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Master's Thesis

Socially responsible investing and mutual funds – a good match?

A performance evaluation of American mutual funds pursuing SRI.

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Supervisor: Robert Spliid

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Contents

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Abstract

This study sets out to evaluate the performance of actively managed mutual funds in the American financial industry. Specifically, the study investigates what happens in the cases when actively managed mutual funds pursue a socially responsible investment strategy, and in this case, determine whether such funds are able to outperform the market.

With the advancement of CSR, socially responsible investing slowly gained a foothold in the world of investment. As soon as a new term is coined it is researched to determine if any significance can be assigned to the theory.
To address the above paradox, the present study seeks to clarify what happens in the cases when actively managed mutual funds pursue a socially responsible investment strategy. A number of American mutual funds have been analyzed for this purpose.
It should be noted the result is based on a limited sample, which could not be randomly picked. The ability to generalize the result beyond funds with similar investment strategies may therefore be limited.

The outcome of this analysis is that American mutual funds pursuing a socially responsible investment strategy do not appear to outperform the market. However, there is evidence that mutual funds within this investment strategy perform better than the market during a crisis.

Introduction

Through history, public image perception has always been important, but with the dawn of the industrial age, positive public image importance exponentially gained more and more influence on the way firms did business. With the arrival of Corporate Social Responsibility in business decision-making, firms had to take into account the potential effect of their decisions on several different criteria. Eventually it found its way into investing and Socially Responsible Investing was born, and ever since the performance have been gauged against the performance of others, is it really possible to be "Doing Well while Doing Good" (Hamilton, S., Jo, H., & Statman, M. 1993)

Traditionally studies within this field, specifically regarding SRI funds, have in various ways researched the performance of funds with a SRI strategy against conventional funds and rarely found any conclusive evidence of SRI being better than the others and vice versa. The different analyses of the fund performances rarely take into account the different investment strategies of mutual funds, including the potential bias of the SRI funds investing in the same companies as the conventional funds. Conventional funds are not bound in the same way as SRI funds and can potentially invest in the same companies. The purpose of a SRI fund is to generate returns for customers, while keeping in the ethical concerns of most as well. At this point it is possible that even conventional fund managers have some ethical concerns when investing, through objective opinion however.

Problem statement

The background for this study is the theoretical foundation of socially responsible investing when actively managed mutual funds pursues socially responsible investing.

The aim of this study is to examine whether American socially responsible investment funds are able to create market beating returns for their shareholders.

If we look at the numerous studies conducted on the subject of SRI, it is clear to see that the results vary greatly. A large number of funds across the world have adopted SRI and it is an

intriguing prospect to earn returns greater than the market while at the same time investing in Economical, social and governance stocks.

Based on above, this study will examine the following research question:

- How do the American mutual funds pursuing a socially responsible investing strategy perform compared to the market?

To answer the research question, several sub-questions have been outlined. These sub-questions also provide some guidance in terms of the analytical approach of the study and in what respect the research question is sought answered. Sub-questions:

1. Do mutual funds pursuing a socially responsible investing strategy outperform the market?
2. How did socially responsible funds perform during the height of the financial crisis?
3. Do positive ESG screened stocks show superior performance to stocks excluded by ESG criteria?

Scope and Delimitations

This study aims at investigating actively managed American mutual funds pursuing a socially responsible investing (SRI) strategy over a 10-year period (January 2005-December 2015). The covered period includes some of the volatility created by the financial crisis in 2008. With the hit of the financial crisis in the US late 2008, there will undoubtedly be some volatility from the different economic cycles captured. Therefore, caution must be made when generalizing the results to longer periods.

In order to distinguish between the different styles of mutual funds, several selection criteria are outlined in the section Empirical data collection**.** Based on these selection criteria, 22 American registered Socially responsible mutual funds were identified. Included are the different class shares to highlight difference in fees. As the funds included in this study are style-based (Large-cap), the conclusions reached are not valid for all American SRI mutual funds. In addition, since the mutual funds are primarily limited to one stock universe, the US market,

their results cannot act as a reasonable proxy for this type of style-based mutual funds in other equity markets. Except for similar markets, with large cap mutual funds and funds.

