Where to Invest?

-A comparative study of the performance of Swedish funds investing in Sweden and Swedish funds investing in Emerging Markets -

Author: Edith Bellini
ABSTRACT

The world-wide globalisation that has taken place over the past decades has led to a revolution on the stock markets. Nowadays, it is more simple, cheap and convenient to access financial information. As a result investing in mutual funds has increase.

There has been a renewed interest to investigate the performance of the mutual fund industry. The researcher has chosen to perform a comparative analysis of the performance of Swedish mutual funds invested in Sweden and, Swedish mutual funds invested in emerging markets.

The primary aim of this research is to examine whether the investment in mutual funds is more profitable in Sweden or in the Emerging markets. The research endeavors to answer the following questions:

Considering risk and return factors, is it more profitable to invest in Swedish equity funds or invest in equity funds from emerging markets?

Was the Swedish mutual funds performance better than the performance of the Swedish index?

Was the Emerging markets mutual funds performance better than the performance of the emerging markets index?

A quantitative method with a positivistic epistemology was used for the research. 4 mutual funds investing in Sweden and 4 mutual funds investing in emerging markets were studied in this research. To estimate the performance of the mutual funds, historical data from Jan. 2000 to Sep. 2007 was analyzed using:

(i) Treynor’s index
(ii) Sharpe’s index
(iii) Jensen’s index
Descriptive statistics were obtained using the Statgraphs program, the excel program and the Metastock program. The results showed that the Emerging markets funds had a better performance during the period studied.

The result showed, in addition, that the Swedish funds outperformed the Swedish MCSI index whereas the Emerging markets funds under performed against the Emerging Markets MCSI index.
ACKNOWLEDGEMENTS

I would never have been able to complete this Master thesis without the contributions of many others. Therefore I would like to thank, first and foremost, to my supervisor Claes-Göran Larsson for all the time he has spent listening to my ideas and all the valuable feedback he has been providing. I would also like to dedicate a special thanks to Jakob Walgreen at Morningstar for providing the data for this thesis.

Umeå University 2007

Edith Bellini
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<th>Description</th>
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<tr>
<td>( \alpha_p )</td>
<td>Alpha Coefficient of the Portfolio</td>
</tr>
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<td>( \beta )</td>
<td>Beta</td>
</tr>
<tr>
<td>( \text{Cov} (X,Y) )</td>
<td>Covariance of X and Y</td>
</tr>
<tr>
<td>( d )</td>
<td>Days</td>
</tr>
<tr>
<td>( \bar{R} )</td>
<td>Expected Return</td>
</tr>
<tr>
<td>( \text{NAV}_t )</td>
<td>Daily Net Asset Value per Unit of the Mutual Fund in the Period ( t )</td>
</tr>
<tr>
<td>( N ) or ( n )</td>
<td>Number of Funds</td>
</tr>
<tr>
<td>( \bar{R}_m )</td>
<td>Expected Return on the Market</td>
</tr>
<tr>
<td>( R_f ) or ( r_{fi} )</td>
<td>Risk-free Return</td>
</tr>
<tr>
<td>( R_p ) or ( r_{ip} )</td>
<td>Return of Portfolio</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>Coefficient of Determination</td>
</tr>
<tr>
<td>( \rho_{x,y} )</td>
<td>Correlation Coefficient of X and Y</td>
</tr>
<tr>
<td>( \Sigma )</td>
<td>Standard Deviation of a Sample</td>
</tr>
<tr>
<td>( \sigma )</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>( \sigma^2 )</td>
<td>Variance</td>
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## LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>CAPM</td>
<td>Capital Asset Pricing Model</td>
</tr>
<tr>
<td>CML</td>
<td>Capital Market Line</td>
</tr>
<tr>
<td>EM</td>
<td>Emerging Market</td>
</tr>
<tr>
<td>H(a)</td>
<td>Alternative Hypothesis</td>
</tr>
<tr>
<td>H(0)</td>
<td>Null Hypothesis</td>
</tr>
<tr>
<td>Ji</td>
<td>Jensen’s Index</td>
</tr>
<tr>
<td>MSCI</td>
<td>Stock Market Index</td>
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<tr>
<td>MSCISW</td>
<td>Swedish Stock Market Index</td>
</tr>
<tr>
<td>MSCIEM</td>
<td>Emerging Markets Index</td>
</tr>
<tr>
<td>MPT</td>
<td>Modern Portfolio Theory</td>
</tr>
<tr>
<td>SML</td>
<td>Security Market Line</td>
</tr>
<tr>
<td>Si</td>
<td>Sharpe’s Index</td>
</tr>
<tr>
<td>SW</td>
<td>Sweden</td>
</tr>
<tr>
<td>Ti</td>
<td>Treynor’s Index</td>
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# GLOSSARY

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>ALPHA COEFFICIENT</td>
<td>The risk-adjusted excess return on an asset or portfolio above that which is implied by its risk-adjusted return in the Capital Asset Pricing Model (CAPM). Alpha is the difference between the expected return as predicted by the CAPM and the actual return.</td>
</tr>
<tr>
<td>BETA</td>
<td>A measure of the sensitivity of an asset to changes in the market. Technically is the correlation of the asset price with the net value of all assets in the market. (Moles &amp; Terry, 1998, p. 44)</td>
</tr>
<tr>
<td>BEAR MARKET</td>
<td>A prolonged period in which investment prices fall, accompanied by widespread pessimism.</td>
</tr>
<tr>
<td>BULL MARKET</td>
<td>The opposite of bear market. It is characterized through increasing prices and optimism.</td>
</tr>
<tr>
<td>CORRELATION</td>
<td>Is a statistical term that describes the degree of association between variables. When two variables tend to change together, then they are said to be correlated. (Pass, Lowes &amp; Davies, 2004, p. 98)</td>
</tr>
<tr>
<td>COVARIANCE</td>
<td>Is a statistical measure of the co-movement between two series. It is an indication of the measure of interdependence of the two sets of data. The correlation coefficient is a more easily interpreted version of the same relationship. Covariances are important in modern portfolio theory since, given a large enough portfolio, the effect of individual price variance is dominated by the matrix of Covariances. (Moles &amp; Terry, 1998, p. 118)</td>
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</table>
GLOSSARY

PORTFOLIO  A combination of financial assets held by an investor for the purposes of achieving particular objectives, such as target rates of return and capital appreciation. (Moles & Terry, 1998, p. 426)

RISK AVERSION  the tendency to avoid undertaking risks and to choose less risky alternatives. (Pass, Lowes & Davies, 2004, p. 468)

RISK ANALYSIS  The systematic analysis of the degree of risk attaching to capital projects. Risk reflects the variability of expected future returns from a capital inventing and as such the statistical technique of probability may be applied to assist a decision. (Pass, Lowes & Davies, 2004, p. 467)

SPECIFIC RISK  The part of an asset’s total risk in modern portfolio theory that is unique to the asset and can be diversified away by building a portfolio (cf. Stock specific risk). (Moles & Terry, 1998, p. 44)

STANDARD DEVIATION  The square root of the mean of the squared deviations of members of a population from their mean. The most widely used measurement of variation about a mean, and, for many purposes a proxy for risk. (Gastineau and Krizman, 1992, p. 261)

SYSTEMATIC RISK  The risk associated with the market as a whole. This risk cannot be reduced by diversification because every asset with nonzero beta contains this risk. (Luenberger, 2004, p.182)

VARIANCE  The average of the sum of the squares of deviations of data from their mean calculated for a statistical population on a sample taken from it; the square of a standard deviation. (Rutherford, 1992, p. 482) Variance is a well-know measure of dispersion about the expected. (Markowits, 1952, p. 14)
1. INTRODUCTION

This chapter will introduce the reader to the research conducted, describing the background of the subject of interest and the problems contained within it. The purpose of this research will be presented in the subsequent chapters.

1.1 Background

Over the past 35 years investing has become simple, cheap and convenient. The access to financial information has never been easier, largely due to the revolution of the Internet. The Internet has changed the way investors follow the stock markets, from using transistor radios and newspapers, to a more fast access to the information through computers and Internet. (Zweig, J., 2007, p. 122-126)

Investment in new financial assets has grown due to the Internet and the ability to access financial information.

The mutual fund industry is among the most successful recent financial innovations. Mutual funds tend to be larger in those countries which display stronger rules, laws, and regulations (specifically where mutual fund inventors’ rights are better protected). Furthermore, mutual funds are larger in countries with a wealthier and more educated population; in countries in which the industry is older; where trading costs are lower, and; in counties in which defined contribution pensions plans are more prevalent (Khorana, Servaes, & Tufano, 2005, p. 3-11).

In Sweden, interest on equity mutual funds has been growing rapidly during the past years and fund fees have been decreasing, according to the Swedish Statistics Office (See Appendix 8.1). Trends, which would reflect the findings of the previous referred research. According to Fitzrovi’s survey of ‘Fund Fees in Europe from 2004’, Sweden is top ranked on the list of countries with low fund fees for actively managed mutual funds (See Appendix 8.2)

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1 This thesis focuses on mutual funds, which invest in equities (equity funds) from here on they will be referred as funds or mutual funds.
Investors have always been interested in evaluating their portfolio performance and as the interest on investing in mutual fund grows the interest of evaluating the fund performance will also increase. As a result, a large number of fund performance evaluations, based on the theories of Treynor (1965) Sharpe (1966) and Jensen (1968), have been carried out.

Treynor, Sharpe and Jensen, from different theoretical perspectives, propose and apply diverse measures of performance affected by different factors, for example risk. They endeavor, through their theories and evaluations, to answer the complex question of whether the returns achieved during a period of time are deemed reasonable or not.

Treynor’s index, Shaper’s index and Jensen’s index will be applied in this research to analyze the problem presented in the next chapter.

