Socially Responsible Investing

A study of SRI fund performance

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Abstract

This study examines the performance of socially responsible investment (SRI) funds compared to regular funds on the Swedish market from the four biggest banks in Sweden. The performance of the funds was examined on a risk-adjusted basis as well as on a return basis. The fund returns were also compared to an index in order to depict the performance with the market as a whole. The funds were chosen by a matched-pair analysis where similar characteristics were analyzed in order to find matching pairs of funds to facilitate the analysis. The study found no statistical evidence of differences in performance of SRI funds and regular funds on a return basis.
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1. Introduction

Socially responsible investing, “SRI”, or ethical investing is an investment strategy where the savers’ money is invested in businesses that are considered to be involved in ethical or common weal practices. This can for example be businesses involved in human rights, diversity, equal rights, good work ethics and environmental issues, while on the other hand firms involved in the alcohol, porn, tobacco, fossil fuel and the arms industries are ruled out as they are deemed as unethical.

Socially responsible investment has its roots back in the 18th century in the US where the members of The Religious Society of Friends were forbidden from participating in the slave trade. The modern age of socially responsible investing was developed in the 1960s when some investors’ interest in human rights increased during the Vietnam War. Several protests were carried out against corporations supporting the war. Consequently, the first modern socially responsible investment fund was created in 1971 for investors who were against the Vietnam War (Renneboog et al., 2008). Moreover, socially responsible investment also played a part in the apartheid era in South Africa in the 1970s, in the form of investment boycotts against different South African businesses (Teoh et al., 1999).

Socially responsible investment is becoming increasingly popular in financial markets because of increased interest in social issues, according to the European Sustainable Investment Forum (Eurosif, 2014). For example, the public interest for the environment has increased because of the current environmental debate being focused a lot around global warming and renewable energy. According to the Organization for Economic Co-operation and Development (OECD, 2006), socially responsible investment assets increased by 36 percent in popularity from 1991-2001 in the US. In 2005, socially responsible investment assets composed 5.5 percent of total assets in the US. Socially responsible investment has also had an upturn in Europe in the 21st century, with an increase in socially responsible investment assets of 1.6 percent in 2010 compared to the total assets in European funds (KPMG, 2013). According to a study conducted by Eurosif (2014), there has been an increase in the overall interest in socially responsible investment, and that SRI is more important to women than men. The study also shows that younger people tend to be more socially responsible in their
investments. According to Eurosif (2010), 17 percent of total assets under professional management in Europe were involved in socially responsible investment and 10 percent for the US.

Ethical funds or socially responsible investment funds are becoming more popular in the world. Not only does this give the investor a chance to make a profit but also gives people a chance to affect the society in a positive direction with their investment. Ten years ago there were very few socially responsible investment funds available in Sweden but as of 2008 the number of socially responsible investment funds had increased to over a hundred (Aktiespararna, 2008)

There are thousands of different funds available for small savers in Sweden and around 100 of these are considered to be ethical or socially responsible investment funds. This makes the choice for those who want to invest in SRI funds relatively small and the probability of making good returns smaller as well. There are two types of SRI screening – positive and negative, which are two types of SRI funds. Positive screening is a process where fund managers invest in businesses that are considered to be involved in ethical or socially responsible businesses. Negative on the other hand, is a process where businesses are instead excluded because fund managers find them deviating from what is believed to be ethical or socially responsible.

In a more recent study, Capelle-Blancard and Monjon, (2014) evaluated whether financial performance of SRI funds had any relation to SRI screening. SRI Screening as mentioned above is where companies are excluded or included in the investment selection based on the fulfilling or the failure of fulfilling certain established criteria. Since SRI funds often engage in some form of screening, the authors wanted to examine if this process affected the performance of the funds. Based on a sample of French SRI funds, Capelle-Blancard and Monjon, (2014) found evidence that intensified screening affected financial performance negatively. The overall conclusion is also that socially responsible investing funds tend to carry greater risk than traditional funds.

The main purpose of this study is to examine how SRI funds perform in comparison to regular funds on a risk-adjusted basis as well as a return basis. The funds will also be compared to a benchmark index to evaluate how the funds have performed in comparison to the market. Secondly, due to limited research time, the study will focus
on funds available in Sweden for small savers. The funds will be selected from the four biggest banks in Sweden: Handelsbanken, Swedbank, Nordea and SEB. The chosen funds have been those with the longest available time horizon. Where the minimum time horizon of 4 years has been established in order to attain a good understanding about their performance.

1.1 Hypothesis

The question that this study aims to answer is whether or not the performance of SRI funds and regular funds differ. The question has been constructed with the aid of the theoretical foundation and the previous research in the forthcoming sections.

To see whether the performance of the funds are statistically significant or if the performance is a result of coincidence, two hypothesis tests were conducted with the use of the statistical analysis software STATA. A two-sample t-test and a Wilcoxon signed-rank test will determine if the hypothesis holds. The hypothesis was tested at a significance level of 0.05.

\[ H_0: \text{Financial performance does not differ between SRI funds and regular funds} \]
\[ H_A: \text{Financial performance differs between SRI funds and regular funds} \]

2. Previous Research

Several studies have been conducted through the years to examine the performance of SRI funds compared to regular funds. In the forthcoming sections a couple of them are presented.

A study conducted in the United Kingdom by Mallin et al., (1995) compared the performance of SRI funds and regular funds to each other and to a benchmark index between the years 1986 through 1993. A sample of 29 SRI funds and 29 regular funds was selected through a matched pair analysis where the authors established matching pairs of funds by examining the funds investment universe, age, book-to-market, size
and other characteristics to ensure that the performance of the different funds was not affected by any external factors such as market risk and exchange risk (see section 4.2.1).

Initially by measuring the performance of mean excess returns, Mallin et al. (1995) found weak evidence that SRI funds generally underperformed regular funds and the market. However, on a risk-adjusted basis the authors found that SRI funds on average outperformed the regular funds in the study. The researchers argue that this result was a consequence of increased demand and popularity of SRI funds. The risk-adjusted measures used in the study to evaluate the performance were Jensen’s alpha and the Sharpe- and Treynor ratio.

