of Friend, Blume, and Crockett (1970) finds a slightly positive relation between portfolio turnover and performance; however, both Malkiel (1995) and Carhart (1997) report a negative impact for portfolio turnover and total fund expenses on fund returns. Grinblatt and Titman (1994) and Wermers (2000) demonstrate a positive relationship between performance and turnover, suggesting that those funds engaged in more active trading may be finding under priced securities.

Thus the mutual fund literature frequently reaches conflicting conclusions regarding the ability of fund managers to beat the market and the impact of turnover and expenses on fund performance. In collective, these studies address the relevant explanatory factors; however, individually their relatively narrow focus may contribute to the contradictory findings.
4) Methodology

In this chapter, mode of procedure, literature review, the selection of sample size, statistical methodology, validity and reliability of the study is discussed in detail.

To do this project was an inspiration from the students of Gothenburg University, who have done a great work and they have highlighted in detail how fund characteristics affected the Swedish equity mutual funds. Our contribution will help the investors and other researchers to deeply study the Nordic region is a best profitable place for them to make investment. The investors can make some choices while selecting the right mutual funds for their investment.

Following methods is used for our research work\(^1\):

\(^1\) Donald R. Cooper, Pamela S. Schindler, Business Research Methods, 10th Edition
There are two ways of research i.e. qualitative and quantitative in nature. Quantitative research should be measurable and the measures should describe and explain to generate the validity. Qualitative research is characterized by investigators trying to understand how people experience themselves, their existence and environment (Lundahl & Skarvad, 1999).

We used both qualitative and quantitative research methods but most of our study was of quantitative nature, we collected huge amount of data which we processed to hypothesize and to find a relationship between the funds characteristics affecting the equity mutual funds performance. Using the quantitative methods having advantage of efficiency; it is also easier to process a large quantity of data as compared to a large quantity of words (Holme & Solvang, 1997).

Different research techniques can be used while performing a research, but when the area of interest is not yet fully covered an explorative or qualitative study can also be done. If there are already some research work has been done in the area of research, then descriptive research technique is used. In cases when extensive information is available for the subject area and models already been formulated, the study is said to be hypothesis verifying. This technique concentrates on tests of given assumptions to examine their accuracy (Davidsson & Patel, 2003).

a) The Selection Process

A sample size of 33 Swedish mutual funds are used, we employ their returns, net asset value, turnover, funds size, fund age, management tenure, total cost, price to book value, price earnings, price to cash flow and market capitalization from the January 2000 to December 2007. Appendix 1 provides the total sample size. Most of the data is obtained from the Morningstar Sweden\(^2\), Swedish funds facts obtained from the EcoWin\(^3\) pro software developed by Reuters and Fondbolagens Förening\(^4\) (The Swedish Investment Funds Association).

The mutual funds included in our sample size are those invest in Swedish securities and we considered the most appropriate benchmark to be the SIX Portfolio Return Index\(^5\).

i) Selection of Mutual Funds

We have included the mutual funds which invested 90 percent of their investment in Swedish securities. The reasons to select why not those mutual funds included in our sample size who have invested 100 percent in Swedish markets are of because our sample size was very small. In this way we have tried to include the funds whose data was easily available and our study can perform analysis of a homogeneous group of mutual funds, which was the reason why we have chosen the funds which have solely invested in

\(^2\) www.morningstar.se
\(^3\) http://about.reuters.com/productinfo/ecowinpro/
\(^4\) www.fondbolagen.se
\(^5\) http://www.fondbolagen.se/English/Indices.aspx
Swedish securities. These groups of funds have a longest history in Sweden and this was also a questionable thing why we have chosen only the funds which have invested 90 percent of their investment in Swedish securities. Some mutual funds have an option to invest internationally up to an amount of 10 percent but this fact was not considered to influence the sample size.

Why the selection of a group of homogenous mutual funds was included in the study was also that the funds which invested in countries other than Sweden have different risk exposures and other influencing factors. Moreover it was also easy to set a benchmark for the funds which have invested in the same market.

The selection of the mutual funds which invested in Swedish securities taken from the previously research done by Thomas Karlsson and Marina Persson 2005, from the Morningstar Sweden and members of the Swedish Investment Funds Association. Mutual funds having deposit claims above SEK 10000 are excluded from the sample and availability of data was considered while selecting the mutual funds. Those funds which invested only in Swedish securities also fulfilling the environmental and ethical criteria are included in the sample.