1.2 Presenting the Problem

Evaluation of the performance portfolios of risky investments has been a central problem in finance and portfolio management. (Jensen, M., 1968, p. 2)

The new age of information and globalization that has taken place during the past decades has led to the integration of financial markets. The result being that investors in any country need not be limited to their domestic financial market. (Fabozzi, 1998, p. 17)

Mutual funds were invested exclusively in stocks listed in Sweden since very recently. The deregulation of the foreign exchange market in 1989 made it possible for Swedish investors to invest in foreign securities (Fondbolagen.se, 2007). Mutual funds became the cheapest option for investors who wanted to invest in new markets because of the huge amount of capital required to invest in stocks directly With the facilities offered today by banks and fund managers it is easy for investors to invest in mutual funds from emerging markets. In recent years funds from emerging markets, such as Asia, Latin America and Eastern Europe, have become more popular.

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The risk of investment in emerging markets is higher than the risk of investment in mature markets. A few factors distinguish mutual funds in emerging markets from their counterpart in more established markets, such as the extent of regulations and the size of government involvement. Emerging markets are more volatile with all to frequent ‘boom and bust cycles’ (Bernstein and Damodaran, 1999)

Is the risk taken by investors who choose to invest in emerging markets paying off? Research has been conducted to analyze the performance of mutual funds. However, research found is centered on the analysis of Swedish funds. See Dahlquist, Engström & Söderlind, (2000) and Ostermark (1991). Engström (2003) presents one study which investigates mutual funds from emergent markets. However, this research investigates the cost of information when investing in mutual funds from emerging markets and does not study the performance and risk of investing in those markets. The reason for which the performance of mutual funds in emerging markets is now a subject of interesting investigation.

This gives real purpose to this research, endeavoring to answer the following questions

**Considering risk and return factors, is it more profitable to invest in Swedish equity funds or invest in equity funds from emerging markets?**

**Was the Swedish mutual funds performance better than the performance of the Swedish index?**

**Was the Emerging markets mutual funds performance better than the performance of the emerging markets index?**
1.3 Purpose

The aim of this study is to perform a comparative analysis from Jan. 2000 to Sep.2007 between (i) Swedish mutual funds investing in Sweden, and; (ii) Swedish mutual funds investing in Emerging Markets.

The research will focus on analyzing risk and returns. Treynor index, Sharpe’s index and Jensen’s Index will be used to find which investment was more profitable, investing in the Swedish funds or investing in the Emerging markets funds.

1.4 Limitations

The research will be limited to mutual funds managed by Swedish banks. The research will analyze the performance of two portfolios containing four mutual funds each. It will cover a period of seven years, from January 2000 to September 2007.
1.5 Research Outline

CHAPTER ONE: Introduction
This chapter will introduce the reader to the research conducted, describing the background of the subject of interest and the problems contained within it. The purpose of this research will be presented in the subsequent chapters.

CHAPTER TWO: Theoretical Method
This chapter will firstly introduce to what is behind the choice of the research subject, secondly a review of the theoretical methodology and research method is presented.

CHAPTER THREE: Theoretical Framework
The Theoretical Framework chapter will firstly introduce the definitions of the key concepts used, and secondly explain the theories behind this research.

CHAPTER FOUR: Empirical Method
This chapter will firstly explain how the data was analysed, secondly method criticism will be conducted.

CHAPTER FIVE: Empirical Summary & Analysis
The ‘Empirical Summary’ chapter will summarise and present the research data and analyse the theory’s and the empirical findings.

CHAPTER SIX: Discussion & Conclusion
The Conclusion chapter will firstly present the conclusions from the analysis in relation to the purpose of the study, secondly a discussion of validity concerns will be presented, finally suggestions for further research will be presented.

Figure 1: RESEARCH OUTLINE
2. THEORETICAL METHOD

This chapter will firstly introduce the choice of the research subject, secondly a review of the theoretical methodology and presents research method.

2.1 Preconceptions and Choice of Subject

During a person’s life there is an ongoing process which creates an understanding for how to view and understand their surroundings. Factors, such as social background, education and work experience create preconceptions. (Johansson, 1993, p. 25)

The researcher relates to her own education it that she choose, from a very early stage in her life, to study economics. She studied at economics at upper secondary school in Sweden.

During the last four years, the author has attended the International Business Program at Umeå University. Here, her main subjects are focused around Finance: Corporate Finance, International Finance, Financial Management and Financial Investments. In terms of life experience, the author comes from a multicultural background and has gained international experience living in England, Spain and China.

Furthermore, the researcher is very interested in the stock market and has been an active investor for several years. The fact that her personal interest is investments and that her prior education was a key factor in determining her choice of subject studied, indicates that the background of the author could influence the research. Preconception about the Stock market and investing exist and these preconceptions and prior knowledge of the subject undoubtedly affect the choice of the relevant theories for this research. However, the researcher is aware of the importance of being objective during the investigation and also the importance of not being influenced by prior knowledge. In addition, since the analysis of the research will be based on quantitative data, and incorporates statistical tests, the prior knowledge will have a very slight affect, if any, on the result of the research.

Objectivity can be implemented in various contexts and it is frequently stated that objectivity means the separation of fact and valuation. ((Mc Garty, C. Yzerbyt, V & Spears, R/ (Brown & Turner, 2002, p. 67) )

Objectivity can be implemented in various contexts and it is frequently stated that objectivity means the separation of fact and valuation. ((Mc Garty, C. Yzerbyt, V & Spears, R/ (Brown & Turner, 2002, p. 67) )
2.2 Research Perspective

The research perspective is an important issue to be considered because research perspective affects the gathering and analysis of data. The research question and objectives need to be taken into consideration when choosing research perspective. Since the aim of this research is the analysis of the performance of Swedish mutual funds the appropriate perspective for this research is the investors’ perspective.

2.3 Epistemological Approach

Each individual has a conception of reality, which is based upon a variety of known and unaware norms and beliefs. These conceptions are also known as paradigms and they shape the research thought and actions. It is important for the outcome of the research that the researcher is aware of those paradigms.

The choice of perspective after research will make it easier to define reality and therefore increase the level of meaning within the study. (Bryman & Bell, 2003, p. 29)

2.3.1 POSITIVE PARADIGM

According to positivist tradition, there is an objective, an external world that exists independently of human perception, which is amenable to quantitative measurement. The researcher acquires knowledge of this world by following a scientific mode of enquiry similar to that found in natural sciences. The aim is to develop valid and reliable ways of collecting “facts” about society, which can then be statistically analysed in order to produce explanations about how the social world operates. (Clarke, 2001, p. 32)

2.3.2 SUBJECTIVIST PARADIGM

Weber delivered two statements which are the fundamental assertions for the subjectivist paradigm:

(i) Sociology must concern itself with the interpretation of social action;
THEORETICAL METHOD

(ii) It must devise a social theory of values since the acts of valuing and judging are preconditions of social action. (Cohen, Manson & Morrison, 2003, p. 276)

Weber’s theory of social action can be defined as the body of social theory devised by him on order to make valid judgements about the ‘inner states’ of actors in their actions.

‘Inner states’ refers to the capacity of the actor to choose between the means and ends of action and to exercise rational choice. At the most fundamental level, this involves the process of assigning meanings to the given factual states in the outer world and thus involves subjective processes. Weber promoted the idealist point of view and its association with the qualitative paradigm, the nature of reality and the role of the researcher. (Cohen, Manson & Morrison, 2003, p. 276)

Referring to theories of the positive and subjectivist paradigm the positive paradigm is the most suitable for this research. Firstly because of the authors own views regarding the development of knowledge, which are influenced by prior education. The author’s education has contributed to the researcher logic and rational view and to develop a positivist view of the external world. This can be seen as strength to the research since the positivist view is external and objective, and observer is independent science. This will undermine preconceptions acquired prior to the research as stated on the positive paradigm.

There are two major distinctions between the positivist and subjectivist paradigm. The first uses deduction: beginning with hypotheses. The latter follows induction: the process of finding a case and observing relationships and then finally constructing a general theory to cover all cases. (Bryman & Bell, 2003 p. 10-12)

Hypotheses will be created to test the validity of the claim on the research question and so for this research deduction is the most appropriate method to follow.

For this research deduction is the most appropriate method to follow since hypotheses will be created to test the validity of the claim on the research question.
Strengths and weaknesses of the positive paradigm are also important factors to take into consideration. The positive paradigm’s strengths are that it can provide wide coverage of the range of situations and can be fast and economical. Furthermore, since statistics are aggregated from large samples, they may be of considerable relevance to policy decisions. On the other hand quantitative research tends to be rather inflexible and artificial. It is not very effective in understanding processes or the significance that people attach to action. In addition the quantitative paradigm it is not very helpful in generating theories (Bryman & Bell, 2003, p. 86). However, the aim of the research is to test the performance of Mutual funds performance based on historical data and not to find out the “why” behind the performance of mutual funds. Therefore, the weaknesses of the positive paradigm will not affect the research.

To summarise the positive and subjectivist paradigm a figure was created based on the theory of paradigms.