Later, Statman (2000) investigated the subject by the use of similar methods. The author studied the performance of 31 SRI funds and 62 regular funds in the US during the year 1990 to 1998. The study found no empirical evidence that the performance of SRI funds differed from that of the regular funds. The author also compared a SRI index to the S&P 500 index where the SRI index performed slightly lower than S&P 500 on a risk-adjusted basis in the sample. The difference however, was not statistically significant. Statman (2000) concluded that there were no empirical evidence showing any differences between SRI funds and regular funds.

Bauer et al. (2005) examined the risk-adjusted returns of SRI funds and regular funds. In contrast to the previously mentioned studies, this sample was substantially larger. The authors used data from the years 1990-2005 containing 103 German, US and UK SRI funds as well as 4384 regular funds. Similarly to previous studies, the authors applied a matched pair analysis when comparing the funds, as well as a benchmark index. The authors found that the SRI funds generally underperformed the index as well as the regular funds in the sample, however the results regarding performance were in line with Statman (2000). No statistically significant differences between SRI funds and regular funds were found, leading up to the conclusion that the findings in the sample were a result of chance.

Further, Kreander et al. (2005) analyzed the performance of 30 regular funds and 30 SRI funds from the UK, Netherlands, Germany and Sweden. The matched pair analysis primarily capitalized by Mallin et al. (1995) was used to examine the performance of the funds during the years 1995 to 2001. The funds generally
underperformed in comparison to indices, however on a risk-adjusted basis the returns were similar. Secondly, after a statistical analysis of the data Kreander et al. (2005) concluded that there were no statistically significant differences in performance between SRI funds and regular funds.

The current study will contribute to the subject since not many studies on SRI fund performance have examined the Swedish market. Moreover, not many acclaimed studies within the field have been conducted during recent years, as many are as old as 10 years. The subject is very modern-age and since SRI funds are continuously growing popular as mentioned in section 1, the author finds it most interesting to evaluate the performance of SRI funds as of today.

3. Theoretical Foundation

3.1 Modern portfolio theory

Harry M. Markowitz first introduced the modern portfolio in 1952. The theory is an investment model that describes how risk-averse investors can maximize their portfolio returns at a given level of risk by the use of diversification. Diversification is a technique where a portfolio with different assets will on average provide higher returns and lower risk than an individual asset within the portfolio (Markowitz, 1959). The theory accentuates the general idea that higher levels of risk induce higher returns, where the risk is defined as the standard deviation of the portfolio (Markowitz, 1959).

3.2 Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is a model based on the previously mentioned modern portfolio theory. CAPM was introduced by Treynor (1962), Sharpe (1964), Lintner (1965) and Mossin (1966), and is used for pricing a portfolio or individual securities. The model describes the relationship between expected return and risk that is used when pricing the portfolio or asset.

According to CAPM, investors need to be compensated in risk inferred and in time value of the money. CAPM helps investors calculate risk and what return they should
expect on their investment. The CAPM equation is given below. The time value of money is represented by the risk free rate. The risk free rate is usually the rate from a government bond. It compensates the investors for placing their money in an investment over a certain period of time. The second part of the formula represents the risk, it calculates the amount of compensation needed for the investor for bearing additional risk. This is done by the use of a stock volatility measure multiplied by its risk premium. The stock volatility measure is the movement of an investment in relation to the market. The risk premium is calculated by subtracting the risk free rate of return from the expected return of the market.

The CAPM equation:

\[ r_a = r_f + \beta (r_m - r_f) \]  

(1)

Where \( r_a \) is the return of asset \( a \), \( r_f \) is the risk free rate, \( \beta \) is the stock volatility measure and \( r_m \) is the rate of return of the market.

3.3 Beta

The beta-coefficient is an important parameter within CAPM. Beta measures the volatility or systematic risk of an asset’s price in relation to the market, i.e. the asset’s sensitivity to changes in the market. The beta is calculated through regression analysis or through the following formula given by the CAPM equation, where a beta value of 1 indicates that the asset’s price moves with the market. A beta value of less than 1 tells us that the asset’s price is less volatile than the market and a beta value larger than 1 indicates that the asset’s price is more volatile than the market (Treynor, 1962).

Beta equation:

\[ \beta = \frac{Cov(r_a, r_m)}{\sigma^2_m} \]  

(2)

Where \( Cov(r_a, r_m) \) is the covariance between the asset return and the market return and \( \sigma^2_m \) is the variance of the market.
3.4 Standard Deviation

The standard deviation is a measure of an investments’ volatility or spread, i.e. how the price of an investment has changed in the past. The standard deviation is denoted as the total risk of an investment or as the historical risk. The standard deviation is the risk that is diversifiable, meaning that it can be diversified away by investors. The formula for the standard deviation is:

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

(3)

Where \( \sigma \) is the standard deviation, \( x \) is each sample value, \( \bar{x} \) is the sample mean and \( n \) is the number of observations.

3.5 Sharpe Ratio

The Sharpe ratio measures performance of an investment by adjusting for its risk. The Sharpe ratio declares whether an investment’s return is due to smart investment choices or as a result of excessive risk (Sharpe, 1964). If two investments yield the same return but one has a substantially higher level of risk, that investment will have a lower Sharpe ratio.

The Sharpe ratio is calculated by subtracting the risk-free rate, which is usually the rate from a government bond, from the returns of the investment and the dividing it with the standard deviation of the investment. The standard deviation is the volatility of the investment.

\[ \text{Sharpe Ratio} = \frac{r_i - r_f}{\sigma_i} \]  

(4)

Where \( r_i \) is the return of investment \( i \), \( r_f \) is the risk-free rate and \( \sigma_i \) is the standard deviation of investment \( i \).
3.6 Treynor Ratio

The Treynor ratio is another risk-adjusted performance measure similar to the Sharpe ratio. Treynor (1965) developed the ratio, and it is today also a very commonly used risk-adjusted performance measure today. Unlike the Sharpe ratio that uses standard deviation as a measurement of volatility, the Treynor ratio is based on systematic risk or market risk i.e. the beta of the portfolio (see section 3.3). The formula of the Treynor ratio is very similar to the one of the Sharpe ratio:

\[
\text{Treynor Ratio} = \frac{r_i - r_f}{\beta_i}
\]  
(5)

Where \( r_i \) is the return of portfolio \( i \), \( r_f \) is the risk-free rate and \( \beta_i \) is the beta of portfolio \( i \).

