

Institute of Economic Studies, Faculty of Social Sciences  
Charles University in Prague

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Linnéa Lundberg  
Jiri Novak  
Maria Vikman

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Institute of Economic Studies,  
Faculty of Social Sciences,  
Charles University in Prague

[UK FSV – IES]

Opletalova 26  
CZ-110 00, Prague  
E-mail : [ies@fsv.cuni.cz](mailto:ies@fsv.cuni.cz)  
<http://ies.fsv.cuni.cz>

Institut ekonomických studií  
Fakulta sociálních věd  
Univerzita Karlova v Praze

Opletalova 26  
110 00 Praha 1

E-mail : [ies@fsv.cuni.cz](mailto:ies@fsv.cuni.cz)  
<http://ies.fsv.cuni.cz>

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# Ethical vs. Non-Ethical – Is There a Difference?

Analyzing Performance of Ethical  
and Non-Ethical Investment Funds

Linnéa Lundberg\*

Jiri Novak#

Maria Vikman°

\* Stockholm University School of Business  
SE-106 91 Stockholm, Sweden

# IES, Charles University Prague  
E-mail: novakji@fsv.cuni.cz  
corresponding author

° Stockholm University School of Business  
SE-106 91 Stockholm, Sweden

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## **Abstract:**

Ethical investments have become increasingly popular over the past years. Ethical funds restrict their investment based on environmental, social and/or ethical criteria. Prior research on the performance of ethical versus non-ethical funds yields mixed results. This paper investigates the differences in risk profiles and realized returns between ethical and non-ethical funds. A sample of 23 ethical funds and 152 non-ethical funds covering the time period between 2000 and 2007 is investigated. The analysis of the portfolio composition shows that there are small differences in the structure of portfolios concerning industry composition and company size. However, the ethical funds tend to hold more stocks in their portfolios than non-ethical ones. The results provide some evidence on the underperformance of ethical funds; this underperformance is stronger in years of poor stock market performance, which indicates that systematic risk of ethical funds may be higher.

**Keywords:** ethical, social responsible investment, SRI, investment, funds, portfolio, returns, risk, screening, Sweden

**JEL:** G12, C21

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# 1 Introduction

Social responsible investing (SRI)<sup>1</sup> has been attracting increasingly more attention among both institutional and individual investors in recent years. The popularity of SRI stems from the public concern that some companies may lack social responsibility in a variety of areas such as environmental issues, workers health and safety (Schepers & Sethi, 2003). SRI is thus viewed as an alternative investment strategy as well as a promoter of the socially desirable business practices.

SRI includes a wide range of different investment products. One of the most common products are the ethical funds. These funds commit to place their assets in companies which stand for social justice, fairness and sustainability of recourses (Karlsson, 2006). Nonetheless, ethical funds can have different aims and objectives. Some funds do not hold stocks in firms operating in the alcohol, tobacco or weapon industries while others exclude firms with poor environmental track records. These funds share the philosophy that maximization of the financial returns is not their sole aim; rather they take both financial and non-financial concerns into consideration when they decide which companies to invest in (Benson, Brailsford, & Humphrey, 2006).

Even though ethical investments have received quite a lot of attention the last years, the history of ethical awareness in investing dates back to the 17<sup>th</sup> century. In 1928 the first SRI fund named 'the Pioneer fund' was formed. The fund made screening decisions based on religious traditions and avoided alcohol and tobacco; nevertheless, the fund never became particularly popular (Renneboog, Ter Horst, & Zhang, 2008). After that when other than religious aspects were taken into consideration ethical alternatives increased in popularity and attracted a broader investor attention. During the 1960's and the Vietnam War many brokers avoided to invest money in companies involved in the war and in 1971 the first modern ethical fund was introduced (Sandberg, 2008). In the mid 1980's others than religious groups started to invest in ethical funds due to the regime in South Africa. After the fall of

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<sup>1</sup> The terms SRI funds and ethical funds will be used interchangeably in this paper. The former is used in some parts of the world while the later is more common in other parts, but they can be seen as synonymous.

apartheid the interest in ethical funds did not decline, but the focus has since then shifted to lie more on environmental issues (Karlsson, 2006).

USA is the leading country when it comes to ethical investments, but Sweden is one of the forerunners on the European market. 'AktieAnsvar Aktiefond' was the first ethical investment fund in Sweden established in 1965. During the late 80s and early 90s the number of ethical funds on the market increased and today the market offers several different fund alternatives (Bengtsson, 2008).

Investing in ethical funds is a debated issue. Many investors, brokers and other market participants argue that it is not better to invest in ethical than in non-ethical funds because the opinion what is 'ethical' differs and is highly subjective. Many different funds can call themselves ethical because of the lack of a commonly agreed definition (Sparkes, 2001). Some fund managers draw the line with human rights while others go further and eliminate everything that has a bad impact on the environment and on human health. However it is difficult for the broker to monitor the companies and all its suppliers and partners. It is hence up to the brokers to decide what is ethical (Hellsten & Mallin, 2006).

The performance of ethical funds is likely to differ from their traditional counterparts both in terms of returns and risk. Ethical funds commit themselves not to invest into companies that perform ethically questionable activities. These activities tend to be regarded unethical because they enhance company profits by means for creating substantial negative externalities, such as creating excessive environmental burden, exploiting children as labor force or perpetrating armed conflicts. Besides, screening the potential investment targets is a costly activity that further reduces the realized return. Consequently, it is reasonable to expect the ethical funds to underperform mainstream funds. At the same time, the commitment to invest ethically limits the pool of stocks that the ethical funds would consider for their investments which limits the diversification possibilities. Supporters of ethical funds argue that the number of socially responsible companies will increase as time goes and thereby will ethical funds have a higher number of companies to choose between. The risk for ethical and non-ethical funds will thereby converge (Mill, 2006), but this process may be lengthy and incomplete. Therefore ethical funds are also likely to exhibit a higher level of systematic risk than the traditional counterparts.

The existing empirical evidence on the relative performance of ethical funds is mixed. *Benson et al.* have investigated if there are any differences in portfolio composition for ethical versus non-ethical funds. They concluded that there are differences between the weights invested in different industries but found no differences in returns between the two fund types (Benson, Brailsford, & Humphrey, 2006). *Geczy et al.* concludes that ethical funds are likely to underperform traditional funds (Geczy, Stambaugh, & Levin, 2005). Criticizers of ethical funds also point out that it is costly and administratively burdensome to monitor the funds. Because of that the ethical fund fees are frequently regarded as more expensive than non-ethical alternatives and there are large fee differences between the managers (Michelson, Wailes, van der Laan, & Frost, 2004). The interpretation of the results is further complicated by the fact that the definition of an ethical fund is unclear and many of

these comparative studies are performed or sponsored by boards for socially responsible investing that have vested interest in promoting this kind of investment strategy.

The main purpose of this paper is three-fold. We first establish a definition of an ethical fund that excludes all funds that may disguise problematic investments by using a very broad concept of the social responsible investing. Second, based on this distinction we investigate if there are differences in portfolio composition between ethical and unethical funds that should give some indication whether the distinction is material or whether it essentially concerns just the label. Finally, we examine whether there are differences in returns and risk between ethical and non-ethical funds. As far as we know there is no independent study performed in this manner in Sweden where the portfolio composition has been investigated as well.

The remainder of this paper is organized as follows. Section 2 includes a definition of what an ethical fund is and section 3 includes a review of prior research reports. Section 4 describes how the research is structured. In section 5 the results from the study of portfolio composition and performance in terms of risk and returns is presented.

## 2 Defining Socially Responsible Investing

This section contains a discussion of the classification criteria applicable for ethical funds. The definition of an ethical fund is not universal and commonly agreed, which cause problems. The definition by the Etiska Nämnden för Fondmarknadsföring (Ethical Board for Marketing of Funds)<sup>2</sup> is presented in this paper. Subsequently, different ethical screening methods and reasons for ethical investments are discussed.

Ethical investing is an investment strategy where the fund managers make investment decisions based on ethical principles. The philosophy behind this strategy is that investors will consider moral, environmental and social aspects in their decisions. All funds that use non-financial screening to exclude or add companies in their portfolios can be classified as ethical according to the Social Investment Forum (Socially Responsible Investing Facts). Besides the non-financial criteria a fund must fulfill several other aspects to be classified as ethical according to Etiska Nämnden för Fondmarknadsföring. These are:

- The fund must have a clearly expressed ethical policy and a clearly expressed screening method. The fund company has to inform the market which policy and strategy it applies. This information must be published in a written report
- The fund must apply a cut-off limit, so that no more than ten percent of the company's revenues are derived from doubtful activities
- The fund company must have a system in order to continuously check and ensure that the ethical rules are followed (Etiska nämnden för fondmarknadsföring: vägledande uttalande januari 2004, 2004)

There are different methods to select what kinds of companies to include in an ethical fund, but the main methods are negative and positive screening, best-in-class and the engagement method.

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<sup>2</sup> A board established by The Swedish Investment Fund Association to handle regulations concerning ethical investment marketing.