<table>
<thead>
<tr>
<th>BASIC BELIEFS</th>
<th>POSITIVE PARADIGM (QUANTITATIVE RESEARCH)</th>
<th>SUBJECTIVIST PARADIGM (QUALITATIVE RESEARCH)</th>
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<tbody>
<tr>
<td></td>
<td>• The world is external and objective.</td>
<td>• The world is socially constructed and</td>
</tr>
<tr>
<td></td>
<td>• Observer is independent Science</td>
<td>subjective</td>
</tr>
<tr>
<td></td>
<td>• Science is value free</td>
<td>• Observer is part of what is observed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Science is driven by human interests</td>
</tr>
<tr>
<td>RESEARCHER SHOULD</td>
<td>• Focus on facts.</td>
<td>• Focus on meanings</td>
</tr>
<tr>
<td></td>
<td>• Look for causality and fundamental laws.</td>
<td>• Try to understand what is happening.</td>
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<tr>
<td></td>
<td>• Reduce phenomena to simple elements.</td>
<td>• Look at the totally of each situation.</td>
</tr>
<tr>
<td></td>
<td>• Formulate hypotheses and test them.</td>
<td>• Develop ideas through induction from</td>
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<tr>
<td>PREFERRED METHOD IN THE RESEARCH</td>
<td>• Operational single concepts so that they</td>
<td>data.</td>
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<td></td>
<td>can be measured taking large samples.</td>
<td>• Using multiple methods to establish</td>
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<td></td>
<td></td>
<td>different views of the phenomena.</td>
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<tr>
<td></td>
<td></td>
<td>• Small samples investigated in depth or</td>
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<td></td>
<td>over time.</td>
</tr>
</tbody>
</table>

Figure 2: POSITIVE AND SUBJECTIVIST PARADIGM
Adapted from Easterby-Smith (1991, p.27)
2.4 Choice of Research Method

The choice of method for the research should reflect the problem studied and the theoretical perspective of the research. The researcher views regarding the development of knowledge as well as how the choice of method affects the study have to be taken into consideration. (Bryman & Bell, 2003, p. 4-6)

After reviewing the methodology theory and considering that the aim of the research is to answer the following questions:

*Considering risk and return factors, is it more profitable to invest in Swedish equity funds or invest in equity funds from emerging markets?*

*Was the Swedish mutual funds performance better than the performance of the Swedish index?*

*Was the Emerging markets mutual funds performance better than the performance of the emerging markets index?*

The combination of a positivistic epistemology with a deductive approach using quantitative methods is the most appropriate approach for the research. The research is based upon historical data and statistical methods will be applied to test the hypotheses.

Quantitative research is described as entailing the collection of numerical data; as exhibiting a view of the relationship between theory and research as deductive; a prediction for a natural science approach, positivism in particular, and; as having an objectivist conception of social reality. (Bryman & Bell, 2003, p. 68)

The positivistic epistemology is justified considering that the foundation for the research is historical data and since the research questions indicates that a positivistic approach has to be used. Furthermore considering that the use of hypotheses is part of the process in a quantitative
study. Furthermore the data will be analysed by applying objective statistical methods therefore the results will not leave space for subjective interpretation.

The author’s view of the development of knowledge, which has a positivist character, justifies also the choice of the method.

2.5 Secondary Sources

Secondary data sources must be viewed with the same caution as any primary data. The researcher has to ensure that the data will enable one to answer the research question and meet the objectives. (Saunders, Lewis, & Thornhill, 2007, p. 263)

The starting point for searching secondary sources was the gathering of books and articles from Umeå’s university library. The aim, to try to find out if there exists research on Swedish mutual funds performance and theories related to portfolio evaluation. Regarding theories of portfolio evaluation, the main sources were collated from the original articles from the theories used for the research were developed. Literature from books and new articles discussing the theories were also consulted.

Articles discussing previous research which would relate to the research in question were found based on U.S funds investing in emerging markets. A handful of research about investment in Swedish mutual funds were discovered and only one research specifically dealt with Swedish funds investing in emerging markets.

The collection of literature is a significant process that determines the quality and reliability of the research. To assemble information does not simply imply finding different facts and opinions but it is also determines that all material found is relevant and its sources reliable. The researcher ensured that all materials and resources were valid and relevant for the research.
2.5.1 CHOICE OF THEORIES

The choice of theories was based on finding the most appropriate method to answer the problem formulation stated at the beginning of the research. In order to answer the research question and achieve the purpose of this investigation the researcher chose the theories concerning measurement of risk and return. The theories are well known and used by other researchers for the same purpose as the one in this research.

2.5.2 CRITICISM OF SECONDARY SOURCES

All researchers, before using any previous study, should evaluate the materials independence, if it is free from false view, how recent it is and how close to the source the material was collected (Bryman & Bell, 2003, p. 404).

The use of Internet sources is one aspect which can be criticised in this research. Internet sources are not a reliable source of information for academic research. The researcher ensured that only reliable Internet sources were used Examples of reliable Internet sources used would be: ‘The Swedish fund Association’ and the ‘Official Statistics Office in Sweden’.

When considering reliability of sources one should take into consideration the time in which the sources were written. If the source is out-dated the credibility of the source might be put into question. The researcher was aware of this fact and ensured that the sources were new and relevant for the research. The original articles which were the foundation for the new portfolio theory evaluation would now be considered as dated and unreliable sources. However, those theories are still referred to today in present literature on the subject matter and new theories have not yet entirely replaced them.
3. THEORETICAL FRAMEWORK

The Theoretical Framework chapter will firstly introduce the definitions of the key concepts used and secondly explain the theories behind this research.

3.1 Mutual Funds

Mutual funds is the common name used to describe open-end investment companies which pool the limited funds of small investor into large amounts, thereby gaining the advantages of large-scale trading, assigning to the investor a prorated share of the total funds according to the size of their investment. (Bodie, Kane & Marcus, 2005, p. 16)

There are different types of mutual funds: Money Market Funds, Fixed-Income Funds, Balanced and Income Funds, Specialized Sector Funds, Equity funds etc.

This investigation will focus on equity funds. Equity funds are an example of mutual funds investing in a range of equities with the aim of outperforming the market (Rutherford, 1992, p. 313)

The professional management of mutual funds is considered one of the benefits of mutual funds for the individual investor; the ability to delegate the management of a portfolio to a professional investor. The investors hope that these portfolio managers can achieve better investment performance than they could obtain on their own. (Bodie, Kane & Marcus, 2005, p. 118)

Investment fund saving is wide-ranging in Sweden. A survey in 2006 revealed that 77 per cent of all adults (aged from 18 to 74) invest in funds, and 71 per cent of all children have investment fund-based savings (fondbolagen.se)³.

³ Paper : Facts and figures about funds and competition from the Swedish Investment Fund Association
The investments in mutual funds have been growing considerably for the past years. Today there is ca. SEK 1600 billion invested in mutual funds, (see fund assets in appendix 3). Since 2002 the assets managed within this industry have risen by 140 percent and in Equity funds the investments have risen by 170 percent (fondbolagen.se)\(^4\)

Freedom of choice and the range of funds available have increased dramatically as well. In 1994 the amount of fund was 350 and today the amount is ca 2600. (fondbolagen.se)\(^5\) the last few years have, for example, seen the introduction of funds that invest in emerging markets, approximately half of all savings in equities funds is invested in Swedish shares and half in foreign ones. The investment in emerging markets accounts for 9% of the total investment in equity funds (fondbolagen.se)\(^6\). (See distribution in appendix 4).

### 3.2 Modern Portfolio Theory

The theory of portfolio analysis describes the performance of individual securities, with emphasis on expected return and risk.

Markowitz (1952) laid the fundamentals for the modern portfolio with his work `Portfolio Selection’. His model for portfolio diversification is based on the mean and variance of expected return where \(E\) is the expected return and \(V\) is the Variance of the portfolio. The model assumes that expected returns on a security can be defined by their mean and variance; when two or more securities are combined in a portfolio, the sum of the two returns depends on the covariance or correlation between the securities’ returns. (Markowitz, 1952, p. 8-17)

\(^4\) The Swedish Fund Market 2007 – A presentation

\(^5\) Mutual funds second quarter 2007, FM37 SM 07 03

\(^6\) Fund switch tax deferrals; Facts & Figures
Markowitz demonstrated that by combining securities into portfolios, investors could obtain either significantly higher returns for the same risk or the same return with significantly lower risk.

![Figure 3: THE CAPITAL MARKET LINE](Adapted from Luenberger, 2004, p. 176)

3.3 Treynor’s index

Treynor (1965) developed a composite measure of portfolio performance. Treynor Index is a measure of the excess return per unit of risk. The excess return is defined as the difference between the portfolio’s return and the risk-free rate of return over the same evaluation period. The risk measure in the Treynor Index is the relative systematic risk as measured by the portfolio’s beta, which can be estimated from the portfolio’s characteristic line. Treynor argues that this is the appropriate risk measure because, in a well diversified portfolio, the unsystematic risk is close to zero. (Fabozzi, 1998, p. 723)

**Beta (β)** is a measure of the sensitivity of an asset to changes in the market. Technically it is the correlation of the asset price with the net value of all assets in the market. (Moles & Terry, 1998, p. 44)
Theoretical Framework

\[ Ti = \frac{R_p - R_f}{\beta_p} \]

Where:
- \( Ti \) = Treynor's performance index
- \( R_p \) = Portfolio's actual return during a specified time period
- \( R_f \) = Risk-free rate of return during the same period
- \( \beta_p \) = Beta of the portfolio

Whenever \( R_p > R_f \) and \( \beta_p > 0 \) a larger \( T \) value means a better portfolio for all investors regardless of their individual risk preferences. In two cases we may have a negative \( T \) value: when \( R_p < R_f \) or when \( \beta_p < 0 \). If \( T \) is negative because \( R_p < R_f \), we judge the portfolio performance as very poor. However, if the negativity of \( T \) comes from a negative beta, fund's performance is outstanding. Finally when \( R_p - R_f \) and \( \beta_p \) are both negative, \( T \) will be positive, but in order to qualify the fund's performance as good or bad we should see whether \( R_p \) is above or below the security market line pertaining to the analysis period. The security market line will be presented in the next subchapter.

**TREYNOR'S INDEX**

Figure 4: TREYNOR'S INDEX

Researcher’s interpretation
Treynor’s index was considered suitable to be used in the study due to the research aim: to perform a comparative analysis between the Swedish funds investing in Swedish equities and the Swedish funds investing in the emerging markets. In order to be able to compare the performance of the funds selected the researcher will compare the results of the Treynor’s index as: if the Ti for The EM funds is > than the Ti for the SW funds then the emerging markets funds performed better according to Treynor’s index.