The Treynor ratio measures the additional return you earn over the return you would have got in a risk-free investment per unit of market risk or systematic risk taken. The value of the Treynor ratio is a relative measure and is therefore difficult to examine on its own. It is only useful when comparing two investments. The higher Treynor ratio, the better the return per unit of market risk.

4. Data & Method

4.1 Data

The data used in this study has been collected from Thomson Reuters Datastream. Historical monthly net asset value (NAV) data from the chosen funds was collected and used to calculate the rate of return and the risk-adjusted performance. The reason why the net asset value data was collected monthly is because it removes some noise that can exist in daily or weekly data. Administrative fees are included in the NAV data.

The indices used in the comparison to the market are OMXS 30 for the funds that invest in Sweden and MSCI World for funds that invest globally. Further, a 3-month Swedish treasury bill was used to calculate the risk-free rate, since a long-term treasury bill is more likely to have larger fluctuations than a short-term bill. Thus, a
short-term treasury bill is more eligible as a risk-free rate. Further, the information and guidelines of the different funds have been gathered from each funds fact sheet.

4.1.1 Selection of funds

This study concentrates on the Swedish market. The selected SRI- and regular funds are funds available for Swedish small investors from the four biggest banks in Sweden; Swedbank, Nordea, Handelsbanken & SEB. Swedish funds that have a national investment universe and also Swedish funds with an international investment universe have been examined in this study in order to examine if results may differ because of factors such as market risk. When choosing funds, a similar matched pair analysis as the one used by Mallin et al. (1995) have been conducted (see section 4.2.1).

The time horizon of each fund pair is the same although they largely differ between the pairs. This is because a greater time horizon gives a more just portrayal of the fund when looking at the funds’ performance during recessions and stock market declines and upturns. The longest time horizon available for each fund pair was used. The time horizons were restricted to a minimum of 4 years in order to fairly portray the performance of the funds. Only 4 of the funds in the study are funds that invest globally, this is simply because matching pairs of additional global funds could not be constructed.

The sample consists of 10 funds where 5 of these are SRI funds and 5 are regular funds. As mentioned above, the time horizon varies among the matched pairs where the longest time horizon is 2004-01-01 to 2014-11-01 and the shortest being 2011-01-01 to 2014-11-01.

The funds in Table 1 have been analyzed in this study.
Table 1. Selected funds

<table>
<thead>
<tr>
<th>Name</th>
<th>SRI-fund</th>
<th>Regular fund</th>
<th>Investment universe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedbank Robur Ethica Sverige Mega</td>
<td>✔</td>
<td></td>
<td>Sweden</td>
</tr>
<tr>
<td>Swedbank Robur Sverigefond Mega</td>
<td></td>
<td>✔</td>
<td>Sweden</td>
</tr>
<tr>
<td>Swedbank Robur Ethica Globalfond</td>
<td>✔</td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>Swedbank Robur Globalfond</td>
<td></td>
<td>✔</td>
<td>Global</td>
</tr>
<tr>
<td>SEB Etisk Global</td>
<td>✔</td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>SEB Globalfond Chans/risk</td>
<td></td>
<td>✔</td>
<td>Global</td>
</tr>
<tr>
<td>Handelsbanken Sverige Index Criteria</td>
<td>✔</td>
<td></td>
<td>Sweden</td>
</tr>
<tr>
<td>Handelsbanken Sverigefond</td>
<td></td>
<td>✔</td>
<td>Sweden</td>
</tr>
<tr>
<td>Nordea Swedish Stars</td>
<td></td>
<td>✔</td>
<td>Sweden</td>
</tr>
<tr>
<td>Nordea Olympia</td>
<td></td>
<td>✔</td>
<td>Sweden</td>
</tr>
</tbody>
</table>

The Investment universe of each fund differs as mentioned above. The fund with the highest holding percentage in Swedish businesses is Handelsbanken Sverige Index Criteria, with 95.4 percent of its investments in Sweden. The fund with the lowest holding percentage in Sweden, with Sweden as the main investment universe, is Nordea Olympiafond with 88.7 percent.

The data may suffer from selection bias, as the study does not include the entire population of the funds but only those that had available data during the investigation period. Since different criteria have been set up when performing the matched pair analysis to find matching funds, some funds have been excluded. Secondly, funds with insufficient time horizons and funds lacking sufficient data have been excluded as well. However, it is difficult to determine exactly how the selection bias will affect the results of the study.

4.1.2 Presentation of funds

The following sections consist of a presentation of each fund included in the study. The funds are ordered by which bank they belong to.
Swedbank Robur Ethica Sverige Mega is one of the “MEGA-funds” that Swedbank offer. The MEGA-funds concentrate first and foremost on investors who want to invest large capital as private individuals. The MEGA-funds are also suited for companies, institutions and different organizations. They invest in both stocks as well as interest bearing papers. Further, it is a SRI fund that follows numerous comprehensive sustainability conditions. The fund invests in corporations with good policies in areas such as the environment, human rights and business ethics. The fund excludes businesses involved in violations of human rights and environmental norms, as well as those involved in the weapons, tobacco, gambling and porn industries. The main investment universe is Sweden where it invests approximately 92 percent of total capital. The fund also invests a small percentage in other parts of Western Europe as well as a small percentage in South America. The fund makes the majority of its investments in businesses such as financial services and different industries (technology, energy, etc.). The fund is allowed to use derivatives to increase returns and avoid market risks (Swedbank, 2014).

Swedbank Robur Sverigefond Mega is a regular mutual fund that invests primarily in Sweden. This fund can also use derivatives to increase returns. The fund invests in small and medium sized companies, and there are no dividends; returns are reinvested in the fund. Investment in this fund can be associated with a higher level of risk. The fund invests the majority of its assets in financial businesses, industry and consumer sector (Swedbank, 2014).