These methods can either be used on their own or in a combination. Usually a fund applies a combination of the screening methods (O'Rourke, 2003)

Negative screening is the oldest and most basic SRI strategy. It means that a list of negative criteria is used by the fund manager to avoid activities or products that are affecting the society in a negative way. Stocks must be excluded if companies do not meet certain ethical, social and environmental criteria. Alcohol, tobacco, weapons, pornography, nuclear weapons, gambling and defense industries are the most common avoided negative criteria (Lundberg & Westholm, 2006). Some fund managers have extended their screening by excluding meat production and/or drug companies that manufacture contraceptive pills (Karlsson, 2006). Funds can also reject investments in companies that have been associated with discrimination, child labor, unjust working conditions or animal testing (Lundberg & Westholm, 2006). Some fund administrators are strictly taking distance from all kinds of questionable investments while others invest a limit part in alcohol, tobacco and/or weapon industry and still are classified as ethical. Ethical funds have a policy not to reveal which firms who fail the screening process (Schepers, 2003).

The negative screening has proved to be a relatively inexpensive screening method because the fund administrators have the availability to boycott companies that do not live up to the criteria. On the other hand the negative method has raised questions where to draw the line considering outsourcing and underlying companies. The funds are often inconsistent in the selection of companies when it comes to subcontractors. A fund manager who rejects one company for ethical reasons can accept another company with similar characteristics. For example it is quite common that fund managers who exclude tobacco companies yet invest in their resellers and transport companies (Renneboog, Ter Horst, & Zhang, 2008).

Another problem is raised when it comes to companies that are doing well on several ethical criteria, but fail on some others. The negative criteria are limiting the investment alternatives and several fund managers have therefore accepted to invest in companies that only have a limited part of their holdings in the above discussed areas. Many funds have set a cut-off limit of ten percent on revenues derived from doubtful activities. *Schepers* (2003) argue that larger companies have an advantage against smaller companies since a ten percent cut-off limit revenue will gain larger companies as they can place a larger part of their revenues (in absolute terms) in problematic activities. The fund managers seem to set the cut-off limit for financial reasons. A high cut-off limit allows the funds to invest in a lot of different companies while a low cut-off limit excludes many companies (Schepers & Sethi, 2003).

Furthermore, fund managers may not have full access to internal data because most companies are not willing to give away this information. For that reason a majority of the fund managers must rely on published financial information when deciding which companies to exclude. Sometimes it can be difficult for the fund managers to know the sales of a particular product because a number of products might be grouped in a division. Activities in large companies are fast changing and the fund managers must therefore always be updated, which is both time consuming and costly. Larger corporations are also having a lot of different products and are active on several markets around the world. This can make it difficult for the fund managers to properly classify the companies (Schepers & Sethi, 2003).



If the ethical fund managers apply the positive screening method the companies are selected based on activities or products that are affecting the society in a positive way. It could be that the company has not been found to break the legislation, it is not condemned for any environment pollution or that they have signed a code of conduct such as the UN Global Conduct. A company can also be selected if it operates in a specific sector like for example the environment technology (Schepers D. H., 2003). The positive screening criteria can also include companies that produce organic food or support community development activities. Some funds donate approximately one to two percent of the total yield to charity organizations. This is another example of a positive criterion where the fund does not need to be ethical in other aspects (Karlsson, 2006).

The positive screening method has been criticized for taking only a few aspects into consideration. Companies know which aspects the funds evaluate when choosing where to place their assets. Some companies are therefore focusing on these issues while other important issues have not been taken into consideration (Schepers, 2003). The positive screening method is often combined with a best-in-class screening approach.

The companies with the best performance in a particular sector are chosen by the funds within the best-in-class strategy. It means that best-in-class funds do not avoid any particular industry sector. Instead they choose to invest in the best companies within a particular sector. Companies are evaluated based on the performance of other companies in that sector and only the best firms in the sector are selected. High efficiency, environmental awareness, socially responsibility and research and development are factors that the fund managers take into consideration when choosing which companies to invest in (O'Rourke, 2003). The amount of women respectively men in the company on leading positions, product safety and protection of minorities are also important. The product performance, information in the annual reports and the performance of the firm versus the performance of other firms are additional factors that the fund managers evaluate when choosing which companies to invest in. The aim of this strategy is to encourage other companies to be aware of social responsibility and environment issues.

Most of the fund managers only invest in large cap stock listed companies. One reason for this is that it is easier to get hold of information for large corporations. Another reason might be that markets leaders often have a more stable financial situation, which makes the returns less volatile than the returns for growing companies (Schepers D. H., 2003).

Much of the criticism that has been presented for the positive screening method is also relevant for the best-in-class method. Even this method has been criticized for favoring larger companies since it is difficult for smaller companies to live up to all screening criteria. For example there is a higher probability that larger corporations will have minorities on top positions within the organization (Schepers & Sethi, 2003). The opponents argue that the-best-in-class screening method is a cover up to earn high returns since they are choosing companies with a strong financial performance even if the firm has failed on a number of ethical aspects (Mackenzie, 1998).

The engagement method is the most recent of the screening approaches. It can also be named active strategy or constructive engagement, direct dialogue and the third generation screening

method. Investors engaged in this approach are investing in companies that are behaving in a morally unacceptable way and they are doing so by trying to change the companies by using their shareholder influence. The engagement strategy includes finding areas where companies can be better and support them to make those improvements, which can be done in three ways.

In the first step the fund managers inform the company which investment policies they have and how they affect their decision whether or not to invest in the company. They also inform the company what they need to improve and encourage them to improve on those areas. The fund managers will invest in the company if it makes the suggested improvements.

Secondly, the fund managers can use a method whereby they try to influence the companies via regular meetings. The aim is to convince the firm to improve their practices on issues such as recycling and pollution reduction. They can try to persuade the company in a more responsible way by introducing and voting on resolutions at the company's annual meeting. Starting a dialogue with the company's managers by writing letters and/or sending out press releases are additional ways to influence the company to become ethical. Around 30 percent of the American ethical funds are reported to be active shareholders (Sandberg, 2008), but in Sweden it is not common (Lundberg & Westholm, 2006).

Finally, the fund companies can offer to help the management of the company to formulate a policy based on the ethical approach. In many cases when companies have been rejected they do not know for which reasons. Instead of selling the assets, fund managers can make management aware of the investment rules according to the engagement method (Lundberg & Westholm, 2006).

One positive aspect with the engagement method is that funds still can invest in unethical companies and they are thereby not missing investment opportunities. On the other hand, the fund is not making a clear statement by investing in these companies (Karlsson, 2006). It can also be difficult for the funds to influence the companies. The funds are quite far from the everyday decisions and they do not always have the share rate needed to affect decisions (Sandberg, 2008).

A number of research papers have not found any evidence that discussions with management have an impact on companies' behavior. SRI funds have in most cases a marginal economic impact and for that reason it can be hard to put pressure on the companies. The question is when to disengage the cooperation if the company does not make any improvements? The amount and length of the investments horizon are difficult to determine. *Schepers* (2003) argues that the motives behind this method can be questioned. He claims that the engagement approach is a tactic strategy since these investments could be seen as a cover up for investment into unethical companies with good earnings prospects. The main reason for ethical companies to follow this strategy is that they can invest in the same companies as non SRI funds, so they will get similar financial returns. The invested money into unethical companies could be spent in a better way since prior studies have found the minimal impact on unethical companies' behavior. Ethical fund companies should invest the money in companies that are living up to the ethical criteria instead of investing in unethical companies (Schepers D. H., 2003).

Of these screening methods presented above the negative and positive screening method will be criteria for the authors' classification of the studied funds which follows Mallin, Saadouni, & Briston (1995).

### 3 Prior Research

Prior research has examined the financial performance of ethical funds versus non-ethical. Several research reports have also focused on the financial performance of these funds relative to a selected market index. Most of the research has focused on the UK, US and the Australian market. However, the research has not come to a general conclusion. A variety of methodological approaches have been used to estimate the financial performance, which can be a reason for the differences in the outcomes. A few international studies have indicated statistically significant evidence that there exist differences in the performance of ethical and non-ethical funds (Benson, Brailsford, & Humphrey, 2006).

*Luther et al.* did one of the first studies of ethical trusts. The authors have studied the performance of 15 ethical funds in the UK for a period between the years 1984 to 1990. The SRI funds included in the survey was selected based on the Ethical Investment Research Service definition of an ethical fund. The Ethical Investment Research Service defines an ethical fund 'as a fund which excludes companies from their portfolios for non financial reasons' (Luther, Matatko, & Corner, 1992). This broad ethical definition has been debated. As a result of this broad definition funds that use for example religious screens can be classified as ethical even if they are not marketing themselves as ethical (Schepers & Sethi, 2003). Nevertheless, there was no comparison with regular funds in this study. The monthly return, the Sharpe ratio and the Jensen's alpha were computed and a domestic as well as a world index were used for the calculations. Some evidence of over performance against the world index appeared in the study, but the authors stated that the result might have been affected by a small company effect. The selection of two broad indexes could have affected the outcomes given that most of the ethical funds had a relatively high portfolio weight on small-cap companies (Luther, Matatko, & Corner, 1992). This study has been criticized since the authors did not use any statistical test to control if the results were statistically significant (Jones, van der Lann, Frost, & Loftus, 2008).