3.4 The Capital Asset Pricing Model (CAPM)

The CAMP model states that the return of an investment should be a linear function of the systematic or market risk (beta) and return premium over the market. (Luenberger, 2004, p. 175)

\[ \bar{R}_p = R_f + \beta \times (\bar{R}_m - R_f) \]

Where,
\[ \bar{R}_p \] = Expected return on a security or portfolio
\[ R_f \] = Risk free of rate
\[ \beta \] = Beta of the Security
\[ \bar{R}_m \] = Expected return on the market

![Graph showing the Security Market Line (SML)](Figure 5: THE SECURITY MARKET LINE)
Adapted from: Ross, Westerfield & Jaffe, p.285
The Security Market Line is the graphical depiction of the capital-asset-pricing model (CAMP). The expected return on a stock with a beta of 0 is equal to the risk-free rate. The expected return on a stock with a beta of 1 is equal to the expected return on the market. (Ross, Westerfield & Jaffe, p.285)

### 3.5 Sharpe’s Index

The studies of William Sharpe together with Treynor and Jensen laid the foundations for modern fund evaluations. Sharpe’s research ‘Mutual Fund Performance’ (1966) evaluated 34 funds during the time period of 1954 and 1963. Sharpe’s research is the fundament for the development of the CAMP (Capital Asset Price Model) Sharpe developed the CAMP model attempting to extend the work of Markowitz Modern Portfolio Theory and Treynor’s Index. (Sharpe, 1966, p.1-20)

Sharpe’s model assumes that (i) all investors are able to invest funds at common risk-free interest rate and to borrow funds at the same rate. All investors (ii) have identical preferences about risk and return (iii) investors expect the same risk and return over the future (iii) investors do not pay taxes or returns and no transaction cost. (Sharpe, 1966, p. 2-3)

Sharpe developed a composite index which is very similar to the Treynor measure, the only difference being the use of **standard deviation**, instead of beta, to measure the portfolio risk, in other words except it uses the total risk of the portfolio rather than just the systematic risk:

**Standard deviation (σ)** is the square root of the mean of the squared deviations of members of a population from their mean. The most widely used measurement of variation about a mean, and, for many purposes a proxy for risk. (Gastineau & Krizman, 1992, p. 261)
Sharpe’s Index

\[ S_i = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p} \]

Where,

- \( S_i \) = Sharpe performance index
- \( \sigma_p \) = Portfolio standard deviation

This formula suggests that Sharpe prefers to compare portfolios to the capital market line (CML) rather than the security market line (SML). Sharpe index, therefore, evaluates funds performance based on both rate of return and diversification.

Figure 6: THE CAPITAL MARKET LINE
Adapted from: Ross, Westerfield & Jaffe, p.277

Sharpe’s index is suitable for this study due to the aim of this research: to perform a comparative analysis between the Swedish funds investing in Swedish equities and the Swedish funds investing in the emerging markets. In order to be able to compare the performance of the funds selected the researcher will compare the results of the Sharpe’s index as:

- if the \( S_i \) for The EM funds is > than the \( S_i \) for the SW funds then the emerging markets funds performed better according to Sharpe’s index.
3.6 Jensen’s Index

Jensen’s research; ‘the performance of Mutual funds in the period of 1945 –1963’ evaluated the performance of 155 mutual funds. Based on the CAMP model, it measured the average return on a portfolio over and above that predicted by the CAMP model, given the portfolio beta and the average market return (Jensen, 1968, p. 389-416). Jensen’s measurement of risk is known today as Jensen’s Index or Jensen’s alpha.

**Jensen’s Index (Ji)** is the difference between the expected return as predicted by the CAPM and the actual return: \( Ji = \alpha = (R_p) - E(R_p) \). The term is used in a general market sense for a firm’s exceptional performance or performance above that anticipated for the risks taken. (Moles & Terry, 1998, p. 12)

In Jensen’s work the concept of portfolio performance has 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. (2) The ability of the portfolio manager to minimise through “efficient” diversification the amount of “insurable risk” boom by the holders of the portfolio. (Jensen, 1968, p. 389)

The following assumptions are made in Jensen’s model (Jensen, 1968, p.390):
(i) all investors are averse to risk and are single period expected utility of terminal wealth maximizers
(ii) all investors have identical decision horizons and homogeneous expectations regarding investment opportunities.
(iii) all investors are able to choose among portfolios solely on the basis of expected returns and variance of returns.
(iv) all transaction costs and taxes are zero.
(v) all assets are infinitely divisible.

The Jensen index uses the capital asset pricing model to determine whether the money manger has outperformed the market index.
\[ J_i = \bar{R}_p - \left[ (R_f + \beta \times (R_m - R_f) ) \right] \]

Where,

\( J_i \) = Jensen’s Index
\( \bar{R}_p \) = Expected return on a security or portfolio
\( R_f \) = Risk free of rate
\( \beta \) = Beta of the Portfolio
\( \bar{R}_m \) = Expected return on the market

The Jensen measure is the alpha or unique return that is estimated from the above regression. If the alpha is not statistically different from zero, there is no unique return. A statistically significant alpha that is positive signifies that the fund manager has outperformed the market index; a negative value signifies the contrary that the fund manager performed under the market index.

The Jensen measure assumes that the portfolio is fully diversified in that the only risk remaining in the portfolio is systematic risk. The estimated alpha is sensitive to the beta level of the portfolio. To correct this, the alpha can be divided by the expected return for the portfolio to reflect its systematic risk. (Fabozzi, 1998, p. 724-725)
Jensen’s index will be applied to this research to cover that set out in the aim of this investigation: to find out if the portfolios studied outperformed their respective benchmarks in the market.

The Swedish Funds will be compared with the MCSI of Sweden. If the result of the analysis shows that, \( J_i > 0 \), then the Swedish funds studied outperformed the benchmark.

The same rule applies for the Emerging markets funds when comparing to the MCSI of the emerging markets. If, \( J_i > 0 \), then the funds studies outperformed the benchmark.
3.7 Bias on the Performance Evaluation

Performance evaluation has two basic problems:

(i) Many observations are needed for significant results even when portfolio mean and variance are constant.

(ii) Shifting parameters when portfolios are actively managed make accurate performance evaluation all the more elusive.

Certain precautions can be made to overcome the above problems. The number of observations has to be maximized by taking more frequent return readings. Readings must specify the exact makeup of the portfolio to obtain better estimates of the risk parameters at each observation period. (Bodie, Kane & Marcus, 2005, p. 113)

Therefore, in order to achieve enough observations and acquire a significant result, the period chosen for this investigation is that of 7 years. Furthermore, the results obtained from this investigation will be compared to the results showed on the web pages of Morning Star to achieve credibility for the investigation. The results will vary because the period used by the analysis in Morgan Stars is always 3 years. However, the variation should be minimal and the trend showed on this study should be according to the trend showed by Morning Star.

Market climate can be identified as another significant bias that can have an impact on the investigation. Previous studies, such as that of (Scholz & Wilkens, 2006) have identified the bias caused from market climate. Market climate is determined by the random mean and standard deviation of markets excess returns for a specific evaluation period. The mean of the market excess returns, in particular, has a considerable impact on the Sharpe index. The mean causes one to overestimate the performance of funds that exhibit relatively high proportions of unsystematic risk in outstandingly negative market climates (Bear markets), and vice versa. Thus, the Sharpe index does not provide a meaningful assessment of the performance of funds especially in extraordinary times (Bull Markets).

The researcher, taking into consideration this possible bias, will perform two more evaluations which will consider different periods. The first period, between 2000 and 2003 was a period
with a more negative market climate and, the second, from 2003 to 2007 was characterised as a bull market. As a result of these further investigations, the researcher will be able to conclude whether this bias caused by the market climate is present in the investigation.

3.8 Previous Research

The growth in the mutual fund industry has led to an increasing interest of analysis of the evaluation of mutual funds. There is an extensive collection of research on mutual funds. However, in relation to emerging markets, the studies collated have mainly focused on US funds that have been invested in the emerging markets. There is very limited research to date that has explored Swedish mutual funds.

Dahlquist, Engström & Söderlind (2000) are cited as one of these few studies. They conducted research on Swedish mutual fund investment in Swedish securities, from 1993 to 1997. The study focused on the relationship between fund size, management fees, turnover ratio and performance. According to the results, bigger mutual funds on average tend to perform worse than smaller funds. In addition, the study showed that funds with higher turnover ratios performed better than those with lower turnover ratios. Furthermore, there existed no correlation between high fees and high return.

Wiberg (2004) compares Swedish long-term fund return against the OMRX-Bond, in the period of 2000 to 2003. The results of the investigation showed that, on average, those mutual funds studied outperformed the market and that an increase in volatility in the funds might not automatically lead to higher returns. However, if such an increase might occur, it would be consistent in the sense that it makes the Swedish long-term bond funds on average, more comparable to the Swedish market. On the subject of Swedish mutual funds investing in Emerging markets, Engström (2003) is cited as the only study found. He examined how the costly search for information affects fund performance the fund sample consisted of all equity funds in the Swedish mutual fund industry from 1993 to 1998 and all those that had an investment objective in Asia or Europe.

The results suggested that international funds under-performed. The deducted management fee can explain the under-performance of the European funds but not the under-performance of the
Asian funds. Hence, European-based funds have superior stock selection ability in Europe in comparison to Asia. Moreover, the empirical evidence also shows that European-based funds, that have a regional investment objective in Asia, have a significantly worse stock selection ability than funds that have a more focused investment objective. Furthermore, the empirical evidence in this paper has shown that from an international investor's point of view, investments in European funds have been beneficial. These funds have provided their investors with diversification benefits and positive performance. In contrast, the Asian funds performance is pervasively negative in terms of diversification benefits.

3.9 Theory Model
To summaries the theory chapter and for a better understanding of the correlation between the theory and the research, a model was created:

![Diagram](image)

Figure 8: THEORY MODEL
4. EMPIRICAL METHOD & DATA

This chapter will firstly present the strategy and model for the research and secondly explain how the data was collected and analyzed; finally method criticism will be conducted.