In the list of Morningstar Sweden, funds those were launched after January 2000 also excluded from the sample since their data was biased and not covered the required period. Below is the summary of the funds selection;

- 192 mutual funds in different category found in the Morningstar Sweden webpage as of April 21, 2008.
- Finally 33 mutual funds selected which lunched before January 2000 and their popularity, growth, cost and management variables are easily available.

ii) Data Collection

Data sources can be divided into primary sources and secondary sources. Primary sources include the information collected by the investigator but in secondary source of data collection includes information collected by someone other for some other purpose. Advantage of using the primary sources is that its uniqueness and the fact that it has not been collected before (Lundahl & Skavrvad 1999).

We collected secondary data from Morningstar Sweden, mutual funds web pages, EcoWin pro trader, The Swedish Investments Funds Association, and other search engines.

iii) Data Processing

Popularity, growth (risk), cost and management variables are used for the last eight years to measure the performance of funds. Every fund attributes were collected and analyzed using the regression analysis, correlation coefficients and the difference between the minimum and maximum values were used.

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6 “Mutual funds performance” 2005
iv) Selection of an Appropriate Benchmark

Mutual funds movement in relation to market is measured by beta. The market is defined by index. To calculate beta an appropriate index should be selected. We choose the funds which have invested only in Sweden securities and we chose Swedish index.

Use of index as benchmark is very important for fund managers when measuring the performance, graphical representation gives investors a view to make an opinion about the funds results. Since mutual funds are not permitted to invest more than 10 percent in a single security so preferably should choose the index with the same limitations. Different indices are available for evaluation of performance and we have chosen SIX Portfolio Index (SIXPX). SIX is the largest producer of stock indices. SIX Portfolio Index (SIXPX) presents the average performance on the Stockholm stock market (according to SIXGX) adjusted for the placement restrictions that apply to equity funds.

b) Statistic Methodology

We used simple and multiple regressions to see whether the performance depends on the defined attributes. We used the Microsoft Excel and EcoWin Pro Trader for regression analysis.

i) Regression Analysis

Regression analysis is the statistical technique that identifies the relationship between two or more quantitative variables: a dependent variable, whose value is to be predicted, and an independent or explanatory variable (or variables), about which knowledge is available. The technique is used to find the equation that represents the relationship between the variables. A simple regression analysis can show that the relation between an independent variable X and a dependent variable Y is linear, using the simple linear regression equation \( Y = a + bX \) (where a and b are constants). Multiple regression will provide an equation that predicts one variable from two or more independent variables, \( Y = a + bX_1 + cX_2 + dX_3 \).

Regression analysis is used to understand the statistical dependence of one variable on other variables. The technique can show what proportion of variance between variables is due to the dependent variable, and what proportion is due to the independent variables. The relation between the variables can be illustrated graphically, or more usually using an equation.
c) The Validity and Reliability of the Study

Validity and reliability are two ways of measuring whether a study is of high quality or not (Denscombe, 1998). Validity can be explained as the ability to measure what you actually intended to measure (Eriksson and Widersheim-Paul, 1999). Validity is about data and the methods used and how the data can be considered exact, true and accurate (Denscombe, 1998). Reliability means that another research using the same approach should be able to come up with the same results (Eriksson and Wiedersheim-Paul, 1999). A reliable study consequent and trustworthy (Denscombe, 1998).

Reliability means the degree of consistency between two measures of the same thing. (Mehrens and Lehman, 1987). The measure of how stable, dependable, trustworthy, and consistent a test is in measuring the same thing each time (Worthen et al., 1993) and Validity can be explained the does the test measure what it purports to measure? the extent to which certain inferences can be made from test scores or other measurement. (Mehrens and Lehman, 1987) and the degree to which they accomplish the purpose for which they are being used (Worthen et al., 1993). Validity and reliability is ensured by carefully collecting data from the sources and analyzed. In selection process the mutual funds were selected from the Morningstar and Fondbolage, where updated data is available. Mostly previous studies of mutual funds performance were done with the time span of ten years; our study period is of eight years.
4) Frame of Reference

In this chapter we discussed the theoretical definitions, hypothesis and previous studies evaluating the performance of mutual funds. The section starts with the theoretical background of efficient markets and portfolio management, funds characteristics in details influencing the funds performance and furthers more the previous research work was discussed addressing the mutual funds performance.

a) Efficient Markets and Portfolio Management

The introduction of the term “efficient market” is usually credited to Eugene Fama. In his 1965 paper, “Random Walks in Stock Market Prices,” published in the *Financial Analysts Journal*, Fama cites, among other things, his earlier study of serial correlations in daily price changes of 30 stocks that comprise the Dow Jones Industrial Average index (“The Behavior of Stock Market Prices”). He concluded that daily changes had a very small positive correlation, approaching zero for practical purposes. The stock market seemed to work in a way that allowed all information reflected in past prices to be incorporated into the current price. In other words, the market efficiently processed the information contained in past prices. Fama defined an efficient market as:

>A market where there are large numbers of rational profit maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants.