In a later study by *Luther et al.* they concentrated on some of the troubles raised in their early work. In this study they claimed that a small company index would improve the ethical funds performance since the ethical funds seemed to invest a larger part of their holding in smaller companies (Luther & Matatko, 1994).

*Mallin et al.* examined the relative performance of ethical funds by using a matching sample approach. The authors have investigated if UK ethical funds over perform the market of non-ethical funds. The study was done since most of the earlier research papers only focused on the investment policies of the fund managers. *Mallin et al.* defines an ethical fund as a fund which either has a positive or a negative selection criteria. Managers investing in companies which are environmentally friendly were classified based on a positive criterion. Fund managers avoiding certain countries or industries such as the tobacco, alcohol, armaments, gambling and pornography industry belonged to the negative criteria group. Funds that have both positive and negative screening methods were also classified as ethical whereas all other funds were

classified as non-ethical. However, there is no description in the paper on how the selection actually has been made. The study has been criticized on that point, as the selection process is fairly important for these kinds of studies. According to this paper both kind of trusts tend to underperform the market and the ethical trusts outperform the non-ethical regardless if a ranking of Jensen's alpha, Treynor's index or the Sharpe ratio was used. The results may have been caused by a temporary phenomenon caused by an increased awareness and interest in ethical investments (Mallin, Saadouni, & Briston, 1995).

Two years later these findings were re-evaluated by *Gregory et al.* They argued that larger firms have superior performance to smaller firms because of economies of scale. The fund sample consisted of 18 SRI funds and 18 non SRI funds matched to the SRI funds by size, age and investment area. All ethical funds were selected based on 1995 years list of ethical funds from The Ethical Investment Research Service. The FT All Shares Index and the Hoare Govett Small Cap Index were used to compute the Jensen's alpha. The authors argued that the study proved that ethical funds had a greater exposure to small companies than the control group consisting of mutual funds. Both types of funds were underperforming the market index during the research period. Ethical funds performed worse than non-ethical, but the differences were not statistically significant. Anyway the authors claimed that they have found some evidence supporting their hypothesis that ethical funds underperformed non-ethical. The result of their study could have been affected by the fact that small companies performed significantly worse than larger firms from 1989 to 1993 (Gregory, Matatko, & Luther, 1997). Even this study has been criticized for result deviations due to sample selections biases. *Gregory et al.* have matched the fund size at the beginning of their study, which has lead to significant divergences in fund size towards the end of the sample period (Kreander, Gray, Power, & Sinclair, 2005).

*Kreander et al.* adopted in a more recent study a matched pair approach which was similar to the approach used by *Mallin* and *Gregory*, except that they matched the fund size in the middle of the sample period. This was done to overcome the size problems earlier studies have suffered from. *Kreander et al.* investigated the financial performance of 60 investment funds from four European countries during a period between 1995 and 2001. 37 of these 60 funds were classified as ethical while the others were mainstream mutual funds. The study was built on a matched pair analysis where the funds were matched by type, age, country, size and investment universe. The sample analysis consisted of 34 funds from UK, 14 Swedish funds, 8 funds from Germany and finally there were four funds from the Netherlands. No significant difference in financial performance could be established between the ethical and mainstream funds despite the different investment strategies. The results were significant both for Jensen's alpha, the Sharpe ratio and Treynor's index. The conclusion of the study was therefore that there are no differences in returns, but the researchers found some evidence that mainstream funds are riskier than their ethical counterparts (Kreander, Gray, Power, & Sinclair, 2005).

*Renneboog et al.* have investigated if investors pay a price for investing in socially responsible investment funds. The study was based on the Fama-French-Carhart (FFC) benchmark model. The conclusion of the paper was that SRI funds underperform the mainstream funds on both the US and UK market and in most of the European and Asian-Pacific countries. However, the results are only statistically significant for the Japanese, French and Swedish market. It seems that investors have to pay a price for investing in ethical funds and in other types of socially

responsible funds in the above-mentioned countries (Renneboog, Ter Horst, & Zhang, 2008). Similar results were found in a study by *Stewart Jones et al.* They have studied the returns for 89 SRI funds in Australia over a period from 1986 to 2005. The conclusion of their study was that SRI funds significantly underperform the market benchmarks by three to five percent over the sample period. The researchers also found evidence that the SRI funds underperform the market by around 0.88 percent annually over the entire period, but during the years 2000-2005 the underperformance was even greater with an annual percentage of 1.52 (Jones, van der Lann, Frost, & Loftus, 2008).

No evidence of significant differences in the returns was found by *Hamilton et al.* (Hamilton, Jo, & Statman, 1993) neither found *Bauer et al.* any differences in risk-adjusted returns in their international study. This study investigated 103 German, UK and US ethical funds by applying a FFC model. (Bauer, Koedijk, & Otten, 2005). On the other hand they found that ethical funds have a higher expense ratio than conventional funds. Another conclusion from their study was that ethical funds are smaller and that older SRI funds outperform their younger counterparts. The authors used similar methodologies to investigate the Australian market but they did not find any evidence of significant differences in risk adjusted returns for the period 1992-2003. One reason for this may have been that the results are sensitive to the chosen time period (Bauer, Otten, Tourani Rad, 2004).

The result from another study of *Lewis et al.* shows that ethical investors are holding both ethical and non-ethical investments at the same time. The study consists of a questionnaire survey of 1146 ethical investors in the UK. The conclusion was that people are willing to put their money in alternative investments, but their investments are affected by different economic factors. The risk and return are key factors for an investor when choosing a portfolio. (Lewis & Mackenzie, 2000)

During the years 1999 to 2001 the Swedish environmental protection agency<sup>3</sup> published reports about Scandinavian funds with an environmentally aware approach. The reports had slightly different contents, but in the third and last one the risk adjusted returns were calculated for ten Swedish and three Norwegian ethical funds. The conclusion was that the funds neither had a higher or a lower risk adjusted return than the benchmark index. They seemed to perform as well as similar mainstream funds and the conclusion was that the returns had more to do with the fund administrators competence and experience. When the Swedish environmental protection agency decided not to continue with the reports Folksam<sup>4</sup> started to publish fund reports about SRI funds. The SRI funds consisted of mutual funds, mixed-funds and interest funds. Folksam's analysis from 2006 proved that SRI funds over a ten year period between 1996-12-31 and 2006-12-31 had higher average returns than the average returns from all other funds on the market. It did not matter if a time period of ten, five, four, three, two or one year were used, the ethical funds performed better than the non-ethical group consistently. Funds in Sweden and Scandinavia gave the highest returns and it was interest, mixed, environment and European funds that had the best performance during the year right before the report was presented (Lundberg & Westholm, 2006). However, the objectivity of these mentioned reports can be questioned since both organizations profit on ethical investments. The selection of the

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<sup>3</sup> In Swedish, Naturvårdsverket

<sup>4</sup> A Swedish insurance company

funds included in these kind of studies can also be questioned since the company can have an interest in marketing their own funds.

## 4 Hypotheses

The SRI funds will be unable to diversify completely as suggested by the modern portfolio theory. An ethical fund that strictly exclude companies or entire industries that have not lived up to the ethical criteria will have a lower number of companies to select among. The portfolio composition for ethical funds will therefore differ from non-ethical funds. As a reason for that ethical funds will have a less diversified portfolio than traditional funds. To control if this statement is correct the following hypothesis will be tested:

H1: Ethical funds have a less diversified portfolio than traditional funds.

According to the findings summarized in the previous chapter, the expected return might be lower for an ethical fund than for a traditional fund. One reason for lower returns is that SRI funds might underinvest in financially strong companies due to ethical restrictions. The exclusion of firms within a specific industry can have a significant impact on the financial performance. To test if this statement is correct the following hypothesis will be used:

H2: Ethical funds do underperform traditional funds in terms of stock returns.

The limited diversification possibilities imply that ethical funds are likely to exhibit higher risk for a given level of return (Barnett & Salomon, 2006). To investigate whether there exist any differences in risk and returns between ethical and non-ethical funds the following hypothesis will be tested:

H3: There is no difference in risk between the two fund types.

## 5 Data Selection

In the previous section we have stated the hypotheses that will be tested and here we will introduce the data sample included in the study. The focus of this study is on mutual funds registered in Sweden since the 1<sup>st</sup> of January 2000 . The studied time period is reaching to 31<sup>st</sup> of December 2007. This time period is particularly interesting because there has been both ups and downs in the overall economy during this time period. The sample is drawn from the Swedish Financial Supervisory Authority<sup>5</sup>. They monitor the Swedish market and provide a list of all funds registered in Sweden. The received data from the Swedish Financial Supervisory Authority include a list of 697 Sweden registered funds and their market values. Nevertheless, all data is not relevant for this investigation. We have excluded all funds that are not classified as mutual funds. A mutual fund must hold at least 75 percent of their assets in stocks. To evaluate if a fund can be classified as a mutual fund we have studied the fund fact sheet and their holdings. Funds that have delimitations of a minimum investment of 1 million SEK or more have been excluded since most private investors do not invest those numbers. A few funds that were registered, but did not hold any instruments during the entire sample period were also

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<sup>5</sup> In Swedish, Finansinspektionen

excluded. All funds, both the ones that are alive and the ones that are dead or have disappeared are included to avoid survivorship bias. Dead funds have been included in the study until the date they have disappeared and those funds that have not been noted at the 1<sup>st</sup> of January 2000 are not examined. Funds that disappear tend to do so either because their performances have been weak for a long time period or because their market value is underestimated and the managers decide it is no longer profitable to maintain the fund. Therefore the performance will be overestimated if only funds that have survived are included (Scholtens, 2007). Statistical differences in industry allocation, risk and returns between ethical and non-ethical funds is provided by the student's t-test.