Swedbank Robur Ethica Globalfond is a SRI mutual fund that invests globally. A maximum of 30 percent of the fund’s assets may be invested in Sweden. This fund also follows several sustainability conditions with regards to human rights, environmental aspects and business ethics. Businesses with associations to the weapons, tobacco, gambling and porn industries as well as those involved in violations of human rights and environmental norms are excluded. The fund invests 60 percent of its assets in North America. The majority of the holdings are in financial services, health care and technology (Swedbank, 2014).

Swedbank Robur Globalfond is a regular fund that invests globally. Similarly to the previous fund, only 30 percent of its total assets may be invested in Sweden. The majority of the fund’s assets are invested in North America (58 percent). The fund’s
biggest holdings are in financial services, technology and health care (Swedbank, 2014).

SEB Etisk Global fond is a SRI mutual fund that invests globally with regards to international standards for environmental issues and social responsibility. The fund also considers certain policies regarding businesses involved in areas such as the gambling, alcohol, weapons and porn industries. Not more than 5 percent may be invested in the previously mentioned areas. The fund invests 62 precent in North America (SEB, 2014).

SEB Globalfond Chans/Risk is a regular mutual fund that invests globally. The majority of the assets holdings are invested in North America. The fund’s biggest investment sectors are financial services, energy and technology (SEB, 2014).

Handelsbanken Sverige Index Criteria is a SRI fund that follows the index OMX/GES Ethical Index Sweden. The index contains companies that have been reviewed with regards to ethical standards such as human rights, business ethics and the environment. The fund follows the criteria’s for Global Ethical Standards (GES). GES states that no investments will be made in companies with annual profits exceeding 5 percent earned from production or sales of goods such as tobacco products or war material. The fund invests 95 percent of its assets in Sweden. (Handelsbanken, 2014)

Handelsbanken Sverigefond is a regular fund that invests primarily in Sweden where it invests 93 percent. The majority of the investments are in financial services, the industrial sector and the consumer sector (Handelsbanken, 2014).

Nordea Swedish Stars is a SRI fund that invests most of its assets in Sweden. The fund considers international standards and guidelines for ethical aspects such as the environment, business ethics and social responsibility. The fund does not invest in companies with annual return that exceeds 5 percent made from production and/or sales of products or services within businesses in the tobacco, porn, gambling and alcohol industries (Nordea, 2014).

Nordea Olympiafond is a regular fund that invests mostly in Sweden. The fund can invest up to 10 percent of its capital in other funds. The fund’s biggest holdings are in the industrial sector, telecommunication and consumer businesses (Nordea, 2014).
4.1.3 Indices
In order to compare the SRI funds to the market, appropriate indices have been selected to reflect the market as a whole. The SRI funds that invest in Sweden will be compared with the Swedish index OMXS 30. The SRI funds that invest globally will be compared to the market index MSCI World. OMX Stockholm 30 or OMXS 30, is an index over the 30 most traded stocks on the Stockholm Stock Exchange. The OMXS 30 index reflects the Swedish market as a whole. The Morgan Stanley Capital International World index or MSCI World, is a stock market index of 1,612 world stocks. The MSCI World is commonly used as a benchmark index for global funds. The index includes stocks from 23 different countries and has been calculated since 1969.

4.2 Method
A larger sample was initially collected but several funds had to be excluded since matched pairs could not be constructed in order to do the comparison and the analysis.

After the NAV data was assembled for each fund, the monthly rate of return was calculated accordingly;

\[ r_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \]  

Where \( r_{it} \) is the rate of return for fund \( i \) for month \( t \). \( P_{it} \) is the price of fund \( i \) in month \( t \) and \( P_{it-1} \) is the price of fund \( i \) in the previous month \( t-1 \). Where the price in this case is the NAV.

The rate of return of the SRI funds was compared with the return of the regular funds, however as mentioned previously, administrative fees are included in the NAVs. The returns were calculated and compared in order to evaluate the profitability of the funds, to see how the returns had changed over time. However, this way of measuring performance does not take the risk or volatility into account, which is why risk-adjusted measures were also analyzed in the study.
4.2.1 Matched-pair analysis

In order to find a good way to measure the performance of the SRI funds to regular funds a similar matched-pair analysis as to the one primarily introduced by Mallin et al. (1995) has been used. This is executed so that the SRI funds can be matched with a corresponding regular fund in order to measure the performance more accurately.

The matched-pair analysis has been adopted in several further studies through the years (e.g. Mallin et al., 1995; Statman, 2000; Bauer et al., 2005; Kreander et al., 2005), where factors such as investment universe, age and size of funds have been examined in order to find matching pairs of funds. By constructing fund pairs with equal characteristics, one can remove possible external factors that may affect the performance of the funds in order to analyze the funds. The external factors can for example be different types of risks such as market risk and exchange risk. The characteristics that have been analyzed in this study in order to find a matching corresponding fund have been investment universe, age and size. All characteristics have to be equal for the funds to match.

4.2.2 Risk-adjusted performance

There are several methods of measuring performance. This study also evaluated fund performance with the use of risk-adjusted measures and not only actual realized returns. This is because it tells us how much extra return we get for the additional level of risk we are bearing from holding a risky fund, compared to the return from investing in a fund that bears no risk. There are three commonly used risk-adjusted measures, Treynor Ratio (1965), Jensen’s Measure (1968) and Sharpe Ratio (1966) as mentioned in previous sections. Since the establishment of the Sharpe Ratio in 1966 by William F. Sharpe, it has been one of the most referenced risk-adjusted performance measures in finance as well as the Treynor ratio created in 1965 by Jack L. Treynor. The Two ratios measure risk-adjusted performance where the difference being that the Sharpe ratio uses standard deviation as a measure of volatility and the Treynor ratio uses systematic risk as a measure of volatility. The study evaluated the risk-adjusted performance with these two ratios.
As mentioned before the higher Sharpe ratio - the better, where a Sharpe ratio of 1 is considered to be a good risk-adjusted return, 2 very good and 3 is considered excellent. If the Sharpe ratio would happen to be negative, a risk free asset would perform better than the fund. The Sharpe ratio of each SRI fund will be compared and evaluated with the matched regular fund.