A well-known story tells of a finance professor and a student who come across a $100 bill lying on the ground. As the student stops to pick it up, the professor says, “Don’t bother—if it were really a $100 bill, it wouldn’t be there.” The story well illustrates what financial economists usually mean when they say markets are efficient. Markets can be efficient in this sense even if they sometimes make errors in valuation, as was certainly true during the 1999-early 2000 internet bubble. Markets can be efficient even if many market participants are quite irrational. Markets can be efficient even if stock prices exhibit greater volatility than can apparently be explained by fundamentals such as earnings and dividends. Many of us who believe in efficiency do so because we view markets as amazingly successful devices for reflecting new information rapidly and, for the most part, accurately. Above all, we believe that financial markets are efficient because they don’t allow investors to earn above-average risk-adjusted returns. In short, we believe that $100 bills are not lying around for the taking, either by the professional or the amateur investor Malkiel (2003).
b) Funds Characteristics Influencing Performance

i) Rate of Return

The rate of return on an investment in a mutual fund is measured as the increase and decrease in net asset value plus income distributions such as dividends or distributions of capital gains expressed as a fraction of net asset value at the beginning of the investment period. If we denote the net asset value at the start and end of the period as \( NAV_0 \) and \( NAV_1 \), respectively, then

\[
Rate\ of\ return = \frac{NAV_1 - NAV_0 + Income\ and\ capital\ gain\ distributions}{NAV_0}
\]

Measuring rate of return in this way ignores any commissions such as front-end loads paid to purchase the fund. On the other hand rate of return is also affected by the fund’s expenses. These charges are periodically deducted from the portfolio, which reduces the net asset value. Thus the rate of return of the fund equals the gross return on the underlying portfolio minus the total expenses ratio. (Bodie Investments 2002)

ii) Net Asset Value (NAV)

NAV represent the fund price per share and is influenced by fund performance. Relative NAV is calculated as \(|1−NAV\ ratio|\), where the NAV ration is the fund’s NAV divided by the average NAV for the funds within the same investment objectives. If as expected no optimal trading range exist, then we hypothesize no significant relationship between this variable and fund performance.

Most commonly used in reference to mutual or closed-end funds, net asset value (NAV) measures the value of a fund's assets, minus its liabilities. NAV is typically calculated on a per-share basis. Net asset values are like stock prices in that they measure the value of one share of a fund. Also, they give investors a way to compare a fund's performance with market or industry benchmarks (such as the Standard & Poor's 500 or an industry index). However, some analysts argue that comparing long-term changes in a fund's NAV is not as meaningful as comparing long-term changes in its share price because funds periodically distribute capital gains to their fund holders, thus reducing the NAV.

Investors buy shares in investment companies and ownership is proportional to the number of shares purchased. The value of each share is called net asset value or NAV. Net asset value equals assets minus liabilities expressed on a per-share basis: (Bodie Investments 2002).

\[
NAV = \frac{Market\ value\ of\ assets - liabilities}{Shares\ outstanding}
\]
iii) Risk

Risk means uncertainty about future rate of return. It is impossible to avoid the risk factor when investing in mutual funds. Academics believe that equity investors are rewarded for taking on risks in the long run (Peterson et al 2001). To measure the risk beta and standard deviation are commonly used. Beta measures the extent to which returns on the stock and the market move together. It is a measure of the systematic risk of a company or a portfolio where individual asset or portfolio is compared to the market. A higher beta than 1 implies that the individual or portfolio risk is higher than market (Bodie Investments 2002).

\[ \beta_i = \frac{COV(R_i, R_m)}{VAR(R_m)} \]

Where:  
- \( COV(R_i, R_m) \) = the covariance between the return of asset \( i \) and the market return \( m \).  
- \( VAR(R_m) \) = the market variance.  
- \( \beta_i \) = the estimated systematic risk of asset \( i \)

The standard deviation measures the risk of a fund fluctuation from the mean return, the average return of a fund over a period of time which includes both systematic and non-systemic risk (Bodi Investments 2002).

\[ \sigma = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}} \]

Where:  
- \( \sigma \) = lower case sigma ‘standard deviation’.  
- \( \sum \) = capital sigma ‘the sum of’.  
- \( \bar{X} \) = x bar ‘the mean’.