However, there were a few mutual funds that we could not find any information about and therefore they are also excluded. We have investigated if the fund has change name or if a fusion has taken place when the names from the Swedish Financial Supervisory Authority did not match any names in DataStream or Six Trust. In some cases we have not been able to match a fund name with data and thereby that fund has been excluded. After the eliminating a sample of 175 funds remained from the list whereas 23 of them were classified as ethical.

In the absence of a commonly universal agreed definition of what an ethical fund really stands for, we have used our own definition. An ethical fund is according to our definition a fund that takes non-financial aspects such as environmental and moral aspects into consideration when selecting investment alternatives. This consideration has to be expressed by the use of either the negative screening approach or a combination of the negative and positive screening approach.

This definition is more restricted in comparison with the definition of the Social Investment Forum. If a fund for example use non-financial screening based on religious principles, then the Social Investment Forum is classifying this funds as ethical, even if they are not marketing themselves as ethical. The funds that do not market themselves as ethical have not been classified as ethical in this study according to the guidelines by Etiska Nämnden för Fondmarknadsföring. A fund that has an expressed ethical strategy has not automatically been classified as ethical. Funds claiming that ethical issues are important, but have not a clear strategy or an ethical aim, have not been classified as ethical.

A fund either has to use a negative screening approach or a combination of the negative and positive screening approach to be classified as ethical. However, the positive screening method cannot be used on its own. The fund has to use more than three or additional screening criteria, where at least two of the screening criteria need to consist of negative screens. Fund companies that are applying the positive screening criteria can select companies that are affecting the society in a positive way and often they can select companies that are top ranked in their sector. This might imply that the fund companies do not need to suffer financially for investing ethically. The fund companies that are using the negative screening criteria exclude some sectors. This implies that they might have to do a financial sacrifice for investing ethically. The focus in this paper lies therefore on the negative screening criteria. Appendix I includes a summary of the negative and positive screening methods that the fund must apply when selecting companies to be classified as ethical.

By studying the annual reports and the fund fact sheets compiled by the fund companies the authors have decided if the funds actually can be classified as ethical. Funds that are donating a

part of their returns to charity are not classified as ethical unless they use additional screening methods. The reason for this is that the money they donate to charity can be gained from unethical investments. A fund is neither classified as ethical if it only applies the best-in-class approach or the engagement strategy. The reason for this is that we claim that those approaches might be a cover up for the fund managers to invest in socially undesirable companies to get higher returns.

## 6 Research Method

The empirical analyses consist of two sections. The first section includes a portfolio composition analysis while the second part compares the performance of ethical and non-ethical funds as measured by realized returns and risk.

We first examine if there are any systematic differences in a portfolio composition between ethical and non-ethical funds. Due to that we analyze the number of securities and the numbers of unique securities the funds hold in their portfolios, the concentration of the portfolios measured in terms of the market values of the largest assets in the portfolios and the geographical composition of the portfolios.

After that we investigate if the funds that claim to be ethical are in fact less likely to invest into stocks that have been identified in existing research as ethically questionable. Lindsten (2007) identifies 16 companies that could be viewed as morally questionable; we investigate the percentage of the total market value invested in these companies for each year by different fund types.

Formula 1 has been used to calculate the monthly return for each fund. By using monthly data the fluctuations in daily or weekly data is avoided.

$$R_{pt} = \left( \frac{NAV_{pt} + DIV_{pt}}{NAV_{p,t-1}} \right) - 1 \quad \text{Formula 1}$$

Where;

$R_{pt}$  is the return for fund  $p$  at time  $t$ ,  $NAV_{pt}$  is the net asset value of fund  $p$  at the end of day  $t$ ,  $DIV_{pt}$  is the dividend for fund  $p$  at time  $t$  and  $NAV_{p,t-1}$  is the net asset value of fund  $p$  at the end of day  $t-1$  (Busse, 1999)

Formula 1 has also been used to calculate the returns for the market indexes. Six Portfolio Return Index, AC World Index and S&P-500 were selected as market indexes.

Several different approaches are used in the existing literature to adjust the realized returns for risk. The most common approaches to measure risk-adjusted returns are the Sharpe ratio, Treynor's index and Jensen's alpha. These measuring tools will also be used in this paper since these tools compare both risk and return. The Swedish government borrowing rate from January 2000 to December 2007 is used as the risk-free rate, as the government borrowing rate reflects



the risk-free long-term market rate. The Swedish government borrowing rate consists of the average market rate on government bonds with a remaining maturity of at least five years. The reason for using a monthly rate instead of a quarterly rate is that the monthly rate gives a more precise approximation.

The Sharpe ratio is the only tool to measure total risk, whereas the other two measurement tools only take the systematic risk in form of beta into consideration. A higher portfolio risk adjusted performance will lead to a higher Sharpe ratio and is calculated in the standard manner as:

$$\text{Sharpe ratio} = \frac{\overline{R}_j - R_f}{\sigma_j} \quad \text{Formula 2}$$

Where;

$\overline{R}_j$  is the annual average return of fund  $j$ ,  $R_f$  is the risk free rate and  $\sigma_j$  is the annual standard deviation of fund  $j$ (Copeland, Weston, & Shastri, 2005)

The Sharpe ratio has been criticized on the grounds that it considers the total risk while the financial theory informs us that it is only the systematic risk that investors are compensated for. Nevertheless, we will use the Sharpe ratio to measure the performance of funds that hold a diversified portfolio of stocks, which makes the use of this measure more meaningful.

We also use complementary performance measures that capture only the systematic risk component. The Treynor's index is one of the ratios that focus on the market specific risk. Similarly to the Sharpe ratio, the Treynor's index focuses on the risk and risk premium, but the denominator differs from the Sharpe ratio. Beta represents the denominator in the Treynor's index. The better the portfolio has performed, the higher the ratio will be. Formula 3 shows how to calculate the value of the Treynor's index.

$$\text{Treynor index} = \frac{R_{jt} - R_{ft}}{\beta_j} \quad \text{Formula 3}$$

Where;

$\overline{R}_j$  is the annual average return of fund  $j$ ,  $R_f$  is the risk free rate and  $\beta_j$  is the annual beta value of fund (Copeland, Weston, & Shastri, 2005)

The third risk measure, the Jensen's alpha, is used to evaluate the portion of realized returns that cannot be explained by the CAPM beta that captures the sensitivity of an asset excess return on the market excess return or in other words the marginal contribution of a stock to the systematic risk of a portfolio. A positive value indicates that the fund managers have managed to outperform the return expected for the particular level of systematic risk. The formula for Jensen's alpha is as follows:

$$r_{pt} - r_{ft} = \alpha_p + \beta_p * (r_{mt} - r_{ft}) + \varepsilon_{pt} \quad \text{Formula 4}$$

Where:  $r_{pt}$  is the return of the portfolio,  $r_{ft}$  is the return of a risk free asset,  $\alpha_p$  is the Jensen's alpha for the portfolio,  $\beta_p$  is the portfolio beta,  $r_{mt} - r_{ft}$  is the excess return for the market. This means that  $r_{pt} - r_{ft}$  is the excess return of the portfolio in period  $t$ . The random error term is  $\mathcal{E}_{pt}$  (Copeland, Weston, & Shastri, 2005).

Finally, the CAPM adjusted returns have been used to calculate the financial performance of Swedish SRI funds and conventional funds. The CAPM has been calculated as follow:

$$R_i = R_f + \beta_i * (R_m - R_f) \quad \text{Formula 5}$$

Where;

$R_i$  is the expected return on the capital asset,  $R_f$  is the risk free rate of interest,  $\beta_i$  is the beta value of asset  $i$  and  $R_m$  is the expected return of the market (Fama & French, 2004). The betas are estimated over a 12 month period. In case the information on historical returns was not available for some funds in some months, the first available beta computed in the coming months was used.

## 7 Results and Analysis

In this section we present and analyze our results. We first introduce the results concerning the portfolio composition and thereafter follow the results from the calculations of returns. The Sharpe ratio, Treynor's index, Jensen's alpha, beta values and CAPM are reported in the last part of the section.

### 7.1 Portfolio Composition

We first analyze if the ethical and non-ethical funds differ when it comes to their portfolio composition. The assets in the portfolio for each year have been analyzed in different ways. First, the number of securities in the portfolio and the number of unique securities for the two types of funds will be presented.