4.1 Research Strategy

4.1.1 RESEARCH PLAN

The research is planed as a quantitative research, to be conducted through the analysis of the funds historical data. Hypothesis will be stated to cover that set out in the aim of the investigation. To be able to reject or accept the hypothesis stated, the following measures will be applied:

(i) Treynor’s Index

\[ T_i = \frac{\bar{R}_p - \bar{R}_f}{\beta_p} \]

Where,

- \( \bar{R}_p \) = Average return on the portfolio over the evaluation period
- \( \bar{R}_f \) = Average risk–free return over the evaluation period (Treasury bills return)
- \( \beta_p \) = Beta of the mutual fund over the evaluation period.

(ii) Sharpe Ratio

\[ S_i = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p} \]

Where,

- \( \bar{R}_p \) = Average return on the portfolio over the evaluation period
- \( \bar{R}_f \) = Average risk–free return over the evaluation period (Treasury bills return)
- \( \sigma_p \) = The Standard deviation of the portfolio over the evaluation period.
(iii) **Jensen’s Index**

\[
J_i = \overline{R}_p - \left[ (\overline{R}_f + \beta \times (\overline{R}_m - \overline{R}_f) ) \right]
\]

Where,
\[
\overline{R}_p = \text{Expected Return of the portfolio}
\]
\[
\overline{R}_f = \text{Average risk-free return over the evaluation period (Treasury bills return)}
\]
\[
\beta = \text{Beta of the mutual fund over the evaluation period.}
\]
\[
\overline{R}_m = \text{Expected Return on the market portfolio}
\]

4.1.2 **HYPOTHESES**

To test the performance of the Swedish and Emerging markets funds 3 null and 3 alternative hypotheses were created based on the aim of the research and the theories. In some applications it may not be obvious how the null and alternative hypothesis should be formulated. Care must be taken to be sure the hypotheses are structured appropriately and that the hypothesis-testing conclusion provides the information the researcher wants. (Anderson, Sweeney, Williams, 2002, p. 324-325)

In hypothesis testing a tentative assumption about a population parameter is made, this tentative assumption is called the null hypothesis and is denoted by \( Ho \). Another hypothesis, which is the opposite of what is stated in the null hypothesis is defined and called the alternative hypothesis. The alternative hypothesis is denoted by \( Ha \).

There are three different methods of develop a null hypothesis.

1) **Testing research hypotheses**, where the research hypothesis is generally stated as the alternative hypothesis. The conclusion that the research hypothesis is true can be made if the null hypothesis is rejected.
2) *Testing the validity of a Claim*, in this type of hypothesis testing situation generally is assumed that the claim is true unless the sample evidences proves otherwise. The conclusion that the claim is false can be made if the null hypothesis is rejected.

3) *Testing in Decision-Making Situations*, this situation occurs when a decision maker must choose between two courses of action, one associated with the null hypothesis and another associated with the alternative hypothesis. (Anderson, Sweeney, Williams, 2002, p. 325-326).

For this research, testing the validity of a claim will be used to develop the null hypothesis and the null hypothesis will be rejected if the sample evidences proves that the claim is false.

Hypothesis 1:

*H0: The Swedish mutual funds performed better than the Emerging markets mutual funds*

*Ha: The Emerging markets mutual funds performed better than the Swedish mutual funds*

Hypothesis 2:

*H0: The Emerging markets mutual funds performed better than the Emerging markets index*

*Ha: The emerging market index performed better than the emerging markets mutual funds*

Hypothesis 3:

*H0: The Swedish mutual funds performed better than the Swedish market index*

*Ha: The Swedish market index performed better than the Swedish mutual funds*
4.1.3 RESEARCH MODEL

A model was created based on the theoretical framework taking into consideration the research plan for this investigation and the intention of the study: to test the performance of emerging markets funds against the Swedish mutual funds investing in equities.

Figure 9: RESEARCH MODEL
4.2 Data

4.2.1 SAMPLE OF FUNDS

The researcher conducted an extensive research to find all existing mutual funds investing in emerging markets on the Swedish stock market. The majority of Swedish mutual funds investing in emerging markets are relatively new due to investment in emerging markets funds being a relatively new trend in Sweden. To be able to perform a study on risk and returns in mutual funds, a period of at least 3 years is recommended. As a result of their short period on the market, not all funds were appropriate for use in this research: the mutual funds which had passed a longer period of time on the market were selected for research. Based on the selection of the emerging markets funds the researcher selected an equal number of both the funds investing in Swedish equities and managed by the same bank, and the emerging markets funds. Thus, the total number of funds analyzed in this study is 8 - 4 of which focus on the emerging markets and 4 on the Swedish markets. The period to be studied is between January 2000 and September 2006.

Two portfolios were created in order to the compare performance of the Emerging markets mutual funds and the Swedish mutual funds. The decision to create a portfolio and not compare the funds individually is partially based on the fact that the management of funds and managers decisions affect the performance of the funds. In this study, in order to undermine the impact of the manager’s decisions, the mean of the portfolios will be compared.

The portfolios studied are:
Portfolio (1) EMERGING MARKETS
Carlson Global Emerging Markets, Handelsbanken tillväxtmarknadsfonden, Länsförsäkringar tillväxtmarknad, SEB Emerging Markets fond

Portfolio (2) SWEDISH MARKET
Carlson Sverige fond, Handelsbanken aktiefond index, Länsförsäkringar Sverige fond, SEB Sverige fond
4.2.2 MORNINGSTAR HISTORICAL DATA

Morningstar was contacted via e-mail for assistance regarding providing the historical data of the funds selected. After a period of no response from the company, the researcher contacted directly Jakob Walgreen who is in charge of historical data at Morningstar Sweden. Jakob proved to be extremely helpful, allowing the research to compile historical data and accommodate the researchers wishes. The data has been transmitted via Internet and consists of one large Excel file. The excel file itself consists of two worksheets. The separate worksheets are labelled “daily rate returns” and “data index”.

4.2.3 FUNDS CHARACTERISTICS

The explored sample of funds consists of equity mutual funds investing in Sweden and mutual funds investing in the emerging markets.

The Swedish funds selected invest mainly in large-cap firms which are predominantly focused on manufacturing, finance and telecommunication. ex. (Volvo, Atlas Copco, Ericsson, Telia Sonera, Nordea, Investor, SEB, Handelsbanken and others)

The emerging markets funds are compounded of Asia (excluding Japan), Latin America, and East Europe and invest also in large-cap firms which also predominantly focus on manufacturing, finance and telecommunication. Ex. (Samsung Electronics, Sinopec, Hon Hai precision Industry, America Mobile, China mobile Ltd. P, Petroleo Brasilero, Saving Bank of the Russian Federation and others)

4.2.4 BENCHMARKETS

The Morningstar Swedish Index (MSCI) was used as a benchmark for Swedish funds. The Morningstar Emerging Markets Index (MSCI) was used as a benchmark for the funds investing in the emerging markets. The performance of the portfolios will be compared against their
respective benchmark to be able to answer whether the portfolios did in fact outperform the market.

4.2.5 RISK FREE RATE (rf)

The risk-free rate is the minimum return an investor expects for any investment (Bodie, Kane & Marcus, 2005, p. 113). Often, it is what the investor is able to achieve by buying a risk-free government bond. Therefore, the free rate used in this research is the Swedish Treasury bills Rate. The historical data of the Swedish Treasury bills rate was gathered from the home page of Sweden’s Riskbank.

4.2.6 PREPARATION OF THE DATA

The first step of data analysis was to reorder the data. The data provided by Morningstar was on a daily basis and so the format was adapted to give monthly readings. There was a problem encountered with the data due to some of the daily rate returns being missing on the worksheet. To overcome this problem the researcher computed a mean value for those days using the linear interpolation. The researcher selected the day before and the day after the missing value and calculated the mean of the daily returns for the missing days.

Linear interpolation to interpolate between $\text{NAV}_1$ y $\text{NAV}_2$ at day d

$$\text{NAV} = \text{NAV}_1 + \frac{d-d_1}{d_2-d_1}(\text{NAV}_2 - \text{NAV}_1)$$

Where:
$\text{NAV}_t=$Daily net asset value per unit of the mutual fund in the period t
$d - d_1 = n^o$ days between the first data and the day of interpolation
$d_2 - d = n^o$ days between the dates using to interpolate.

The historical data of the Swedish Treasury bills rate, gathered from the home page of Sweden’s Riskbank, also had some missing values. The same procedure applied to the mutual funds data was also applied to the data of the treasury bills rate.
After concluding the preparation of data, the researcher prepared an Excel worksheet based on the measurements that were to be applied to the data (see appendix). The results will be presented in the next chapter and in three different periods.

The first period shown on the results is the total period studied from Jan. 2000 to Sep. 2007.

The next periods are divided in two periods of 3 years, from Jan 2000 to Dec. 2003 and from Jan 2004 to Dec 2006. The reason for having three different periods when presenting the data is the fact that the researcher wants to see if there is any difference in the results due to the market climate. The first period analyzed is characterized as a Bear market and the second as a Bull market.

4.3 Methodological Criticism

On completion of the research, some aspects can be criticized. In relation to the data used, it can be argued that the researcher used a convenience sampling, which is a non-probability sampling technique. The elements are included in the sample without prespecified or known probabilities of being selected. Although, convenience samples have the advantage of relatively easy sample selected data collection, the difficulties of evaluating the “goodness” of the sample in terms of its how it represents the population should be seen as a major disadvantage (Anderson, Sweeney, Williams, 2002, p. 275-276). The result of which is that the research data cannot be generalized to a larger population. The researcher will take this into consideration when analyzing the results and forming conclusions.
5. EMPIRICAL SUMMARY & ANALYSIS

The ‘Empirical Summary’ chapter will summarise and present the research data and analyse the theories and the empirical findings.

5.1 Summary

The main purpose of this study was to perform a comparative analysis from 2000 to Sep. 2007 between (i) Swedish mutual funds investing in Sweden, and; (ii) Swedish mutual funds investing in emerging markets.