Risk can be measured either by using beta or standard deviation depending on the investors’ assumptions. If mutual fund represents the entire investment of an individual investor the standard deviation is a more accurate measure. If the investor has a diversified portfolio beta measure is preferable. If investor invests only in one mutual fund it implies that the portfolio is not diversified and therefore not exposed to both systematic and non-systemic risk (Bodie Investments 2002).

iv) Investment Style

There are a lot of mutual funds available today; selecting ones to include in your portfolio is a tricky business. People invest in mutual funds mainly because of the shortage of time to examine thousands of individual securities, yet selecting specific mutual fund may also not be any easier. Picking the right funds will take some time but once some understanding of the different fund categories and mutual funds investment strategy that will be appropriate, risk tolerance, investment objectives, time horizon and ability to manage fluctuations will value and reward better for the portfolio. Generally equity mutual funds boil down into five large groups: aggressive growth and small-cap funds, growth funds, growth and income funds, balanced funds and sector funds (STANDARD & POOR). Due to the lack of stocks in Swedish market fund companies don’t design mutual funds based on style. Therefore we haven’t included this characteristic in the study.
v) Turnover

A fund with a higher portfolio turnover rate can be particularly “tax inefficient.” Turnover is the ratio of the trading activity of a portfolio to the assets of the portfolio. It measures the fraction of the portfolio that is “replaced” every year (Bodie Investments 2002).

\[
\text{Turnover ratio} = \frac{A \text{ if } A < B \text{ or } B \text{ if } B < A}{C}
\]

Where:  
A = the amount of purchased securities during the period. 
B = the amount of disposed securities during the period. 
C = the average mutual fund wealth during the period.

vi) Fund Size

Mutual funds total assets represent the total kronor value of a single fund’s assets. A negative relationship may indicate that the fund size may impact on its ability to implement a particular investment style. Mutual funds having substantial fund assets under management may have harder time to return superior and however small funds experience no economies of scale. The large mutual funds have several advantages over small one because of economies of scale and spread of fixed overhead expenses over a large assets base. Large funds also have benefit to diversify their investment opportunities which might not available to small market participants (Ciccotello and Gant, 1996).

vii) Growth Variables (PE, PB, PC)

Price earning ratio (PE), price to book ratio (PB), and price to cash ratio (PC) compare the share price to value-impacting accounting variable such as earning, book value and cash flows. Funds with high PE ratio are associated with growth-oriented investment strategy, they also carry greater risk. The PB ratio and PC ratio for a fund are the weighted averages of the PB ratio and PC ratio, respectively for the stocks in the fund’s portfolio. A low PB ratio reflects a liquidation value of the assets close to the current market prices and therefore low PB indicates low risk, value-oriented investment style. The PC ratio implies that the ability of firms in the funds’ portfolio to generate cash flow provide a measure of liquidity and solvency as well as a source for undertaking investments. A high PC ratio indicates the consistent with the expectation of strong future growth in operational cash flows relative to current levels and thus PCs are also positively correlated with growth expectation (Laurie Prather, William J. Bertina, and Thomas Henker September 2002).
viii) Management Tenure

Management tenure affects the performance of a fund because investors have to rely on management tenure as a criterion for selection of fund. Experienced managers might be more efficient in analyzing information and it could affect management fee which allowing them to charge lower fee (Filbeck & Tompkins, 2004).

Some opposing this view that fresh managers have more efficient to perform well. There are also some studies shows that managers close to retirement on average under perform two years prior to departure and that they have higher management fee and portfolio turnover (Peterson 2001).

ix) Management Structure

The relationship between the management structure of a fund and the fund’s investment is vital. To the extent that either fund is co-managed (managed by a team) means that there will be more fighting to implement ideas (Joseph Chen April 2002).

Some research argue that decision makers make valid decision based on their knowledge, self interest and rational with access to all the necessary information. If decisions are made with different alternative to address the same problem will no matter decision make by individual or group. Some scholar opposed to this and suggesting that individuals decision makers operating in group decision making environment may be subject to the group polarization (Prather 2001).

x) Fund Age

Age of fund provides a measure of the fund's longevity or ability to survive in a highly competitive environment. It is simply the number of years that a fund has been in operation. Mutual fund age could affect the performance since younger funds may face higher cost in their start up period. There is also evidence showing that mutual funds returns may be affected by an investment learning cycle (Gregory 1997).
6) Analysis

In this chapter we done simple and multiple regression analysis and summarized the results as well.

a) Descriptive Statistics

We study 33 mutual funds and the characteristics influencing their performance. These funds are including their characteristics are shown in Appendix I.