Diversification is an important tool to reduce the portfolio risk according to the modern portfolio theory. SRI funds cannot diversify in the same extent as traditional funds due to the screening methods, which restrict the pool of stocks that they can consider for the investment. At the same time, however, the portfolio diversification is hardly ever complete. Most funds do not hold more than 20 to 30 different stocks and only a few funds hold more than a hundred stocks. There are mainly two reasons which cause investors to limiting diversifying according to the modern portfolio theory. First the managerial effect of diversification becomes smaller when the portfolio already consists of a large number of different shares. Secondly investors think they will be able to find undervalued stocks on the market. Therefore they sell the stocks they think are overvalued and instead they buy stocks they think are undervalued (Lydenberg, 2007).

Our findings indicate that contrary to our expectations the ethical funds have a larger number of securities in their portfolios than the conventional funds, which can be seen in Table 1. This can

be because the ethical funds are less aggressive with their intention to identify undervalued securities and put more emphasis on the reduction of the overall risk. It is also possible that the higher diversification of ethical funds arises because they tend to be administered by a more diverse group of managers who can have a wider range of companies included in the total portfolio, while a typical traditional fund manager is likely to administer several funds. Furthermore, several of the traditional funds included in the study have an investment strategy targeted towards a specific sector such as technology and pharmaceutical funds. These funds might thereby also have a limited number of stocks to choose between. Besides the differences in the portfolio diversification Table 1 shows that the differences between the two fund types have decreased over the last years and both fund types have increased the number of assets in their portfolio holdings.

	Number of unique securities			Number of securities		
	Ethical	Non ethical	Difference	Ethical	Non Ethical	Difference
2000	34,3	19,4	14,9	88,5	69,4	19,1
2001	30,5	16,8	13,7	104,0	85,8	18,1
2002	32,9	18,5	14,3	119,2	108,5	10,7
2003	38,9	19,9	18,9	101,2	116,7	-15,5
2004	36,9	19,2	17,7	103,2	114,3	-11,2
2005	56,8	22,5	34,3	131,8	120,2	11,7
2006	52,1	26,8	25,3	132,7	131,6	1,1
2007	56,5	29,5	27,0	136,4	138,3	-2,0
<b>Average</b>	<b>42,3</b>	<b>21,6</b>	<b>20,8</b>	<b>114,61</b>	<b>110,60</b>	<b>4,01</b>

**Table 1** – This table presents the number of securities held by an average ethical and non-ethical fund. The right panel considers all the securities held by a fund, whereas in the left panel only the unique securities are counted, i.e. securities held by several investment funds are counted only once.

Another method to measure the differences in portfolio composition is to evaluate the ten stocks with the largest market values in the two types of portfolios rather than the frequency with which they appear. Table 2 shows that the market value in percentage terms for the ten stocks with the largest market values are higher for ethical funds. These differences are significant on a five percent level in all years. One reason might be that ethical funds invest in more well known and larger companies to make it easier to control the level of SRI due to the company's resources and the media attention. The most common top ten invested companies are presented in Appendix II.

Year	Total market value			
	Ethical funds	Non-ethical funds	Difference	T-statistic
2000	36,49%	26,90%	9,58%	15,10*
2001	31,92%	22,74%	9,18%	15,92*
2002	29,97%	22,69%	7,28%	20,43*
2003	35,36%	24,93%	10,43%	15,43*
2004	31,15%	25,80%	5,36%	4,03*
2005	41,82%	22,78%	19,04%	30,62*
2006	40,83%	20,85%	19,98%	31,80*
2007	38,71%	19,49%	19,21%	38,04*

**Table 2** – This table compares the market values for the top ten most common holdings of traditional and ethical funds between year 2000 and 2007. The table reports differences in market value for the entire portfolio for traditional and ethical funds. The student's t-test has been used to investigate whether there exist any differences in market values between traditional and ethical funds between 2000 and 2007. \*Indicate statistically significant values on a 5 percent level.

Table 3 presents investment in the top five countries during the period of 2000 to 2007. In the beginning of the sample period both ethical and non-ethical funds have most securities invested in Sweden. Since year 2002 the non-ethical funds have invested the largest part of the assets in the USA. The ethical funds have invested most of the instruments in Sweden until year 2003. Thereafter they have invested mostly in US securities. This switch towards the US market might be explained by the fact that the USA is the leading country on ethical investment. The ethical fund companies might therefore find a larger supply of companies that live up to the criteria. Even if ethical funds invest the largest market values in Swedish companies a larger number of the assets are invested in US companies. This may be explained by the larger supply of companies on the US market.

Note that both traditional and ethical funds invest in the same top five countries over this period with exception for 2007. All other years it is only the ranking that differs. In year 2007 the four most invested countries are the same, but on the fifth place the investment differs. Traditional funds are investing in German stocks while ethical funds invest a larger part in French stocks. Choosing these countries might be a result of their stable economic markets as well as the financial control of the market in these countries. The fund managers can easier control the screening methods if financial information is well provided for.

	Ethical funds							
	2000	2001	2002	2003	2004	2005	2006	2007
US	20,56%	24,71%	25,88%	31,37%	30,31%	29,58%	30,04%	33,08%
SE	31,46%	32,14%	31,78%	27,32%	28,33%	23,99%	25,73%	22,91%
JP	11,70%	10,57%	8,78%	5,04%	5,20%	8,01%	6,60%	7,35%
GB	7,00%	6,46%	8,78%	8,40%	8,37%	8,77%	8,44%	7,08%
FR	4,46%	4,40%	4,67%	4,89%	5,02%	4,29%	5,09%	4,12%
DE	-	-	-	-	-	-	-	-
<b>Total</b>	<b>75,17%</b>	<b>78,28%</b>	<b>77,04%</b>	<b>77,03%</b>	<b>77,22%</b>	<b>74,64%</b>	<b>75,91%</b>	<b>74,53%</b>

<b>Non ethical funds</b>								
	2000	2001	2002	2003	2004	2005	2006	2007
US	31,57%	24,86%	29,11%	28,75%	27,64%	27,42%	26,95%	26,21%
SE	22,45%	30,72%	25,34%	20,91%	21,06%	24,38%	23,12%	20,03%
JP	8,41%	9,38%	11,04%	13,88%	13,65%	8,64%	8,38%	9,35%
GB	5,45%	5,24%	6,22%	6,47%	6,20%	6,20%	6,04%	6,43%
FR	3,56%	3,26%	3,26%	4,06%	3,90%	3,51%	3,73%	-
DE	-	-	-	-	-	-	-	4,07%
<b>Total</b>	<b>71,44%</b>	<b>73,46%</b>	<b>74,96%</b>	<b>74,07%</b>	<b>72,45%</b>	<b>70,15%</b>	<b>68,22%</b>	<b>66,10%</b>
<b>Difference</b>	<b>3,73%</b>	<b>4,82%</b>	<b>2,08%</b>	<b>2,96%</b>	<b>4,77%</b>	<b>4,49%</b>	<b>7,68%</b>	<b>8,43%</b>
<b>T-value</b>	<b>1,39</b>	<b>1,87</b>	<b>0,79</b>	<b>1,25</b>	<b>2,06*</b>	<b>1,81</b>	<b>3,19*</b>	<b>3,80*</b>

**Table 3** – This table shows the top five most common companies to invest in for non-ethical and ethical funds between 2000 and 2007. The difference in percent between the two fund types for each year is tested by student's t-test. \*indicates statistically significance on a 5 percent level

## 7.2 Ethical Investments

There is a great deal of controversy over whether the ethical funds are in fact more ethical in the actual investment strategy than the traditional funds. To study this, the authors have compared the percentage of investments the fund hold in sixteen well known companies that have been listed as doubtful.<sup>6</sup> The companies investigated operate in different sectors. Firms in the car manufacturing, gambling, tobacco, oil, telecom and financial industries are included. These firms are classified as doubtful for various reasons; some fail the screens because of their impact on the environment or lack of engagement to improve the environment or product safety, business ethics, lack of concern for gender equality, impact on human health and distribution of pornography. Companies may fail the screening even because they own subsidiaries that fail the screening criteria. Ericsson is one of the most invested companies in a Swedish portfolio, but a few of Ericsson's subsidiaries fail the screening criteria. Ericsson have failed KPA's screening (Karlsson, 2006) because a few percent of their total revenues was derived from a subsidiary, which manufacture sales systems that can be use as radar in the defense industry.

According to the screening methods one can assume that ethical funds will invest a lower part of their assets in the questionable companies. However, the results reported in Table 4 indicate that there is no statistically significant difference between the non-ethical and ethical funds in investing in these questionable companies. When analyzing the total percentage of the market values invested in those companies they seem to follow each other quite well. In 2001 ethical funds invested a larger amount in these companies. On the other hand they exclude a larger number of the 16 questionable companies, which imply that they invest a larger monetary amount in the companies they invest in.