There are different ways of calculating the Sharpe ratio such as the ex-post Sharpe ratio and the ex-ante Sharpe ratio. In this study the ex-post Sharpe ratio (also known as the historical Sharpe ratio) was be used. The ex-post Sharpe ratio defined by Sharpe (1966) is calculated by the following formula.

\[
Sharpe\ Ratio = \frac{D_t}{\sigma_{D_t}}
\]  

(7)

Where \(D_t\) is the average excess return of the portfolio in time period \(t\) and \(\sigma_{D_t}\) is the standard deviation of the portfolio over time period \(t\).

The average excess return \(\overline{D}_t\), is computed by calculating the average of the return differentials between the monthly returns of the portfolio and the risk free return. The risk free return used in this study is from a 3-month Swedish treasury bill. The ex-post Sharpe ratio (1966) and the ex-ante version of the Sharpe ratio (1975) are calculated with the same formula. However, the ex-post Sharpe ratio uses actual realized return and the ex-ante version use expected returns. The ex-post Sharpe ratio is therefore better suited for this study since the data consists of historical prices and returns.

The general formula for the Treynor ratio is stated in chapter 3. The Treynor ratio was more explicitly calculated accordingly:

\[
Treynor\ Ratio = \frac{\overline{r}_i - \overline{r}_f}{\beta}
\]  

(8)

Where \(\overline{r}_i\) is the average of the returns of portfolio \(i\), \(\overline{r}_f\) is the average of the risk free return and \(\beta\) is the systematic risk of the fund.
4.2.3 Statistical analysis

A paired two-sample t-test will be calculated in order to investigate the statistic significance of the fund returns. Since the chosen funds are selected through a matched pair analysis, the funds in the sample will be correlated to each other and not totally independent of one another, therefore a paired two-sample t-test was used. The samples are assumed to have equal variances.

The test calculates a t-statistic and a p-value for the t-test, which tells us the probability of the test variable obtaining the same value as the observed value or even more extreme, when the null hypothesis is true. If the p-value is equal to or larger than the level of significance, the null hypothesis should be rejected and thereby accepting the alternative hypothesis to be true (Snedecor et al. 1989).

The two-sample t-test tests the null hypothesis that the means of two populations are equal and with the alternative hypothesis that they are not equal – that they differ from zero:

\[ H_0: \mu_1 = \mu_2 = 0 \]  \hspace{1cm} (9)

\[ H_a: \mu_1 \neq \mu_2 \]

Where \( \mu \) is the sample mean.

The paired two-sample t-test is calculated by the following formula:

\[ t = \frac{\bar{X} - \bar{Y}}{\sqrt{\frac{\sigma^2_x}{n_x} + \frac{\sigma^2_y}{n_y}}} \]  \hspace{1cm} (10)

Where \( n \) is the number of observations, \( \bar{X} \) and \( \bar{Y} \) denotes the return mean of SRI and regular funds and \( \sigma \) is the variance of the sample.

If the t-statistic attains a value greater than the critical t-value or if the p-value for the t-test is greater than the 5 percent significance level at a confidence interval of 95 percent, the null hypothesis cannot be rejected and there will be no statistical evidence supporting the alternative hypothesis.
To determine whether or not the t-statistic exceeds the critical t-value the following formula is calculated:

\[ |t| > t_{1-\alpha/2, df} \]  

(11)

Where \( t_{1-\alpha/2, v} \) is the critical value from the t-distribution with the degrees of freedom given by \( df \) and where \( \alpha \) is the significance level.

The degrees of freedom in the this t-test where the variances are assumed to be equal is given by the formula:

\[ df = n - 1 \]  

(12)

From Figure 1 we can see the rejection regions of the hypothesis test at a 5 percent significance level. If the t-statistic attains a value within the critical region the null hypothesis should be rejected, thus accepting the alternative hypothesis to be true. If the value is within the non-rejection region the null hypothesis cannot be rejected.

Figure 1, Rejection regions for two-sample hypothesis test

The total actual realized returns of the SRI funds were compounded as one variable and the same was done for the regular funds. More explicitly, a variable called SRI and a second variable called REGULAR was created. The SRI variable consisted of
monthly observations, where the observation of month $i$ was an average of the returns from all SRI funds from that particular month. The $REGULAR$ variable was constructed in the same way as the $SRI$ variable, but of returns from the regular funds.

Then the variables were tested in a paired two-sample $t$-test where it determined whether the difference in the two variables, i.e. the returns of the SRI funds and regular funds were statistically significant. No test of risk-adjusted returns was performed since the number observations were too few.

An alternative test of the hypothesis is the Wilcoxon signed-rank test. The Wilcoxon signed-rank test is a non-parametric paired difference test, and is often used as an alternative to the paired $t$-test (Snedecor & Cochran 1989). It is used when the population of two variables is not assumed to be normally distributed. It tests the null hypothesis that the median of the differences is zero and the alternative hypothesis that it is not zero (Wilcoxon, 1945). The test calculates a $w$-statistic, a $z$-statistic and a $p$-value for the test.

To calculate the $w$-statistic, the difference of the observations and signed ranks has to be calculated.

If $d_i$ is the difference for any matched pair of observations, then,

$$d_i = x_{1i} - x_{2i}$$

Where $x_{1i}$ is observation from the variable $SRI$ in month $i$, and $x_{2i}$ is the observation from the variable $REGULAR$ in month $i$.

Then the observed signed ranks $r_i$ is,

$$r_i = \text{sign}(d_i)\text{rank}(|d_i|)$$

Where $\text{sign}(d_i)$ is the sign of the differences and $\text{rank}(|d_i|)$ is the rank of the absolute value of the differences.

Then the $w$-statistic can be calculated, which is the absolute value of the sum of the signed ranks,

$$w = |\sum_{i=1}^{n} r_i|$$
With the w-statistic we can calculate the z-statistic. And since the sample is large, a normal approximation is used to calculate the z-statistic, which is often expressed as the sum of the positive signed-ranks, $w_+$. 

$$ z = \frac{w_+ - m(w_+)}{\sqrt{\text{var}_{\text{adj}}(w_+)}}, $$  

(16)

Where $m(w_+)$ is the mean of the positive signed ranks and $\text{var}_{\text{adj}}(w_+)$ is the adjusted variance of the positive signed ranks.