The research focused on analyzing risk and returns. Treynor’s Index, Sharpe’s index and Jensen’s Index were applied to examine whether the investment in mutual funds was more profitable in Sweden or in the Emerging markets. The research endeavors to answer the following questions:

Considering risk and return factors, is it more profitable to invest in Swedish equity funds or invest in equity funds from emerging markets?

Was the Swedish mutual funds performance better than the performance of the Swedish index?

Was the Emerging markets mutual funds performance better than the performance of the emerging markets index?

The data analyzed were two portfolios

Portfolio (1) EMERGING MARKETS
Carlson Global Emerging Markets, Handelsbanken tillväxtmarknadsfonden, Länsförsäkringar tillväxtmarknad, SEB Emerging Markets fond

Portfolio (2) SWEDISH MARKET
Carlson Sverige fond, Handelsbanken aktiefond index, Länsförsäkringar Sverige fond, SEB Sverige fond
A research model was created based on the theory and 3 hypotheses were stated.

Hypothesis 1:

\textbf{H0: The Swedish mutual funds performed better than the Emerging markets mutual funds}
\textbf{Ha: The Emerging markets mutual funds performed better than the Swedish mutual funds}

Hypothesis 2:

\textbf{H0: The Emerging markets mutual funds performed better than the Emerging markets index}
\textbf{Ha: The emerging market index performed better than the emerging markets mutual funds}

Hypothesis 3:

\textbf{H0: The Swedish mutual funds performed better than the Swedish market index}
\textbf{Ha: The Swedish market index performed better than the Swedish mutual funds}

A quantitative method with a positivistic epistemology was used for the research. Quantitative research is an exploratory study with a deductive approach and therefore the most appropriate method for this research was to use statistical tools to test the claim on the research questions and to test the hypotheses stated. The Excel program was used to analyze the data, the Statgraphics Centurion program to perform the validation of the test conducted and Metastock program for the creation of the graphs.
5.2 Data Analysis

5.2.1 SIMPLE REGRESSION

A simple regression analysis was performed to ensure that the data and the index selected were valid for the research. The results are presented on the tables below.

**Simple Regression – SW Funds vs. SW MSCI**

Dependent variable: FUNDS SW  
Independent variable: MSCI SW  
Linear model: \( Y = a + b \cdot X \)

**Coefficients**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Least Squares</th>
<th>Standard Error</th>
<th>T Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.00305034</td>
<td>0.00183482</td>
<td>1.66248</td>
<td>0.0999</td>
</tr>
<tr>
<td>Slope</td>
<td>0.760631</td>
<td>0.0255093</td>
<td>29.8178</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Analysis of Variance**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>0.274886</td>
<td>1</td>
<td>0.274886</td>
<td>889.10</td>
<td>0.0000</td>
</tr>
<tr>
<td>Residual</td>
<td>0.0278256</td>
<td>90</td>
<td>0.000309173</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (Corr.)</td>
<td>0.302712</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: SIMPLE REGRESSION – SW funds vs. MCSI SW
Correlation Coefficient = 0.952932
R-squared = 90.8079 percent
R-squared (adjusted for d.f.) = 90.7058 percent
Standard Error of Est. = 0.0175833
Mean absolute error = 0.0126186
Durbin-Watson statistic = 1.85834 (P=0.2459)
Lag 1 residual autocorrelation = -0.0462616

The results from the tables above shows a P-value less than 0.05, and this means that there is a statistically significant relationship between the Swedish funds and the MSCI Sweden. This relationship is tested at the 95.0% level.

The R-Squared statistic indicates that the model as fitted explains 90.80% of the variability in the Swedish funds. Further the correlation coefficient of 0.953, indicates a relatively strong relationship between the variables.

Simple Regression – EM Funds vs. EM MSCI

Dependent variable: FUNDS EM
Independent variable: MSCI EM
Linear model: \( Y = a + bX \)

Coefficients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Least Squares</th>
<th>Standard Error</th>
<th>T Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.0028513</td>
<td>0.00286161</td>
<td>-0.996398</td>
<td>0.3217</td>
</tr>
<tr>
<td>Slope</td>
<td>1.0105</td>
<td>0.05482</td>
<td>18.43310</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Analysis of Variance
Table 2: SIMPLE REGRESSION – EM funds vs. MCSI EM

Correlation Coefficient = 0.889152
R-squared = 79.059 percent
R-squared (adjusted for d.f.) = 78.8264 percent
Standard Error of Est. = 0.0268669
Mean absolute error = 0.0204745
Durbin-Watson statistic = 2.04889 (P = 0.5861)
Lag 1 residual autocorrelation = -0.0257093

The results on the tables above shows a P-value less than 0.05, and this means that there is a statistically significant relationship between the Emerging markets funds and the MSCI from the EM. This relationship is tested at the 95.0% level.

The R-Squared statistic indicates that the model as fitted explains 79.059% of the variability in the Emerging markets funds. Further the correlation coefficient of 0.889, indicates a relatively strong relationship between the variables.
5.2.2 MUTUAL FUND RETURNS

When the data was reorder and prepared for the analysis the researcher calculated the mutual funds rate of return as shown below.

The rate of return on an investment in a mutual fund is measured as the increase or decrease in net asset value.

\[ R_t = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}} \]

Where:

- \( R_t \) = Monthly return of a fund in the period \( t \)
- \( NAV_t \) = Monthly net asset value per unit of the mutual fund in the period \( t \)
- \( NAV_{t-1} \) = Monthly net asset value per unit of the mutual fund in the period \( t-1 \)

This measure of the rate of return ignores any commissions such as front-en loads paid to purchase the fund. (Bodie, Kane & Marcus, 2005, p. 113)

The rate of return on the funds studied was analyzed applying the formula explained above and the results are shown below.

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Average Monthly Return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From Jan-00 to Sep 07</td>
</tr>
<tr>
<td>Portfolio Swedish Funds</td>
<td>0.54%</td>
</tr>
<tr>
<td>MSCI Sweden Index</td>
<td>0.30%</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>0.79%</td>
</tr>
<tr>
<td>MSCI Emerging Markets Index</td>
<td>1.07%</td>
</tr>
</tbody>
</table>

Table 3: AVERAGE MONTHLY RETURN

As shown on the table, the returns during the total period were positive for both markets. However, the EM funds had higher returns than the SW funds during the total period. When
looking to the first period the results were negative for both SW and EM funds and the SW fund had lower returns than the EM funds. In the second period both funds have a positive return. Again, the EM funds had better returns than the SW funds.

<table>
<thead>
<tr>
<th>Total Returns (%)</th>
<th>From Jan-00 to Sep 07</th>
<th>From Jan-00 to Dec-03</th>
<th>From Sep-04 to Sep 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Swedish Funds</td>
<td>40.57%</td>
<td>-48.96%</td>
<td>90.08%</td>
</tr>
<tr>
<td>MSCI Sweden Index</td>
<td>4.02%</td>
<td>-62.16%</td>
<td>77.37%</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>77.34%</td>
<td>-41.53%</td>
<td>134.87%</td>
</tr>
<tr>
<td>MSCI Emerging Markets Index</td>
<td>135.82%</td>
<td>-30.27%</td>
<td>128.40%</td>
</tr>
</tbody>
</table>

Table 4: TOTAL RETURNS (%)

The table above shows the total returns during the three different periods and the same discussion as for the monthly returns applies for the total returns. In addition, it can be observed that the Swedish mutual funds had better total returns than the MSCI index. The opposite applies for the EM funds, where the funds under performed the MSCI index.

<table>
<thead>
<tr>
<th>Total Returns Annualized (%)</th>
<th>From Jan-00 to Sep 07</th>
<th>From Jan-00 to Dec-03</th>
<th>From Sep-04 to Sep 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Swedish Funds</td>
<td>4.54%</td>
<td>-20.59%</td>
<td>23.87%</td>
</tr>
<tr>
<td>MSCI Sweden Index</td>
<td>0.52%</td>
<td>-28.34%</td>
<td>21.05%</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>7.76%</td>
<td>-16.80%</td>
<td>32.93%</td>
</tr>
<tr>
<td>MSCI Emerging Markets Index</td>
<td>11.84%</td>
<td>-11.63%</td>
<td>31.69%</td>
</tr>
</tbody>
</table>

Table 5: TOTAL RETURNS ANNUALIZED (%)

The total annual returns show approximate annualized percentage return of the funds during the periods studied. The same conclusion as before can be drawn from here; the EM funds had better annualized returns than the SW fund during the total period and that the SW fund had better returns than the MSCI index.
5.2.3 RESULTS OF STANDARD DEVIATION

The standard deviation measurement is used to estimate a mutual fund’s risk. It is a statistical measurement used to define the scattering of returns around the average return. The method is also often used to define uncertainty of an outcome and used in the evaluation of investment for the same purpose.

An investment with a low standard deviation is less “risky” than an investment with a higher standard deviation (Fabozzi, 1998, p. 743-46)

\[
\sigma = \sqrt{\frac{\sum_{i=1}^{N} (R_{pi} - \overline{R}_p)^2}{N - 1}}
\]

\(\sigma\) = Standard Deviation.

\(R_{pi}\) = Portfolio total return during period i

\(\overline{R}_p\) = Average return during n periods

\(N\) = Time period

For this research the standard deviation was computed to analyze the risk of both portfolios and also the risk of the MSCI indexes. The results are presented below.

<table>
<thead>
<tr>
<th>Total Risk (%)</th>
<th>Annualized Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From Jan-00 to Sep 07</td>
</tr>
<tr>
<td>Portfolio Swedish Funds</td>
<td>19.87%</td>
</tr>
<tr>
<td>MSCI Sweden Index</td>
<td>24.89%</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>20.12%</td>
</tr>
<tr>
<td>MSCI Emerging Markets Index</td>
<td>17.70%</td>
</tr>
</tbody>
</table>

Table 6: ANNUALIZED STANDARD DEVIATION (%)
The results above show that the Standard Deviation on the overall periods is higher for the MSCI SW and lowest for the MCSI EM. The results illustrate that there was more risk involved in investing in Sweden than in the Emerging Markets. The same result is valid for the first period. In the second period the EM funds and the MSCI index show the highest Standard Deviation. This can be translated that there is more risk involved in investing in the Emerging Markets than in the Swedish Market during the last period studied.