When analyzing individual companies one can note that both fund types exclude the betting company Betsson. This exclusion might be for financial reasons rather than for ethical reasons

<sup>6</sup> These companies have been listed as doubtful in an inspection by the financial magazine *Veckans Affärer*, <http://www.va.se/magasinet/2007/25/svarta-listan/>, downloaded 081220.

though. Lundin Petroleum is one of the companies that do not fulfill the ethical criteria for many ethical investors. The ethical funds have not invested in Lundin Petroleum for many years, but during the last years they have. PA Resource and Vostok Nafta are two other oil companies that have had a strong financial performance and have increased their profits rapidly during that last years. One reason for investing in these doubtful companies might be the increased oil price. However, the invested proportions in these companies are minimal and thereby the cut-off limit is not exceeded. The fund companies may also claim to apply the engagement method and in this way they do not have to exclude companies from their portfolio. SAAB, SAS, Scania and Volvo are classified as doubtful. Both traditional funds and ethical funds are investing in these companies, even if ethical funds invest a lower percentage and not every year. The total market values invested in the 16 questioned companies are very similar for the two fund groups for year 2000, 2003, 2005 and 2007. The results indicate that there are statistically significant differences in years 2001, 2002, 2004 and 2006.

**Ethical and Non-Ethical Funds- Percentage of total market value for studied companies 2000-2007**

	2000		2001		2002		2003		2004		2005		2006		2007	
	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical	Ethical	Non-ethical
BETSSON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOSSMEDIA	0,003%	0,019%	0,002%	0,011%	-	0,005%	-	0,027%	-	0,027%	-	0,016%	-	0,013%	-	0,018%
INVESTOR	0,041%	0,345%	0,639%	0,265%	0,832%	0,543%	0,658%	1,503%	0,576%	1,523%	0,532%	2,044%	0,394%	1,864%	0,366%	1,260%
KINNEVIK	2,475%	0,111%	1,418%	0,409%	0,220%	0,412%	0,409%	0,809%	0,358%	0,852%	0,410%	0,642%	0,611%	0,933%	0,885%	0,985%
LUNDIN PETROLEUM	-	0,008%	-	0,851%	-	-	-	0,013%	-	0,013%	0,005%	0,253%	0,294%	0,362%	0,043%	0,256%
PA RESOURCE	-	-	-	-	-	-	-	-	-	-	-	-	0,001%	-	-	0,018%
SAAB	-	0,014%	-	0,024%	0,042%	0,218%	0,004%	0,336%	0,004%	0,371%	0,004%	0,472%	0,004%	0,395%	-	0,224%
SAS	-	-	-	0,001%	0,183%	0,016%	0,222%	0,052%	0,009%	0,053%	0,282%	0,107%	0,250%	0,120%	0,039%	0,063%
SCANIA	0,017%	0,087%	0,011%	0,212%	0,489%	0,402%	0,010%	0,409%	0,194%	0,392%	1,163%	1,153%	1,706%	0,872%	2,425%	1,202%
SWEDMATCH	-	0,383%	-	0,306%	0,072%	0,539%	-	0,436%	0,150%	0,456%	-	0,141%	-	0,158%	-	0,303%
TELE2	-	-	3,535%	1,430%	1,160%	1,262%	1,532%	1,976%	1,341%	2,011%	0,745%	0,759%	0,969%	0,782%	0,312%	0,556%
TELIASONER	0,626%	1,320%	1,202%	1,683%	0,075%	0,131%	4,272%	3,047%	3,739%	3,208%	2,922%	2,134%	3,466%	2,090%	2,690%	2,540%
TIETOENATOR	0,003%	0,010%	1,045%	0,435%	0,021%	0,297%	0,205%	0,027%	0,179%	0,175%	0,645%	0,290%	0,487%	0,312%	0,114%	0,138%
UNIBET	-	-	-	-	-	-	-	-	-	-	-	0,038%	-	0,082%	0,021%	0,146%
VOLVO	0,332%	1,278%	1,641%	1,018%	-	1,505%	2,687%	1,657%	2,351%	1,734%	3,592%	2,022%	3,325%	2,016%	4,008%	2,630%
VOSTOKGAS/VOSTOKNAFT	-	0,011%	-	0,030%	-	0,086%	-	0,087%	-	0,113%	-	0,260%	0,004%	0,368%	0,004%	-
<b>TOTAL</b>	<b>3,498%</b>	<b>3,586%</b>	<b>9,493%</b>	<b>6,674%</b>	<b>3,093%</b>	<b>5,413%</b>	<b>9,999%</b>	<b>10,379%</b>	<b>8,900%</b>	<b>10,927%</b>	<b>10,300%</b>	<b>10,331%</b>	<b>11,509%</b>	<b>10,369%</b>	<b>10,907%</b>	<b>10,338%</b>
<b>Difference</b>	<b>-0,088%</b>		<b>2,819%</b>		<b>-2,320%</b>		<b>-0,380%</b>		<b>-2,027%</b>		<b>-0,031%</b>		<b>1,140%</b>		<b>0,569%</b>	
<b>T-value</b>	<b>-0,34</b>		<b>8,96*</b>		<b>-14,86*</b>		<b>-0,86</b>		<b>-5,10*</b>		<b>-0,09</b>		<b>3,17*</b>		<b>1,38</b>	

**Table 4** – The total market value invested in 16 questioned companies for ethical and non-ethical funds is presented in the table above. The questioned companies operate in different sectors.

\*indicates statistically significance on a five percent level.

### 7.3 *Financial Performance*

Table 5 represents the annual returns for non-ethical and ethical funds. As expected by the theories the ethical funds underperform the non-ethical in year 2000, 2001, 2002, 2003, 2005, 2007. The year 2005 the underperformance for ethical funds appears to be most pronounced. The results are significant on a five percent level in years 2001, 2002, 2003 and 2005. The results are significant for all the years mentioned above if a ten percent significant level is used. The ethical funds outperformed their traditional counterparts in year 2004 and 2006, but the results are not significant in any year. The return for the market index is calculated separately and it is a weighted average of the returns for the Six Portfolio market index, SP-500 and AC World Index. Taken all the sample years together we can observe that the ethical funds underperformed their non-ethical counterparts by -2,68% per annum. This finding is consistent with the hypothesis that the ethical funds underperform their non-ethical counterparts perhaps because they forgo some profitable investment opportunities in firms that are ethically problematic.

We further investigate whether the difference in performance of ethical and unethical funds depends on the market conditions. We divide the sample to good years and bad years depending on whether the return on the market index was positive or negative. In case the portfolio of ethical funds is imperfectly diversified due to the ethical restrictions we expect the ethical fund underperformance to be particularly severe in years of poor stock market performance. In these years the wealth of investors' contracts, which is likely increases the marginal utility of wealth. Hence if we observe a particularly severe underperformance in bad years we interpret these results as a sign of higher risk related to investing in ethical funds.

The underperformance of ethical funds seems to be more substantial in bad years when the return on the market index is negative. Table 5 shows that the ethical funds underperformance is -4.33% in bad years, which is statistically significant on a 5% level. This indicate that ethical funds is a riskier investment alternative than traditional funds when the market decline. It seems like ethical funds are more depending on variations in the market cycle. Table 5 also shows that the ethical fund underperformance in good years with 1.69% good years, which produces a *t*-statistic of -1.30, which is marginally significant at a 10% level. This finding is supported by Table 7, which shows that the ethical funds have marginally higher CAPM betas than non-ethical funds. Taken together these indicate that the systematic risk may be slightly higher for the ethical funds than for the traditional ones. This may be perhaps due to the low dependence of the non-ethical firms' performance on the business cycle. Companies producing weapons, tobacco or pornography may be less sensitive to changes in overall economic conditions; including them in a portfolio provides a protection against market downturns.



### The annual return for Ethical and Non-ethical funds

	<b>Index</b>	<b>Ethical</b>	<b>Non-ethical</b>	<b>Ethical – Non-ethical</b>	<b>T-value</b>	<b>Ethical – index</b>	<b>Non-ethical – index</b>
2000	-8,18%	-10,37%	-7,90%	-2,46%	-1,81	-2,19%	0,28%
2001	-12,04%	-13,07%	-8,11%	-4,96%	-3,04*	-1,02%	3,93%
2002	-25,11%	-36,15%	-30,58%	-5,57%	-4,94*	-11,04%	-5,47%
2003	27,76%	18,55%	21,25%	-2,70%	2,12*	-9,20%	-6,51%
2004	14,43%	11,73%	10,32%	1,41%	1,50	-2,70%	-4,11%
2005	17,17%	31,11%	38,46%	-7,35%	-5,40*	13,94%	21,29%
2006	20,79%	17,88%	15,67%	2,20%	1,66	-2,92%	-5,12%
2007	1,48%	0,39%	2,39%	-2,00%	-1,80	-1,09%	0,91%
<b>All years</b>	4,54%	2,51%	5,19%	-2,68%	-1,55	-2,03%	0,65%
<b>Bad years</b>	-15,11%	-19,86%	-15,53%	-4,33%	-2,36*	-4,75%	-0,42%
<b>Good years</b>	16,33%	15,93%	17,62%	-1,69%	-1,30	-0,40%	1,29%
2008	-39,91%	-37,64%	-39,22%	1,58%	1,1	2,27%	0,69%
2009	-10,62%	-6,85%	-4,07%	-2,78%	-3,30*	3,77%	6,55%

**Table 5** – presents the annual returns and the difference in annual return for non-ethical and ethical funds. The t-values indicates that exist statistically significant differences on a 5 percent level in year 2001, 2002, 2003 and 2005. The Swedish Six Portfolio Return Index, AC World Index and S&P-500 are weighted and used as a benchmark index. \*indicates statistically significant differences at a 5 percent level. Note that the values for 2009 only include the three first month of the year and is not included in the calculation for average values.