Then if the z-statistic attains a greater value than the critical z-value, the null hypothesis should be rejected. Since the critical z-value does not follow any known distribution, the critical z-value can be found in a z-table.

The test is better suited for non-normal distributions than the two-sample t-test (Wilcoxon, 1945), since it is less sensitive to outliers than the two-sample t-test. As stock returns can be non-normally distributed, the Wilcoxon signed-rank test is more efficient than the t-test if this is the case. The Wilcoxon signed-rank test will be tested according to the hypothesis stated in section 1.1. Further, the two previously mentioned variables $SRI$ and $REGULAR$ for the actual realized returns were used to calculate the signed ranks.
5. Results

In the following chapter, the result from the performance is presented for each matched pair, as well as the results from statistical analysis.

5.1 Fund Performance

5.1.1 Swedbank Robur Mega

*Graph 1, returns of Swedbank funds compared with index*

<table>
<thead>
<tr>
<th>Fund</th>
<th>Returns (%)</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedbank Robur Sverigefond Mega</td>
<td>-19.8</td>
<td>+10.3</td>
<td>+23.8</td>
<td>+12.2</td>
<td></td>
<td>+26.5</td>
</tr>
<tr>
<td>Swedbank Robur Ethica Mega</td>
<td>-18.2</td>
<td>+11.9</td>
<td>+18.5</td>
<td>+7.7</td>
<td></td>
<td>+20</td>
</tr>
</tbody>
</table>

As observed in Graph 1 and Table 2 above, one can see that both funds have had similar returns through the years. Both funds provided negative returns in 2011, going down nineteen and eighteen percent respectively. Swedbank Robur Ethica Mega outperformed Swedbank Robur Sverigefond Mega as of 2012. However, as of 2013, Swedbank Robur Sverigefond Mega exceeded the SRI fund with approximately 5 percent and with just over 4 percent in 2014.
Table 3, performance results of Swedbank funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Sharpe ratio</th>
<th>St.Dev</th>
<th>Treynor Ratio</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedbank Robur Sverigefond Mega</td>
<td>0.42</td>
<td>0.042</td>
<td>0.43</td>
<td>0.998</td>
</tr>
<tr>
<td>Swedbank Robur Ethica Mega</td>
<td>0.29</td>
<td>0.04</td>
<td>0.26</td>
<td>1.011</td>
</tr>
</tbody>
</table>

As seen in Table 3, the regular fund had a higher Sharpe ratio than the SRI fund. This implies that the regular fund had better returns for the amount of risk. The standard deviations of the two funds were almost equal; hence, the regular fund outperformed the SRI fund during the investigation period.

When looking at the beta, one can see that the two funds had beta values close to 1. This tells us that the two funds closely follow the market as a whole. The regular fund had a higher Treynor ratio than the SRI fund. Hence, we see that the regular fund performed better per unit of market risk.

5.1.2 Swedbank Robur

Graph 2, returns of Swedbank funds compared with index
Table 4, annual returns for Swedbank funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Returns (%)</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedbank Robur Ethica Global</td>
<td>-10.7</td>
<td>+7.7</td>
<td>+22.4</td>
<td>+15.9</td>
<td>+34.9</td>
<td></td>
</tr>
<tr>
<td>Swedbank Robur Globalfond</td>
<td>-4.4</td>
<td>+9.2</td>
<td>+19.6</td>
<td>+16.9</td>
<td>+41.3</td>
<td></td>
</tr>
</tbody>
</table>

As observed in Table 4 and Graph 2, the two funds have followed similar trends. Both had negative returns in 2011, where the SRI fund had the biggest dip. The following year both funds steadily increased returns and as of 2013 the SRI fund exceeded the regular fund with approximately 2.5 percentage points. The difference in 2014 was only 1 percentage point. The total returns over the four years for the two funds were +34.9 and +41.3 percent respectively, where the regular fund outperformed the SRI fund with about 7 percentage points.

Table 5, performance results of Swedbank funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Sharpe ratio</th>
<th>St.Dev</th>
<th>Treynor ratio</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedbank Robur Ethica Global</td>
<td>0.82</td>
<td>0.03</td>
<td>1.10</td>
<td>0.58</td>
</tr>
<tr>
<td>Swedbank Robur Globalfond</td>
<td>1.20</td>
<td>0.025</td>
<td>1.86</td>
<td>0.435</td>
</tr>
</tbody>
</table>

The Sharpe ratios observed in Table 5 shows significantly higher values than the previous funds. The SRI fund’s Sharpe ratio was 0.82 and the regular fund’s 1.20. The standard deviations are again quite similar. This indicates that the regular fund has had better risk-adjusted performance, that the regular fund has had higher returns for the amount of risk which tells us that the regular funds outperformed the SRI fund in this case.

As Table 5 clearly states, the beta values for these funds are significantly smaller than the previous funds. Since the beta values are smaller than 1, we can see that the two funds do not follow the market as well as the previous funds. The Treynor ratios as observed in the Table 5 are 1.10 and 1.86 respectively where the regular fund has a significantly larger Treynor ratio. This also depicts that the regular fund has outperformed the corresponding SRI fund when studying the systematic risk.
5.1.3 SEB

*Graph 3, returns of SEB funds compared with index*

*Table 6, annual returns of SEB funds*

<table>
<thead>
<tr>
<th>Fund</th>
<th>Returns (%)</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEB Etisk Global</td>
<td>-4.2</td>
<td>+8.6</td>
<td>+20.6</td>
<td>+20.9</td>
<td>+45.9</td>
<td></td>
</tr>
<tr>
<td>SEB Globalfond</td>
<td>-5.6</td>
<td>+6.9</td>
<td>+24.0</td>
<td>+23.1</td>
<td>+48.8</td>
<td></td>
</tr>
</tbody>
</table>