Table 5.1 Research period 2007-01-01 to 2007-12-31

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Min value</th>
<th>Max value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>33</td>
<td>0.37%</td>
<td>0.35%</td>
<td>0.02%</td>
<td>0.92%</td>
</tr>
<tr>
<td>STDEV</td>
<td>33</td>
<td>0.059295</td>
<td>0.059439</td>
<td>0.051621</td>
<td>0.066325</td>
</tr>
<tr>
<td>BETA</td>
<td>33</td>
<td>0.931818</td>
<td>0.94</td>
<td>0.84</td>
<td>0.97</td>
</tr>
<tr>
<td>Fund size</td>
<td>33</td>
<td>2289.492</td>
<td>1019.65</td>
<td>45.38</td>
<td>11813.79</td>
</tr>
<tr>
<td>Market capitalization</td>
<td>33</td>
<td>99345.78</td>
<td>93762.5</td>
<td>1211</td>
<td>182623</td>
</tr>
<tr>
<td>NAV</td>
<td>33</td>
<td>662.9788</td>
<td>240.92</td>
<td>8.67</td>
<td>5631.75</td>
</tr>
<tr>
<td>P/B</td>
<td>33</td>
<td>2.961818</td>
<td>2.86</td>
<td>2.12</td>
<td>3.89</td>
</tr>
<tr>
<td>P/E</td>
<td>33</td>
<td>12.56182</td>
<td>12.78</td>
<td>10.38</td>
<td>15.73</td>
</tr>
<tr>
<td>P/C</td>
<td>33</td>
<td>10.23667</td>
<td>10.38</td>
<td>8.35</td>
<td>12.93</td>
</tr>
<tr>
<td>TKA</td>
<td>33</td>
<td>1.144545</td>
<td>1.3</td>
<td>0.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Turnover</td>
<td>33</td>
<td>0.72</td>
<td>0.65</td>
<td>0.06</td>
<td>1.90</td>
</tr>
<tr>
<td>Management tenure</td>
<td>33</td>
<td>6.363636</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Fund age</td>
<td>33</td>
<td>15.39394</td>
<td>12</td>
<td>8</td>
<td>49</td>
</tr>
</tbody>
</table>

Table 5.1 shows that we calculated mean return (monthly returns) median minimum and maximum values different thirteen characteristics are including in our sample size of 33 funds and they are analyzed by using the spreadsheet (Microsoft Excel). All attributes mean and median are close to each other except for NAV, fund size and market capitalization. It is because that some mutual funds are much bigger than the other.

We calculated correlations because of there are more than two variables for each N subject. The correlation is a measure of the extent to which two measurement variables “vary together” The value of correlation is between -1 and +1 inclusive.
Table 5.2 shows that some funds attributes might be correlated with each other; Return and standard deviation has a high negative correlation which shows that a high return with low risk due to passive investment strategy, fund age with net asset value and with fund size. Because the correlation between fund age, size and net asset value is high as predicted; large mutual funds tend to be oldest. The highest positive correlation is between P/C to P/E as P/C ratio reflects the ability of firms in the funds portfolio to generate cash flow, providing a measure of solvency and liquidity. High price earning (PE) would also carry high risk, conversely low-PE funds would tend to be less risky. It also influenced the funds performance. Funds with higher turnover increase greater turnover cost, such as brokerage fees and bid-ask spreads and it has a negative on performance and it may have a positive impact providing that manager are acting on good information. Appendix II shows regression analysis between return and other variables.