2008 has been a dark year for the fund market with a decrease of nearly 40 percent. Both ethical and non-ethical funds have decreased a lot in value, but no significant differences between ethical and non-ethical funds were found for year 2008. For the three first months of 2009 there exist a statistically significant difference between the fund types.

After having discussed the differences in returns between the two fund types we proceed by analyzing the risk characteristics and we adjust the realized returns for risk. CAPM is the model that is used most frequently in capturing the relationship between risk and expected return. The model predicts the funds expected return as a function of its beta, which measures the marginal contribution of an asset to the portfolio risk. That is determined by the sensitivity of the asset excess return on market excess return. The theory states that the risk for SRI funds should be higher due to the diversification limitations (Boutin-Dufresne & Savaria, 2004). Our results presented in Table 6 are consistent with this expectation. Ethical funds have marginally higher betas for all of the sample years and the difference is statistically significant in years 2002, 2003, 2004 and 2005, which indicate that ethical funds are more risky than their traditional counterparts. These results are not in line with earlier findings of Mallin et al (1995) who found that SRI funds were less risky than traditional funds. This result is not likely to be driven by different age of the funds. The average ethical fund was 15,87 years old while the average age for a typical non-ethical fund was 16,24 years. The differences in age are not significant on a five percent level. The Swedish Six Portfolio Return Index is used to calculate the beta values for the funds. This index is used since many of the fund managers invest in large Swedish companies and thereby is this index appropriate to use.

	<b>Beta Values</b>			
	Ethical	Non Ethical	Difference	T-value
2000	0,99	0,97	0,02	0,27
2001	1,01	0,95	0,06	1,15
2002	1,00	0,89	0,11	2,08*
2003	0,93	0,81	0,12	2,74*
2004	0,93	0,82	0,12	3,02*
2005	0,91	0,81	0,11	3,12*
2006	0,90	0,88	0,02	0,66
2007	0,85	0,81	0,04	1,10
<b>Average</b>	<b>0,94</b>	<b>0,86</b>	<b>0,07</b>	<b>1,67</b>

**Table 6** – Beta values for ethical and non-ethical funds. \*indicates statistically significant differences at a 5 percent level. The Swedish Six Portfolio is used as the benchmark index.

Table 7 shows the CAPM for ethical and non-ethical funds estimated based on the market return rate for the Swedish Six Portfolio Return benchmark index. The results indicate that there are statistically significant differences at a critical level of five percent in year 2002, 2003, 2004 and 2005. This indicates that the investor should expect a higher risk premium due to a higher risk to invest in ethical funds. On average, investors require a higher risk premium for investing in ethical funds than for investing in traditional funds. However, the difference is small and it is not statistically significant on average. It does not matter which of the three indexes are used to compute the CAPM, the results indicate that ethical funds have a higher CAPM value on average than traditional funds, but there is no statistically significant difference.

<b>CAPM Adjusted Returns</b>				
Year	Ethical	Non-ethical	Difference	T-value
2000	-0,502	-0,498	-0,004	-0,268
2001	-0,062	-0,057	-0,005	-1,150
2002	-0,295	-0,261	-0,034	-2,08*
2003	0,776	0,709	0,067	2,74*
2004	0,706	0,652	0,054	3,017*
2005	0,821	0,755	0,067	3,12*
2006	-0,253	-0,254	0,0004	0,656
2007	-0,620	-0,606	-0,015	-1,101
<b>Average</b>	<b>0,072</b>	<b>0,055</b>	<b>0,016</b>	<b>0,130</b>

**Table 7** – presents CAPM adjusted returns for ethical and non-ethical funds. \*indicates statistically significant difference at a 5 percent level. The Swedish Six Portfolio Return index is used as the benchmark index.

Jensen's Alpha, the Sharpe Ratio and the Treynor's Index are other risk measures investigated in this paper. The Sharpe ratio has been used to measure how well a fund is rewarded for the risk it takes. The Sharpe ratio has been calculated by subtracting the risk free rate from the funds annual average return and dividing it by the funds annual standard deviation. A higher ratio indicates better return per risk taken. Treynor index measure the excess return per unit of risk. Treynor's index has been calculated by subtracting the risk free rate from the funds annual average return and dividing it by the funds beta value. Jensen's alpha describes the average return on the fund over and under the predicted by the CAPM given the beta values and average market return.

The average Sharpe ratio is higher for non-ethical than ethical funds and even the Treynor's index is higher for non-ethical than ethical funds on average. However, neither the Sharpe ratio nor the Treynor's index is statistically significant on a five percent level for the entire period. A higher Sharpe ratio for ethical than for traditional funds on average indicates that ethical funds have a better return per risk taken. On the other hand, ethical funds have a lower return than non-ethical funds when beta is taken into consideration in the Treynor index. The null hypothesis that it does not exist any differences in risk between the two fund types cannot be rejected. The results are in line with earlier findings of Bauer (2006). Even so there exist differences in the values during single years.

The results for Jensen's alpha shows that the alpha values are very similar for the two groups on average. The ethical fund had an average alpha value of 0,001 while the non-ethical funds have an average alpha value of 0,033. In year 2001, 2003 and 2005 the results indicate that the alpha values are significantly different between the two fund types. The result shows that both traditional and ethical funds underperform the market in year 2000, 2006 and 2007 since the observed alphas are negative. However, the observed alphas are not statistically significant at a five percent level.

<b>Jensen's alpha</b>				
Year	Ethical	Non-ethical	Difference	T-value
2000	-0,159	-0,136	-0,023	-1,248
2001	0,033	0,074	-0,041	-1,966*
2002	0,036	0,051	-0,015	-0,870
2003	0,203	0,262	-0,059	-4,251*
2004	0,220	0,226	-0,007	-0,549
2005	0,258	0,368	-0,110	-5,341*
2006	-0,328	-0,344	0,017	1,064
2007	-0,256	-0,239	-0,017	-1,176
<b>Average</b>	<b>0,001</b>	<b>0,033</b>	<b>-0,032</b>	<b>-0,626</b>

  

<b>Sharpe ratio</b>				
Year	Ethical	Non-ethical	Difference	T-value
2000	-1,259	-1,073	-0,186	-3,217*
2001	-0,605	-0,636	0,031	0,624
2002	-0,943	-0,901	-0,042	-1,220
2003	-0,361	-0,355	-0,006	-0,142
2004	-0,560	-0,499	-0,061	-1,027
2005	0,083	0,145	-0,062	-2,706*
2006	-0,281	-0,323	0,042	0,922
2007	-0,956	-0,913	-0,043	-1,132
<b>Average</b>	<b>-0,610</b>	<b>-0,569</b>	<b>-0,041</b>	<b>-0,413</b>

  

<b>Treynor index</b>				
Year	Ethical	Non-ethical	Difference	T-value
2000	-0,059	-0,058	-0,001	-0,275
2001	-0,047	-0,058	0,011	2,302*
2002	-0,082	-0,092	0,011	2,023*
2003	-0,024	-0,033	0,009	2,023*
2004	-0,016	-0,023	0,007	2,021*
2005	0,003	0,010	-0,008	-5,076*
2006	-0,013	-0,018	0,005	1,658
2007	-0,039	-0,052	0,012	1,241
<b>Average</b>	<b>-0,035</b>	<b>-0,040</b>	<b>0,006</b>	<b>0,746</b>

**Table 8** – Jensen's Alpha, the Sharpe ratio and Treynor's index for ethical and non-ethical funds. \*indicates statistically significant differences at a 5 percent level

## 8 Conclusion

The purpose of this paper was to investigate whether there are any differences in portfolio composition and performance measured in terms of risk and returns between ethical and non-ethical funds. Our investigation yielded mixed results. The ethical funds indeed seem to

somewhat underperform the non-ethical ones and there is also some evidence that indicates that they are riskier, but the differences are only sometimes statistically significant.

The first challenge one needs to address when performing this kind of study is to establish a clear criterion that distinguishes the ethical funds from the non-ethical ones. There seems to be no common agreed definition of what an ethical fund stands for. A clear definition would make it easier for the investors to see the difference between different fund alternatives and it would alleviate some of the suspicion about the consistency in ethical investing of these funds. For the purposes of this study we define an ethical fund as a fund that has a negative screening strategy or a fund with a negative screening strategy in combination with a positive screening strategy.