5.2.4 RESULTS OF BETA (β)

Beta Coefficient is a measure of the sensitivity of an asset to changes in the market. Technically, it is the correlation of the asset price with the net value of all assets in the market. (Moles & Terry, 1998, p. 44)

\[
\beta = \frac{\text{cov}(R_p, R_m)}{\sigma_m^2}
\]

Where,

\[
\frac{\text{cov}(R_p, R_m)}{\sigma_m^2} = \text{the covariance between the rates of return.}
\]

<table>
<thead>
<tr>
<th>Beta Coefficient</th>
<th>From Jan-00 to Sep 07</th>
<th>From Jan-00 to Dec 02</th>
<th>From Sep-04 to Sep 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Swedish Funds</td>
<td>0.7607</td>
<td>0.7122</td>
<td>0.8878</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>1.0105</td>
<td>0.9879</td>
<td>0.9922</td>
</tr>
</tbody>
</table>

Table 7: BETA COEFFICIENT (%)

The Beta for the SW funds and the EM funds studied are presented in the table above. It can be observed from the results that the beta for the EM is higher in the three periods. A higher beta means greater volatility and therefore according to the beta the EM can be considered a riskier investment during the period studied.
5.2.5 RESULTS OF ALPHA COEFFICIENT (α)

The Alpha is a risk-adjusted measure of the so-called "excess return" on an investment. It is a common measure of assessing an active manager's performance as it is the return in excess of a benchmark index or "risk-free" investment. (Fabozzi, 1998, p. 70)

\[
\alpha_p = \bar{R}_p - \bar{R}_m \times \beta
\]

Where,
\( \alpha_p \) = Alpha coefficient of the portfolio.
\( \bar{R}_p \) = Expected Return of the portfolio
\( \bar{R}_m \) = Return on the market portfolio
\( \beta \) = Beta of the portfolio over the evaluation period.

The alpha was calculated for the funds, analyzed in order, to see the performance of the funds against the market. The results are presented below.

<table>
<thead>
<tr>
<th></th>
<th>Annualized Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From Jan-00 to Sep 07</td>
</tr>
<tr>
<td>Swedish Funds</td>
<td>3.8117</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td>-3.7787</td>
</tr>
</tbody>
</table>

Table 8: ANNUALIZED ALPHA (%)

The results above show that in the overall period, and in the last period, the SW funds had a positive Alpha. The EM funds had a negative alpha in the overall period and the second period. In the first period both portfolios have a negative alpha. However, the Swedish funds show a considerably better Alpha during the three periods (higher). A better Alpha signals that managers managed the Swedish funds much better than the Emerging markets funds.
5.2.6 RESULTS OF COEFFICIENT OF DETERMINATION ($R^2$)

The Coefficient of determination is a statistical measure that represents the percentage of a fund's or security's movements that are explained by movements in a benchmark index. Or a measure of the percentage of fund’s movements that can be accounted for by changes in its benchmark index. (Fabozzi, 1998, p. 750)

$R^2$ is a statistic that will give some information about the goodness of fit of a model. In regression, the $R^2$ coefficient of determination is a statistical measure of how well the regression line approximates the real data points.

$$R^2 = \left( \frac{\text{cov}(R_p, R_m)}{\sigma_p \cdot \sigma_m} \right)^2$$

The coefficient of determination was calculated and the results are shown below:

<table>
<thead>
<tr>
<th></th>
<th>Coefficient of determination: $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From Jan-00 to Sep 07</td>
</tr>
<tr>
<td>Portfolio Swedish Funds</td>
<td>90.80%</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>79.06%</td>
</tr>
</tbody>
</table>

Table 9: COEFFICIENT OF DETERMINATION

An $R^2$ of 100 indicates that fund’s movements are perfectly correlated with its benchmark and all movements of a security are completely explained by movements in the index. The results on the table above show that the Swedish funds have a higher correlation in all periods.
5.2.7 RESULTS OF TREYNOR’S INDEX

\[ T_i = \frac{\bar{R}_p - \bar{R}_f}{\beta_p} \]

Where,
\[ \bar{R}_p \] = Average return on the portfolio over the evaluation period
\[ \bar{R}_f \] = Average risk–free return over the evaluation period (Treasury bills return)
\[ \beta \] = Beta of the mutual fund over the evaluation period.

As previously mentioned in the theory chapter, the Treynor’s Index measures the performance of the portfolio with (\( \beta \)) as measure of risk. The results of the test are presented in the table below.

<table>
<thead>
<tr>
<th></th>
<th>Annualized Treynor’s Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From Jan-00 to Sep 07</td>
</tr>
<tr>
<td>Portfolio Swedish Funds</td>
<td>0.0121</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>0.0179</td>
</tr>
</tbody>
</table>

Table 10: TREYNOR’S INDEX

From the table above, it can be observed that during all the three period the SW funds had lower performance, according to Treynor’s index. However, the differences between the performances are not substantial

5.2.8 RESULTS OF SHARPE’S INDEX

\[ S_i = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p} \]

Where,
\[ S_i \] = Sharpe performance index
\[ \sigma_p \] = Portfolio standard deviation
As previously mentioned in the theory chapter, Sharpe’s Index measures how well the return of the funds compensates the investor for the risk taken, using the Standard Deviation as a measure of risk. The results of Sharpe’s index are shown below:

<table>
<thead>
<tr>
<th>Annualized Sharpe’s Index</th>
<th>From Jan-00 to Sep 07</th>
<th>From Jan-00 to Dec-02</th>
<th>From Sep-04 to Sep 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Swedish Funds</td>
<td>0.1598</td>
<td>-0.9339</td>
<td>1.6194</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>0.3119</td>
<td>-0.8878</td>
<td>1.7198</td>
</tr>
</tbody>
</table>

Table 11: SHARPE’S INDEX

From the table it can be observed that in the overall period the Swedish funds have a lower performance than the EM funds. This means that considering risk and returns the EM funds performed better in the overall period studied.

When looking at the first period and second period separately, the EM markets fund also performed better. However, this a minor difference in relation to the whole period.

5.2.9 RESULTS OF JENSEN INDEX

(iii) Jensen’s Index

\[ J_i = \bar{R}_p - \left( \bar{R}_f + \beta \times (\bar{R}_m - \bar{R}_f) \right) \]

Where,

\( \bar{R}_p \) = Expected Return of the portfolio

\( \bar{R}_f \) = Average risk–free return over the evaluation period (Treasury bills return)

\( \beta \) = Beta of the mutual fund over the evaluation period.

\( \bar{R}_m \) = Expected Return on the market portfolio
As mentioned in the theory chapter, Jensen’s index measure is used to determine the excess return and to see if the funds outperformed the market. If the Ji is not statistically different from zero, there is no unique return. A statistically significant Ji that is positive signifies that the funds have outperformed the market index; a negative value signifies the contrary, that the fund performed under the market index.

<table>
<thead>
<tr>
<th></th>
<th>From Jan-00 to Sep 07</th>
<th>From Jan-00 to Dec-02</th>
<th>From Sep-04 to Sep 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Swedish Funds</td>
<td>0.0024</td>
<td>-0.0013</td>
<td>0.0035</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
<td>-0.0028</td>
<td>-0.0048</td>
<td>0.0013</td>
</tr>
</tbody>
</table>

Table 12: JENSEN’S INDEX

The results on the table show that the SW funds outperformed the market in the overall period and in the second period, while in the first period the funds under performed the market.

The result shows that EM funds under performed the market in the overall period and in the first period as well. The second period is the only period where the EM outperformed the market and the difference between the SW and the EM in the second period is considerably higher than the Ji of the SW funds.
5.2.10 RESULTS IN GRAPHS

Figure 10: SWEDISH FUNDS VS EMERGING MARKETS FUNDS

Figure 11: SWEDISH FUNDS VS MSCI SWEDEN
Figure 12: EMERGING MARKETS FUNDS VS MSCI EMERGING MARKETS
6. CONCLUSIONS

The Conclusion chapter will firstly present the conclusions from the analysis in relation to the purpose of the study, secondly a discussion of validity concerns will be presented, finalising with suggestions for further research.

6.1 Conclusions

Concluding this research it is important to underline that a generalisation of the results is not possible due to the selection method of data. However the results may give the reader an understanding of the equity mutual funds trends on the Swedish market during the years studied.

The aim of the research was to answer the following question:

**Considering risk and return factors, is it more profitable to invest in Swedish equity funds or invest in equity funds from emerging markets?**

Was the Swedish mutual funds performance better than the performance of the Swedish index?

Was the Emerging markets mutual funds performance better than the performance of the emerging markets index?

The following portfolios were studied:

Portfolio (1) EMERGING MARKETS
Carlson Global Emerging Markets, Handelsbanken tillväxtmarknadsfonden, Länsförsäkringar tillväxtmarknad, SEB Emerging Markets fond

Portfolio (2) SWEDISH MARKET
Carlson Sverige fond, Handelsbanken aktiefond index, Länsförsäkringar Sverige fond, SEB Sverige fond
CONCLUSIONS

After the analysis was performed the research questions can be answered according to results obtained from the test performed on the data.

The results are presented on the table below.

<table>
<thead>
<tr>
<th>Ratios of Performance from Jan-00 to Sep-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharpe’s Index</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Portfolio Swedish Funds</td>
</tr>
<tr>
<td>Portfolio Emerging Markets Funds</td>
</tr>
</tbody>
</table>

The analysis on risk and return using the Treynor’s index and the Sharpe’s Indexes illustrate that the emerging markets funds performed better than the Swedish funds.