Table 5.2 Correlation between variables

<table>
<thead>
<tr>
<th></th>
<th>Return</th>
<th>Standard Deviation</th>
<th>BETA</th>
<th>Size (MSEK)</th>
<th>Market Capitalization</th>
<th>NAV (SEK)</th>
<th>P/B</th>
<th>P/E</th>
<th>P/C</th>
<th>TKA</th>
<th>Turnover</th>
<th>Management Tenure</th>
<th>Fund Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>-0.731</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BETA</td>
<td>0.150</td>
<td>-0.266</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (MSEK)</td>
<td>0.179</td>
<td>-0.243</td>
<td>0.285</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Capitalization</td>
<td>-0.340</td>
<td>0.289</td>
<td>0.118</td>
<td>-0.162</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAV (SEK)</td>
<td>-0.025</td>
<td>-0.075</td>
<td>0.149</td>
<td>0.412</td>
<td>0.004</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/B</td>
<td>-0.034</td>
<td>0.268</td>
<td>-0.056</td>
<td>-0.196</td>
<td>0.168</td>
<td>-0.054</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/E</td>
<td>0.144</td>
<td>-0.048</td>
<td>-0.298</td>
<td>-0.215</td>
<td>0.216</td>
<td>-0.229</td>
<td>0.716</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/C</td>
<td>-0.033</td>
<td>0.104</td>
<td>-0.070</td>
<td>-0.154</td>
<td>0.304</td>
<td>-0.080</td>
<td>0.745</td>
<td>0.861</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TKA</td>
<td>-0.258</td>
<td>0.065</td>
<td>-0.145</td>
<td>-0.159</td>
<td>-0.094</td>
<td>0.069</td>
<td>-0.064</td>
<td>-0.195</td>
<td>-0.126</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnover</td>
<td>-0.009</td>
<td>0.037</td>
<td>0.128</td>
<td>0.051</td>
<td>0.077</td>
<td>0.193</td>
<td>0.044</td>
<td>-0.014</td>
<td>0.203</td>
<td>0.090</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Tenure</td>
<td>0.281</td>
<td>-0.155</td>
<td>-0.230</td>
<td>0.013</td>
<td>-0.056</td>
<td>-0.361</td>
<td>0.315</td>
<td>0.392</td>
<td>0.261</td>
<td>-0.106</td>
<td>-0.386</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fund Age</td>
<td>0.144</td>
<td>-0.326</td>
<td>0.225</td>
<td>0.497</td>
<td>-0.031</td>
<td>0.606</td>
<td>-0.064</td>
<td>-0.131</td>
<td>-0.102</td>
<td>0.185</td>
<td>0.008</td>
<td>0.156</td>
<td>1</td>
</tr>
</tbody>
</table>
b) Regression Analysis

Regression analysis is performed to examine how the attributes influence the return individually. As seen in the below table 5.3 in last column beta explains 83.80 percent of mutual fund return in this regression, and beta is the variable which has the highest coefficient. Stander deviation is also has an explanatory level of 82.1 percent.

Table 5.3 Full sample-simple regressions

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>t Stat</th>
<th>P-value</th>
<th>R square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Deviation</td>
<td>0.000352388</td>
<td>11.93345792</td>
<td>4.01107E-13</td>
<td>82.1%</td>
</tr>
<tr>
<td>BETA</td>
<td>0.003923943</td>
<td>12.67318605</td>
<td>8.4569E-14</td>
<td>83.8%</td>
</tr>
<tr>
<td>Size</td>
<td>6.19044E-07</td>
<td>4.243548806</td>
<td>0.000184835</td>
<td>36.7%</td>
</tr>
<tr>
<td>Market Capitalization</td>
<td>3.15575E-08</td>
<td>7.344117066</td>
<td>2.87915E-08</td>
<td>63.5%</td>
</tr>
<tr>
<td>NAV</td>
<td>1.15939E-06</td>
<td>2.591000623</td>
<td>0.014459402</td>
<td>83.7%</td>
</tr>
<tr>
<td>P/B</td>
<td>0.001196667</td>
<td>11.44389607</td>
<td>1.16412E-12</td>
<td>80.9%</td>
</tr>
<tr>
<td>P/E</td>
<td>0.000289236</td>
<td>12.61571384</td>
<td>9.52279E-14</td>
<td>83.7%</td>
</tr>
<tr>
<td>P/C</td>
<td>0.000352388</td>
<td>11.93345792</td>
<td>4.01107E-13</td>
<td>82.1%</td>
</tr>
<tr>
<td>TKA</td>
<td>0.002529664</td>
<td>7.102571777</td>
<td>5.57953E-08</td>
<td>61.9%</td>
</tr>
<tr>
<td>Turnover</td>
<td>0.003369806</td>
<td>7.066447573</td>
<td>6.16317E-08</td>
<td>61.7%</td>
</tr>
<tr>
<td>Management Tenure</td>
<td>0.000512971</td>
<td>9.464071721</td>
<td>1.17441E-10</td>
<td>74.3%</td>
</tr>
<tr>
<td>Fund Age</td>
<td>0.00019409</td>
<td>7.449139946</td>
<td>2.16377E-08</td>
<td>64.2%</td>
</tr>
</tbody>
</table>

Confidence level 95 percent

Multiple regression is performed to see how much of the return that the fund characteristics could explain together. Here we performed multiple regression with the risk, popularity, growth, cost and management variable. The last column shows that standard deviation and beta explain 49.1 percent and popularity variable i.e. fund size, market capitalization and NAV explain 14.4 percent of mutual fund return in multiple regressions. PE has highest coefficient with explanatory level of 13.8 percent.