In Table 6 and Graph 3 you can see that both funds again have had very similar returns over the years. Both yielded negative returns in 2011, with the regular fund hitting -9 percent and the SRI fund -7 percent in September 2011. Both funds recovered quickly after the dip in September, where both funds made positive returns in November the same year. The SRI fund had better returns in 2011 and 2012 but the regular fund outperformed the SRI fund in 2013 and 2014. The total return over the four years only differed about 3 percentage points.
Table 7, performance results of SEB funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Sharpe ratio</th>
<th>St.Dev</th>
<th>Treynor ratio</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEB Etisk Global</td>
<td>1.28</td>
<td>0.026</td>
<td>2.0</td>
<td>0.45</td>
</tr>
<tr>
<td>SEB Globalfond Chans/Risk</td>
<td>1.06</td>
<td>0.033</td>
<td>1.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>

The Sharpe ratio of the SRI fund as seen in Table 7 was 1.28 while the regular fund’s Sharpe ratio was 1.06. Meaning that the risk-adjusted performance for the SRI fund was higher than that of the regular fund. The standard deviation was quite similar, although slightly higher for the regular fund. In this case the SRI fund outperformed the corresponding regular fund.

Both funds had Sharpe ratios around 1, indicating good returns in relation to the risk. The Treynor ratio of the SRI fund was larger than that of the regular fund, which indicates a better risk-adjusted performance when looking at the systematic risk as well.

The beta value of both funds indicates that they are less volatile than the market meaning that both funds will out perform the market during a downward trend, but they will under perform during an upward trend. The SRI fund is less volatile than the market compared to the regular fund, although both move similarly as the market as depicted in Graph 3.
5.1.4 Handelsbanken

*Graph 4, annual returns of HB funds compared with index*

![Graph 4](image-url)

*Table 8, annual returns of HB funds*

<table>
<thead>
<tr>
<th>Fund</th>
<th>Returns (%)</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB Index Criteria</td>
<td></td>
<td>21.8</td>
<td>4.5</td>
<td>-61.5</td>
<td>49.8</td>
<td>18.4</td>
<td>-16.8</td>
<td>14.3</td>
<td>23.6</td>
<td>12.3</td>
<td>66.5</td>
</tr>
<tr>
<td>HB Sverigefond</td>
<td></td>
<td>19.3</td>
<td>6.4</td>
<td>-57.7</td>
<td>43.7</td>
<td>18.3</td>
<td>-14.0</td>
<td>11.9</td>
<td>22.8</td>
<td>13.4</td>
<td>64.3</td>
</tr>
</tbody>
</table>

If one observes Graph 4, one can see that like the other funds, these two also followed each other to a great extent. The biggest downward trends were in the year 2008 and 2011, with the biggest declines in July and December 2008. In 2008 both funds declined to approximately -15 percent, however recovering quickly and almost reaching +25 percent in May 2009.

When examining Table 8, we can see that the yearly returns were very similar. Both funds had positive trends in 2006, however beginning to decline in 2007. In 2008 both funds yielded negative returns where the SRI fund’s yielded -61.5 percent and the regular -57.7 percent return. Both funds recovered in 2009, only to begin declining again the year after. The total return from 2006 through 2014 differed 2.2 percentage points.
When examining Table 9, we can see that the regular fund outperformed the SRI fund on a risk-adjusted basis. However, the Sharpe ratios were very low, which tells us that the return was too low in relation to the risk.

The beta values in the table depict that both funds follow the market as a whole closely.

5.1.5 Nordea

Graph 5, returns of Nordea funds compared with index

Table 10, annual returns of Nordea funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Returns (%)</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordea Swedish Stars</td>
<td>11.9</td>
<td>19.9</td>
<td>18.5</td>
<td>6.1</td>
<td>-57.7</td>
<td>50.0</td>
<td>15.8</td>
<td>-9.7</td>
<td>14.4</td>
<td>19.5</td>
<td>11.7</td>
<td></td>
<td>100.7</td>
</tr>
<tr>
<td>Nordea Olympiafond</td>
<td>8.5</td>
<td>22.5</td>
<td>15.6</td>
<td>5.3</td>
<td>-54.1</td>
<td>37.3</td>
<td>13.0</td>
<td>-12.9</td>
<td>9.8</td>
<td>21.6</td>
<td>9.5</td>
<td></td>
<td>76.1</td>
</tr>
</tbody>
</table>
The similarity in the trends can be observed in Graph 5. Both funds had significant declines in 2008 with returns around -50 percent, followed by a vast increase during the year 2009. There were negative returns for both funds in 2011 followed by an upward trend the following years. The SRI fund’s total return was 100.7 percent while the regular fund’s total return was 76.1 over the ten year period.

Table 11, performance results of Nordea funds

<table>
<thead>
<tr>
<th>Fund</th>
<th>Sharpe ratio</th>
<th>St.Dev</th>
<th>Treynor ratio</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordea Swedish Stars</td>
<td>0.40</td>
<td>0.05</td>
<td>0.61</td>
<td>0.98</td>
</tr>
<tr>
<td>Nordea Olympiafond</td>
<td>0.30</td>
<td>0.04</td>
<td>0.46</td>
<td>0.90</td>
</tr>
</tbody>
</table>

The Sharpe ratios over the ten-year period are presented in Table 11. The SRI fund had a higher standard deviation along with a higher Sharpe ratio, compared to the regular fund. The small differences in standard deviation and Sharpe ratio tells us that both funds carry to much risk in relation to the return as both Sharpe ratios are well under 1.

When looking at the Treynor ratios one can observe that both funds also performed similarly in regards to systematic risk. Both betas are close to 1, telling us that they move along the market as a whole.

Comparing both risk-adjusted performance measures, we see that the SRI fund outperformed the regular fund.

5.2 Hypothesis

The performance of the funds on a return basis was tested according to the hypothesis. This has been executed in purpose of evaluating whether the data presented in the study is statistically significant or if it is a result of chance. A paired two-sample t-test and a Wilcoxon signed-rank test were performed according to the hypothesis.

The t-test depicted in Table 12 provided an insignificant p-value regarding the difference in performance when testing the SRI fund returns against the regular fund.
returns, where they are assumed to be normally distributed. The results were examined at a 0.05 significance level.