After providing a definition of an ethical fund we contrast the portfolio composition of ethical and non-ethical funds. We find evidence that there exists a difference between the two types of funds. Ethical funds seem to invest in a larger number of unique companies than traditional companies. This is not consistent with our expectations based on the modern portfolio theory. The results also indicate that ethical funds do not invest in fewer securities, so the diversification problem is not confirmed in our sample. On the contrary, there are statistically significant difference in degree of investment in the top ten companies with largest market values. Ethical funds seem to invest a larger amount in the top ten companies perhaps because it is easier to monitor large corporations. The analysis further shows that ethical funds are holding the same kind of companies in their portfolio as non-ethical funds.

One may expect the Swedish ethical funds to invest mostly in Swedish companies because they are easier to monitor. However this study shows that Swedish ethical funds over the last years have invested most of their endowment in the US market. This is perhaps because USA still is the leading country in ethical investments and therefore it is easier to find ethical investment opportunities at the US market.

To analyze if the funds differ in the degree of ethicality of their investment we analyze the amount of resources invested in sixteen companies that have been identified as ethically questionable. Our results indicate that ethical fund managers are willing to invest in questionable companies if the companies have a strong financial performance. The fund managers are pushed to make the fund perform well in a monetary way, but still they have to live up to the ethical criteria. Fund companies that are applying the negative screening method can miss good investment opportunities. The cut-off limit can be a way for them to invest in companies that they otherwise would not be able to invest in. We view the cut-off limit rather questionable. It is beneficial for larger funds that can invest a larger amount of their assets in absolute terms in unethical firms. In Sweden the cut-off limit is set to ten percent but in many other countries the cut-off limit is higher. If the cut-off limit was lower the difference between ethical and non-ethical funds is likely to be more significant.

Finally we analyze the financial performance of the ethical funds. The results indicate that there is a financial sacrifice in investing in Swedish ethical funds, however the differences are only statistically significant for some of the years. In most of the years ethical funds have a lower return than traditional funds. Ethical funds have significantly lower returns in year 2001, 2002, 2003 and 2005. The underperformance is worse in years when the market goes down. It

indicates that ethical funds are more sensitive for changes in the market cycle. One reason might be that ethical fund managers hold a larger part of their portfolios in companies that are affected in a larger extent by fluctuations in the market cycle. Traditional fund managers have the opportunity to hold a larger part in other sectors, such as the weapon and tobacco sector, and they are therefore not affected in the same extent by market fluctuations.

The risk measured in terms of beta is also higher for ethical funds. Statistically significant differences in CAPM adjusted returns were not found on average. Neither were any statistically significant differences in the Sharpe ratio, Treynor's index or Jensen's alpha found for the entire period.

Recent years have witnessed a dramatic rise in the popularity of socially responsible investments. This study concludes that further expansion of ethical funds would benefit from a more specific definition of ethical funds, which would allow them to better differentiate from the traditional funds. We also provide some evidence that the ethical funds produce lower returns than non-ethical funds and they also seem to be somewhat riskier. However, the statistical underpinning of this finding is weak and therefore we need to wait for a longer data sample that will allow us to confirm or refute the currently observed tendencies with a higher degree of certainty.

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# Appendix I

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## Ethical screening criteria stated by the authors

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<b>1) <u>Excluding:</u></b>	
<b>Alcohol &amp; drugs</b>	Firms that produce, sell or advertise alcohol products are avoided.
<b>Gambling</b>	Casinos and gambling companies are avoided.
<b>Pornography</b>	Firms in the pornography industry are excluded.
<b>Defense industries, weapon industries and nuclear weapons</b>	Weapon producers or companies that produce other types of war equipment are excluded as well as companies producing equipment to the nuclear industry.
<b>Inhuman regimes</b>	Regimes that oppress their people are not included in the portfolio.
<b>Society</b>	Firms that have a negative impact on the society in form of dangerous products for the environment and for the human beings health condition will not be included in the fund portfolio.
<b>2) <u>Positive effect on the society:</u></b>	
<b>The firms product and/or service</b>	Firms that offer a safe product with a high quality standard and are working actively with environment, social and ethical questions will be included.
<b>Working conditions</b>	Firms must work actively with their working conditions. The representation of minorities in the company and among the management and the board of directors are also evaluated when choosing companies. Working active with human right issues.
<b>Contribution to the society</b>	Firms that give a contribution to the society like environment awareness, support charity and/or education programs.

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This table presents the criteria the authors have set up and the funds have to live up to for being classified as ethical.

## Appendix II

### The most invested companies

The top ten most common holdings of traditional and ethical funds are compared in following table. The authors have studied the frequency these companies in the fund portfolios. As indicated by the table, there are several companies that are among the top ten choices for both kinds of funds. For example Ericsson, Astra Zeneca, H&M and Electrolux are held by both funds. Both Ericsson and H&M are held every year by both traditional and ethical funds. Astra Zeneca belongs to the most popular stocks among traditional funds in every year while SCA belongs to the top ten most common stocks for ethical funds during all years, except from 2007. Scandia is another company that are among the top ten for ethical funds during the years of 2000, 2001, 2002 and 2003. Thereafter Scandia disappeared from the list. One possible explanation for this can be the scandals concerning the company and the financial performance thereafter. As shown in the table traditional and ethical funds often follow each other. The lowest common number of companies from the top ten list is five companies. Most of the years the number of the same companies are seven.

	2000	2001	2002	2003	2004	2005	2006	2007
<b>Traditional funds</b>	ERICSSON AK B* SKANDIA AK* ASTRAZENEC AK H&M AK B* ELECTROLUX AK B SEK* HANDELSB AK A* SKANSKA AK B NORDEA AK SEK TELIA AK SANDVIK AK	ERICSSON AK B* SKANDIA AK* ASTRAZENEC AK H&M AK B* SCA AK B* HANDELSB AK A* MTG AK B TELIA AK* ELECTROLUX AK B SEK* NOKIA SDB	ERICSSON AK B* ASTRAZENEC AK* H&M AK B* SCA AK B* HANDELSB AK A SECURITAS AK B ELECTROLUX AK B SEK* SKANDIA AK* SKF AK B* TELE2 AK B	ASTRAZENEC AK* ERICSSON AK B* H&M AK B* ELECTROLUX AK B SEK* SANDVIK AK* SCA AK B* TELE2 AK B HANDELSB AK A NORDEA AK SEK TELIASONER AK*	ASTRAZENEC AK* ERICSSON AK B* H&M AK B* ELECTROLUX AK B SEK* SANDVIK AK* SCA AK B* HANDELSB AK A NORDEA AK SEK* TELE2 AK B TELIASONER AK*	ERICSSON AK B* ASTRAZENEC AK* H&M AK B* NORDEA AK SEK* SCA AK B* SANDVIK AK SCANIA AK B GETINGE AK B INVESTOR AK B KINNEVIK AK B	ERICSSON AK B* ASTRAZENEC AK* H&M AK B* NORDEA AK SEK* ABBLTD AK* SKANSKA AK B SECURITAS AK B SANDVIK AK* GETINGE AK B HANDELSB AK A*	ERICSSON AK B* HANDELSB AK A H&M AK B* VOLVO AK B ASTRAZENEC AK* HUSQVARNA AK B NORDEA AK SEK* TELIASONER AK SANDVIK AK* SCANIA AK B
<b>Ethical funds</b>	SKANDIA AK* ERICSSON AK B* SCA AK B SEB AK A SECURITAS AK B ABBLTD AK ELECTROLUX AK B SEK* EUROPOLITA AK H&M AK B* HANDELSB AK A*	ERICSSON AK B* SKANDIA AK* ELECTROLUX AK B SEK* SCA AK B* EUROPOLITA AK SKF AK B TELIA AK* ASSA AK B H&M AK B* HANDELSB AK A*	ASTRAZENEC AK* ERICSSON AK B* FÖRENSPARB AK A SKANDIA AK* ELECTROLUX AK B SEK* SKF AK B* H&M AK B* SANDVIK AK SCA AK B* SKANSKA AK B	ASTRAZENEC AK* H&M AK B* TELIASONER AK* ELECTROLUX AK B SEK* ERICSSON AK B* SANDVIK AK* SCA AK B* SKANDIA AK VOLVO AK B FÖRENSPARB AK A	ASTRAZENEC AK* H&M AK B* TELIASONER AK* VOLVO AK B ELECTROLUX AK B SEK* SANDVIK AK* SCA AK B* NORDEA AK SEK* SKANDIA AK VOLVO AK B	ASTRAZENEC AK* NORDEA AK SEK* SCA AK B* VOLVO AK B TELIASONER AK ERICSSON AK B* H&M AK B* HANDELSB AK A ELECTROLUX AK B SEK SKF AK B	ASTRAZENEC AK* ERICSSON AK B* H&M AK B* NORDEA AK SEK* SCA AK B ABBLTD AK* ELECTROLUX AK B SEK HANDELSB AK A* SANDVIK AK* SKF AK B	ASTRAZENEC AK* SKF AK B NOKIACORP AK H&M AK B* H&M AK B* SCA AK B SEB AK A ABBLTD AK SKANSKA AK B ERICSSON AK B* SANDVIK AK*

This table compares the top ten most common holdings of traditional and ethical funds. \*indicates stocks held by both fund types the specific year

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