Table 5.4 Full sample-multiple regressions

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>t Stat</th>
<th>P-value</th>
<th>R square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Deviation</td>
<td>-0.318336107</td>
<td>-5.184935001</td>
<td>1.51706E-05</td>
<td>49.1%</td>
</tr>
<tr>
<td>BETA</td>
<td>-0.003432416</td>
<td>-0.354702572</td>
<td>0.725378952</td>
<td>14.4%</td>
</tr>
<tr>
<td>Size</td>
<td>9.4479E-08</td>
<td>0.945888972</td>
<td>0.352297093</td>
<td>13.8%</td>
</tr>
<tr>
<td>Market Capitalization</td>
<td>-1.33982E-08</td>
<td>-1.754037367</td>
<td>0.090364977</td>
<td>9.1%</td>
</tr>
<tr>
<td>NAV</td>
<td>-1.05195E-07</td>
<td>-0.435586065</td>
<td>0.666476692</td>
<td>2.6%</td>
</tr>
<tr>
<td>P/B</td>
<td>-0.000735794</td>
<td>-0.77520872</td>
<td>0.444714401</td>
<td>13.8%</td>
</tr>
<tr>
<td>P/E</td>
<td>0.0008282</td>
<td>2.076140239</td>
<td>0.047177521</td>
<td>9.1%</td>
</tr>
<tr>
<td>P/C</td>
<td>-0.000700752</td>
<td>-1.396813988</td>
<td>0.173443296</td>
<td>2.6%</td>
</tr>
<tr>
<td>TKA</td>
<td>-0.000973528</td>
<td>-1.737800077</td>
<td>0.092502953</td>
<td>9.1%</td>
</tr>
<tr>
<td>Turnover</td>
<td>0.000271467</td>
<td>0.386538094</td>
<td>0.702020159</td>
<td>2.6%</td>
</tr>
<tr>
<td>Management Tenure</td>
<td>0.000107954</td>
<td>0.844388854</td>
<td>0.405609199</td>
<td>9.1%</td>
</tr>
<tr>
<td>Fund Age</td>
<td>7.74603E-07</td>
<td>0.019590095</td>
<td>0.984509301</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Confidence level 95 percent

Note that Excel uses scientific notation, by default, so when it says 9.4479E-08 it means, 9.4479 * 10^-8. (i.e. 0.0000000094479).
c) Results of Analysis

A relationship between return and the predictor variable can be sought in the scatter plot Appendix II. All scatter plots indicate some kind of linear relationship. Our analysis of descriptive statistics, correlation between variables and regression analysis gives results that either we will accept the null hypothesis if managerial attributes do not influence the performance and alternatively reject the null hypothesis if these managerial attributes impact the return of mutual funds.

H0: Risk does not influence the return.
H1: Funds including the high risk generate higher return then funds including the low risk.

In the simple regression the coefficient level for beta is highest with highest explanatory level. Chang’s (2004) study shows that low risk provide investors with higher return. We will reject the null hypothesis because risk influences the return of mutual funds.

H0: Fund size does not influence performance of mutual funds.
H2: Big funds perform worse than small funds.

H0: Market capitalization does not influence the return of mutual funds.
H3: Mutual funds return influenced with the market capitalization.

H0: NAV does not impact the return.
H4: NAV does impact the return.

Among the popularity variables the null hypothesis stating that fund size does not influencing the performance of mutual funds. There is a positive relationship with return and negative relationship with standard deviation. Thus the fund size influences the fund performance because larger funds have more diversification of investment and economies of scale. The market capitalization variable coefficient is negative and statistically significant, suggesting that the negative relationship between market capitalization and fund past performance. A negative relationship indicates that the fund size may impact on its ability to implement a particular investment style.

H0: Growth variables (PE, PB and PC) influence the return of mutual funds.
H5: Growth variable does influence the return.

Within the growth (risk) variable category, the coefficient estimates for PB, PE are positively and statistically significant. The impact of these price variables supports for a positive influence of growth opportunities. So we found that growth variables influence the return of mutual funds.
H0: Expenses has no impact on the returns of mutual funds.
H6: Funds with high expenses generate higher return than low expenses.

Earlier study by Ippolito (1989) shows that mutual funds with higher expenses give higher return. In our analysis TKA has negative relationship with return mean that expenses influence the performance of mutual funds. The negative coefficient shows unsatisfactory performance and indicates that investors over compensate fund managers for their poor results. This is consistent with previous studies by Dellva and Olson (1998), Elton et al. (1993) and in contrasts to Droms and Walkers (1996) found a positive relationship between return and funds expenses.

H0: Turnover does not influence the return.
H7: Funds turnover impacts return of mutual funds.