*Table 12, hypothesis test results*

<table>
<thead>
<tr>
<th>T-test</th>
<th>p-value</th>
<th>t-statistic</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
<td>0.452</td>
<td>0.753</td>
<td>130</td>
</tr>
</tbody>
</table>

The result leads us to conclude that we do not have empirical evidence suggesting that financial performance on a return basis differ between SRI funds and regular funds.

Further, the results from the Wilcoxon signed-rank test presented in Table 13 shows a p-value distinctly above the significance level of 0.05. Hence, we draw the same conclusion here. No empirical evidence could be found that the returns of SRI funds and regular funds differ when they are assumed to be non-normally distributed.

*Table 13, Wilcoxon signed-rank test*

<table>
<thead>
<tr>
<th>Wilcoxon signed-rank test</th>
<th>p-value</th>
<th>z-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
<td>0.554</td>
<td>1.003</td>
</tr>
</tbody>
</table>

As mentioned in previous sections, the variables *SRI* and *REGULAR* that were used in the tests consisted of the returns from the SRI funds and the regular funds. Since the time horizons differed between fund pairs, missing observations from some funds are evident in the variables. This can affect the outcome of the tests significantly, depending on the number of missing observations. However, it can be difficult to determine to what extent the results are affected. Although, since the variables contain such a large number of observations and since the missing variables are relatively few, this is thought not to affect the analysis at large (Little and Rubin, 2002).
6. Discussion

The results of the performance differed among the matched pairs. Only two of the SRI funds outperformed their corresponding regular fund on a risk-adjusted basis and two SRI funds on a return basis during the period of investigation, as seen in Table 14 below. Further, one of the SRI funds that outperformed the corresponding regular fund also had the highest risk-adjusted performance of all ten funds in the sample. Another interesting observation from the results of the comparison is that 6 of the 10 funds all had Sharpe ratios under the value of 1. This implies, as defined by Sharpe (1966), that over half of the funds in the study carry too much risk in relation to the return they yielded.

The best performing funds on a risk-adjusted basis were the funds with a global investment universe. The reason why the global funds in the study performed better than the Swedish funds might be that the global funds were better diversified than the Swedish funds, as a more diversified fund generally should perform better (Markowitz, 1959). Another explanation to this can be the holdings and screening policies of the different funds. The intensity of SRI screening may have an effect on the returns and risk-adjusted performance as Capelle-Blancard and Monjon (2014) found that higher screening intensity affects returns negatively. Which also might be one reason why the regular funds generally outperformed the SRI funds in the sample. Galema et al. (2008) establish that SRI funds that invest in diversity and the environment have a positive effect on returns, which might explain why the returns among the SRI funds differed a lot.
<table>
<thead>
<tr>
<th>Funds</th>
<th>Sharpe ratio</th>
<th>Treynor ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEB Etisk Global</td>
<td>1.28</td>
<td>2.0</td>
</tr>
<tr>
<td>Swedbank Robur Globalfond</td>
<td>1.20</td>
<td>1.86</td>
</tr>
<tr>
<td>SEB Globalfond Chans/Risk</td>
<td>1.06</td>
<td>1.60</td>
</tr>
<tr>
<td>Swedbank Robur Ethica Global</td>
<td>0.82</td>
<td>1.10</td>
</tr>
<tr>
<td>Swedbank Robur Sverigefond Mega</td>
<td>0.42</td>
<td>0.43</td>
</tr>
<tr>
<td>Nordea Swedish Stars</td>
<td>0.40</td>
<td>0.61</td>
</tr>
<tr>
<td>Handelsbanken Sverigefond</td>
<td>0.34</td>
<td>0.62</td>
</tr>
<tr>
<td>Nordea Olympiafond</td>
<td>0.30</td>
<td>0.46</td>
</tr>
<tr>
<td>Swedbank Robur Ethica Mega</td>
<td>0.29</td>
<td>0.26</td>
</tr>
<tr>
<td>Handelsbanken Index Criteria</td>
<td>0.26</td>
<td>0.48</td>
</tr>
</tbody>
</table>

However, the statistical analysis proved that no overall conclusion can be drawn from the results concerning whether performance of SRI funds and regular funds differ on a return basis, since no empirical evidence of the performances were found. The results from the comparison are more likely to be due to chance. Hence, the results of the comparisons are not applicable as a conclusion for the SRI funds and the regular funds in general.

Kreander et al. (2005) discussed the likelihood of different methods of investigating SRI performance being a reason for deficiency in the results. Chegut et al. (2011) also stretches the issue, as well as socially responsible verification. The verification of SRI funds is a major issue when examining and evaluating SRI fund performance, since there is no official criteria or definitions for the title SRI or “ethical fund”. Fund managers all have their own criteria for SRI funds, which may deviate from that of other fund managers, as there are no apparent guidelines for the subject.

Chegut et al. (2011) also discuss the problem of survivorship bias, which is common in studies within the field. This study suffer from this problem since it implicates that
only funds that have had available data during the investigation period are included in the study which can skew the results.

The risk-adjusted performance measures in this study have some weaknesses as well. The Sharpe ratios weakness is often discussed as being that it only deals with historic risk i.e. total risk rather than systematic risk. This does not say whether the portfolio is well diversified, it only tells us something if it is compared with another portfolio. Secondly, that the value is difficult to interpret on its own. The Treynor ratio is a relative risk measure meaning that the value of the measure means nothing on its own. It is only interpretable when comparing it to another investment. The beta used as a measure of risk in the Treynor ratio, measures the correlated volatility to the market. If the fund is poorly correlated with the market index, the beta can be low but the investment may still fluctuate a lot in price.

7. Conclusion

The purpose of this study has been to compare the performance of socially responsible investment (SRI) funds to regular funds on a risk-adjusted as well as a return basis. The study has examined funds from the four biggest banks in Sweden. The funds have been compared with a matched-pair method used in previous studies where characteristics such as age, size and investment universe has been compared to find pairs of funds to analyze. Two statistical tests were then conducted in order to examine the statistical significance of the fund returns.

The regular funds generally performed better than the SRI funds in the sample although the difference was very small in many cases. The best performing fund on a risk-adjusted basis and when looking at returns was a SRI fund. However, the differences were not statistically significant.
8. References

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