The results from the Jensen’s Index showed that the Swedish funds outperformed the market, whereas the Emerging markets funds under performed the market. This result shows that, even if the overall performance of the Emerging Market funds had been better than the Swedish funds, it would not have been due to management because the Emerging markets MSCI performed much better than the Emerging funds. This is an indication that the management in Sweden is good at dealing with Swedish funds but poor when it comes to managing funds from emerging markets.

The results from observing the data in two different periods, a Bull market period and a Bear market period illustrated in the tables below.
The conclusions which can be drawn analyzing the results from the three different periods studied are as follow:

Sharpe’s Index shows that the reward per unit of risk is better for the total period. In the total period the reward is 15.01% higher for the emerging market funds compared with the Swedish funds. In the short periods the difference is less, the reward is higher during the bullish period, (the last period) 10.03%. In the bearish period (the first period) is only 4.61%.

Treynor’s index shows that the reward per unit of systematic risk is smaller in the total period. In the total period the reward is only 0.59% higher for the emerging market compared with the Swedish funds. In the 3 year periods the difference is higher for the bearish period, 3.83% than for the bullish period 1.57%.

Jensen’s index shows that the expected performance is higher in the total period that in the short periods. In the total period the difference is 0.52% higher for the Swedish funds compared with the emerging markets funds. In the 3 year periods the difference is less, 0.36% higher in the bearish period, and 0.22% in the bullish period.
The last part of the conclusion is to accept or reject the hypotheses stated for this research. The hypotheses are presented below and the research model will be used to reject or accept the hypotheses.

Hypothesis 1:

*H0: The Swedish mutual funds performed better than the Emerging markets mutual funds*

*Ha: The Emerging markets mutual funds performed better than the Swedish mutual funds*

Hypothesis 2:

*H0: The Emerging markets mutual funds performed better than the Emerging markets index*

*Ha: The emerging market index performed better than the emerging markets mutual funds*

Hypothesis 3:

*H0: The Swedish mutual funds performed better than the Swedish market index*

*Ha: The Swedish market index performed better than the Swedish mutual funds*
CONCLUSIONS

MODERN PORTFOLIO THEORY (MPT)

SHARPE’S RATIO

TREYNORS’ INDEX

JENSENS’ INDEX

EMERGING MARKETS FUNDS

SWEDISH FUNDS

RESULTS

Hypothesis 1
SW > EM
= REJECT

Ti = 0.0179
Si = 0.3119

RESULTS

Hypothesis 2
EM > MSCI
= REJECT

Ti = 0.0121
Si = 0.1598

RESULTS

Hypothesis 3
SW > MSCI
= ACCEPT

Ji = -0.0028

RESULTS

Ji = 0.0024
6.2 Validity

*Validity* is concerned with whether the findings are really about what they appear to be about (Saunders, Lewis, & Thornhill, 2007 p. 151).

*Internal validity* establishes a causal relationship, whereby certain conditions are shown to lead to other conditions, credibility of causal connections is very important for the internal validity. (Bryman & Bell, 2003 p. 33)

To create validity for the research the theory and the research question has been connected to the research model through finding relationships. The relationships then act as a foundation for the hypothesis. Further as foundation for the analysis, finally for evaluating and presenting the results from the research. By using the relationships a clear pattern has been upheld between the theory and the empirical data.

An additional aspect applied to the research to enhance the validity was the performance of a simple regression test to ensure that the data was valid for the research.

The major problem encountered due to the limited number of funds studies is that the ability to achieve validity. The low number of funds studied is due to the relatively young nature of Swedish funds investing in emerging markets. It is possible that the low frequency might affect the mean values being used, and because of that, the information might deviate from the expected, resulting in a decreased validity.
6.3 Reliability

Reliability demonstrates that the operations of a study, such as the data collection procedures, can be repeated with the same results. Reliability is essentially a synonym for consistency and repeatability over time, over instruments and over groups of respondents. For research to be reliable it must demonstrate that if it were to be carried out on a similar group of respondents in a similar context, then similar results would be found. (Saunders, Lewis, & Thornhill, 2007 p. 149)

Issues of both validity and reliability have been considered. To create reliability for this research the researcher endeavored to avoid inappropriate theories, which could result in under-minding the reliability of the research. The theories used in this research to test the historical data are valid and often used by other researchers.

The reliability of this research can strongly be considered as sign that the outcome of this investigation should be the same when the calculation is repeated at other times because the data examined is fair and objective using well-known statistical methods.

6.4 Generalisability

Generalisability establishes the domain to which a study’s findings can be generalised; the main tactic is using replication logic in multiple case studies and questionnaire survey. By means of replication, a theory can be tested a second or even more times and the same results should turn out (Saunders, Lewis, & Thornhill, 2007 p. 151)

The researcher used a convenience sampling, which is a non-probability sampling technique. The elements are included in the sample without prespecified or known probabilities of being selected. Convenience samples have the advantage of relatively easy sample selected data collection; but the disadvantage of the difficulties to evaluate the “goodness” of the sample in terms of its representativeness of the population. (Anderson, Sweeney, Williams, 2002, p. 275-276)
Since the method used was a convenience sampling of selecting the data, the result cannot be generalized to a larger population. However the results may give the reader an understanding of the trends on the Swedish market during the period studied. Moreover the intention of the research was to find out the performance of equity funds investing in the Swedish market and the emerging markets. Therefore the results of the research can not be applicable to other category of mutual funds on the Swedish market.

6.5 Future Research

There are no limitations to the extent at which the performance of the mutual funds can be explored, relating to the dynamic environment that exists on the Stock market.

Below are some examples of areas relating to mutual funds, which could be an interesting subject for further research:

The purpose of this research was to compare the performance of the Swedish mutual funds investing in Sweden and in the Emerging markets.

It could be of interest to do similar research with the same purpose as this research, but on a larger scale. Since investing in Emerging markets mutual fund is relatively new this could be performed in the future when historical data for the new funds investing in emerging markets achieves an historical record of three years.

A final suggestion is that future research could focus only in the analysis of the mutual funds investing in emerging markets, selecting also the mutual funds managed outside Sweden.
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8. APPENDIX

8.1 Gross saving in Equity Funds

Source: Swedish statistical central office (SCB) WebPages.
8.2 Total Expense Ratio
Total Expense ratio (TER) % for actively managed equity funds registered in the respective countries.

<table>
<thead>
<tr>
<th>Reg. country</th>
<th>Average (unweighted)</th>
<th>Average (weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sweden</td>
<td>1.21</td>
<td>1.31</td>
</tr>
<tr>
<td>2 Belgium</td>
<td>1.25</td>
<td>1.03</td>
</tr>
<tr>
<td>3 Germany</td>
<td>1.41</td>
<td>1.18</td>
</tr>
<tr>
<td>4 Switzerland</td>
<td>1.50</td>
<td>1.46</td>
</tr>
<tr>
<td>5 France</td>
<td>1.58</td>
<td>1.33</td>
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<tr>
<td>6 Austria</td>
<td>1.60</td>
<td>1.42</td>
</tr>
<tr>
<td>7 UK</td>
<td>1.62</td>
<td>1.52</td>
</tr>
<tr>
<td>8 Italy</td>
<td>1.95</td>
<td>1.93</td>
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<tr>
<td>9 Ireland</td>
<td>1.98</td>
<td>1.63</td>
</tr>
<tr>
<td>10 Spain</td>
<td>2.12</td>
<td>2.12</td>
</tr>
<tr>
<td>11 Luxembourg</td>
<td>2.15</td>
<td>1.77</td>
</tr>
</tbody>
</table>

Source: Fitzrovia

Source: Fitzrovia statistics, retrieved from The Swedish Investment Fund Association
8.3 Fund Assets

Fund assets, SEK billion
Source: Money mate, retrieved from: The Swedish Investment Fund Association

8.4 Equity Funds Savings Distribution

Source: Money mate, retrieved from: the Swedish Investment fund Association
### 8.5 Data analysis

<table>
<thead>
<tr>
<th>Swedish Funds</th>
<th>MSCI Sweden</th>
<th>Emerging M. Funs</th>
<th>MSCI Emerging M.</th>
<th>Swedish T. Bill % Annual</th>
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<td><strong>Monthly Return</strong></td>
<td><strong>Closing Value</strong></td>
<td><strong>Monthly Return</strong></td>
<td><strong>Closing Value</strong></td>
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<td><strong>Dec-06</strong></td>
<td>130.471</td>
<td>9047.544</td>
<td>0.0835</td>
<td>140.131</td>
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<td><strong>Jan-07</strong></td>
<td>134.608</td>
<td>9327.535</td>
<td>0.0309</td>
<td>139.903</td>
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<td><strong>Feb-07</strong></td>
<td>131.216</td>
<td>9105.515</td>
<td>-0.0238</td>
<td>139.629</td>
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<td><strong>Mar-07</strong></td>
<td>138.328</td>
<td>9624.062</td>
<td>0.0569</td>
<td>145.166</td>
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<tr>
<td><strong>Apr-07</strong></td>
<td>147.619</td>
<td>10091.695</td>
<td>0.0486</td>
<td>145.569</td>
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<tr>
<td><strong>May-07</strong></td>
<td>150.283</td>
<td>10237.272</td>
<td>0.0144</td>
<td>156.204</td>
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<td><strong>Jun-07</strong></td>
<td>147.174</td>
<td>10011.104</td>
<td>-0.0221</td>
<td>161.703</td>
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<td><strong>Jul-07</strong></td>
<td>145.045</td>
<td>9868.425</td>
<td>-0.0143</td>
<td>167.457</td>
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<tr>
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<td>140.452</td>
<td>9627.678</td>
<td>-0.0244</td>
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<tr>
<td><strong>Sep-07</strong></td>
<td>140.572</td>
<td>9669.827</td>
<td>0.0044</td>
<td>177.337</td>
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</tbody>
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**APPENDIX**

- **Swedish Funds**
- **MSCI Sweden**
- **Emerging M. Funs**
- **MSCI Emerging M. T. Bill % Annual**
Average Monthly Returns (%) from Feb-00 to Dec-02

Average Monthly Returns (%) from Oct-04 to Sep-07