H0: Management tenure has no impact on the return of funds.
H8: Management tenure impact the return.

H0: Fund age does not influence the performance of mutual funds.
H9: Fund age impact the return of mutual funds.

Within management variables category the earlier studies by Friend et al (1970), Grinblatt ad Titman (1994), and Wermers (2000) finds a positive relationship between turnover and performance which is in consistent with our analysis but in contrast Carhart (1997) shows that funds with high turn over reveal low return. Management tenure has a positive relationship with fund performance according to the earlier studies by Golec (1996). Our study also is consistent with this showing a positive coefficient. Earlier studies by Gregory et al (1997) shows that mature funds perform better than younger funds whereas Otten and Bams (2001) finds opposite. Our study shows the fund age coefficient negative which is in contrast to Golec (1996). This result suggests that an older fund may have achieved past success but past does not necessarily secure future performance.
7) Conclusion and Future Research Proposals

a) Conclusions

The study provides a comprehensive and integrated examination of mutual funds performance, Swedish pension investment trends in equity mutual funds, history and current trends of mutual funds industry of Sweden and fund characteristics influencing the mutual funds. We includes different types of categories of popularity, growth, cost and managerial variables which influencing the performance. These include detail discussion of the relationship between mutual funds performance and fund specific factors with a recent data set of mutual funds and fund characteristics.

Our study builds upon earlier research and provides investors a framework which factors should they consider while investing in mutual funds. We included 33 mutual funds investing more than 90 percent in Swedish securities. The funds attributes shows the relationship with return how it is affected by the fund size, market capitalization, net asset value, total cost, turn over ratio, fund age and management tenure.

The study reveals that investor is not rewarded for choosing a fund with high expenses and higher turnover ratio. Secondly beta and standard deviation shows a diverse relationship; high beta funds perform better than having low beta and funds with low standard deviation perform better than high standard deviation. Relationship between fund size, age and management tenure reveals that investor should choose the younger fund with a manger in charge for a longer time period and larger funds have economies of scale and they charge less as compare to small funds.

The study provides a significant update to the previous literature by examining mutual funds industry recent conditions and explosive growth of mutual funds industry in the period of year 2000 to 2007. The study shows that proportion of equity funds assets decreased from 69 percent to 56 percent, 5 percent proportion of funds assets covered by hedge funds. Net savings in equity funds decreased in recent year as compare to year 2000. Households direct savings in equity funds are currently 32 percent decreased from 60 percent in year 2000.

The relationship between mutual fund performance and fund specific factors shows the results are generally consistent with the studies conducted by previous researchers.

b) Future Research Proposals

We studies different research papers, thesis related to mutual funds performance which has given us an idea for future studies. We include small sample size and only a few variables influencing the performance of mutual funds. The future study can be done including variable such as diversification level, number of holdings, funds under management, education level etc. Do these variables influence the performance of mutual funds? It would also be interesting to study the hedge funds and pension savings to broader the knowledge and expertise in this field.
8) References


Burton G. Malkiel, Princeton University Book “A Random Walk Down Wall Street”.


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Eugene Fama (1965), The Behavior of Stock market Prices, *Journal of Business*


References


### APPENDIX I

<table>
<thead>
<tr>
<th>Fund Name</th>
<th>Return¹</th>
<th>Standard Deviation</th>
<th>NAV (SEK)</th>
<th>BETA</th>
<th>Turnover</th>
<th>Size (MSEK)</th>
<th>Manage ment Tenure</th>
<th>Fund Age</th>
<th>TKA (%)</th>
<th>P/B</th>
<th>P/E</th>
<th>P/C</th>
<th>Market Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Aktie-Ansvar</td>
<td>0.67%</td>
<td>0.0516</td>
<td>269.95</td>
<td>0.94</td>
<td>0.70</td>
<td>1581.58</td>
<td>16</td>
<td>43</td>
<td>1.40</td>
<td>3.25</td>
<td>12.90</td>
<td>10.38</td>
<td>82,821</td>
</tr>
<tr>
<td>2 Aktiesparana Topp Sv²</td>
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¹ Monthly average returns
² sv. stand for Sverige
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APPENDIX II
Relationship between return and the predictor variables showing in the scatter plots¹.

¹ Blue color shows the return and pink color shows the predictors’ variable.
Appendix II

Return vs P/B

Return vs P/E
Appendix II

Return vs P/C

Return vs Market Capitalization
APPENDIX III

The SIX Portfolio Return Index (2000-01-31 to 2007-12-31)

\[ \text{www.fondbolagen.se} \]