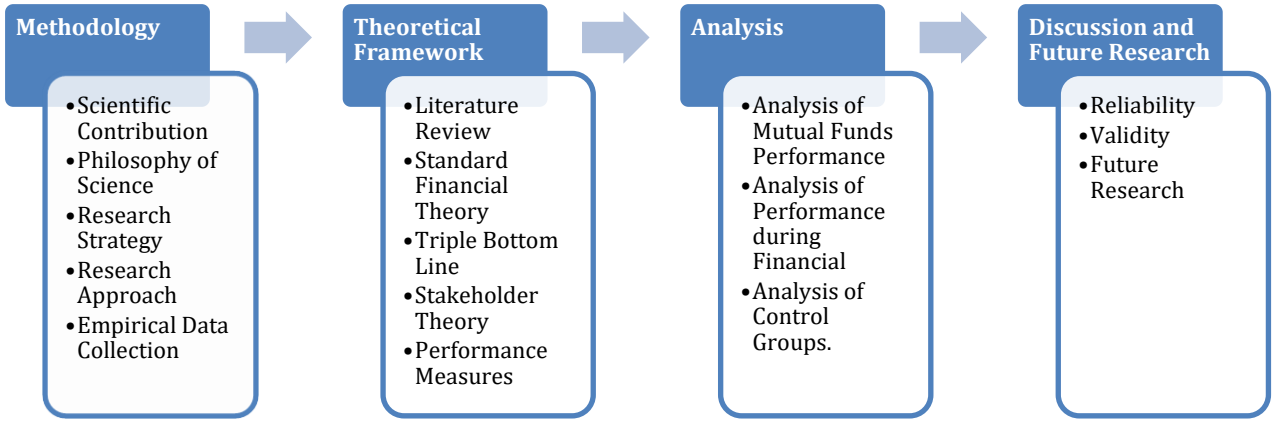
For this study, survivorship bias is not taken into account, as the impact is deemed minimal. A short introduction of Survivorship bias has been added in the data collection. Therefore, it cannot be ruled out that some funds were terminated during the investigated period and therefore did not make it into the sample group.

In light of the investment strategy adopted by the mutual funds, using a model that uses market return as its only risk factor may be inadequate. Consequently, additional explanatory variables are included in the form of Fama & French's 5-factor model (Fama & French, 2015). In extension, many of the performance measures employed assume normally distributed data, for which reason this has been corrected for in the section performance measures if deemed necessary.

Furthermore, no consideration has been taken with regard to transaction costs and taxes, as this is highly individual for different investors. All calculations are based on monthly data due to portfolio holdings only being compiled once a month.

Structure of the study

The following explain the structure of this study. This includes a clarification of the intent and interrelationship between the subsections in the analysis. The study has been structured as presented in figure 1.



Methodology presents and discusses the methodology and rationale behind this study. The objective of the chapter is to demonstrate the methodological choices, and explain how these support and lead to the answering of the research question.

The Theoretical Framework describes the theoretical foundation of this study. This includes reviewing relevant literature on the subject of CSR and SRI as well as mutual fund performance. Additionally, the performance measures used throughout the empirical analysis are introduced and their strengths and weaknesses discussed.

The empirical analysis will include a brief description of the mutual funds and contain a review of the results and conclusions reached. Any anomalies will be discussed.

Finally, Discussion seeks to critical evaluate the findings of the analyses and the applied approach, whereas Future Research will suggest a number of possible research projects naturally following this study.

Methodology

The following section will describe the methodological aspects of this thesis, namely the research approaches and methods used when answering the research question, and which consequences these choices have had for the results and conclusions reached.

The methodology will use the following structure: scientific contribution, philosophy of science, research strategy, research approach, data collection and data handling.

Scientific Contribution

The scientific contribution of this study is to examine whether American mutual funds pursuing an active socially responsible investment strategy through the use of ESG criteria are able to outperform the market. The objective of the SRI funds is to outperform the market and provide its investors, be it institutional or individual investors with more than the average market return. The research within this field have shown no significant under- or outperformance compared against the market and the conventional funds. The funds included in this all state that their goal is to create returns that exceeds the market for their investors.

The scientific contribution to academia is to investigate another perspective on the long running question if investing responsibly creates market beating returns.

In this study two control groups will be created, one consists of ESG screened stocks that have been excluded from the list of purchasable stocks, the other group have also been ESG screened, but have been deemed worthy within the criteria to serve as an investment. Each control group will be gauged for returns over the past decade and the frequency of negative news on both control groups.

Philosophy of Science

This paragraph will briefly describe the research perspective taken in this thesis, or what world-view will be utilized in order to look at specific research phenomenon.

The underlying philosophy of science in this thesis is based on the ontology of positivism (Collins, 2010).

As a philosophy, positivism follows the view that only "factual" knowledge gained through observations, including measurement, is trustworthy. In positivism studies the role of a researcher is limited to data collection and interpretation through objective approach and the research findings are usually observable and quantifiable.

"as a philosophy, positivism is in accordance with the empiricist view that knowledge stems from human experience. It has an atomistic, ontological view of the world as comprising discrete, observable elements and events that interact in an observable, determined and regular manner" (Collins, 2010, p.38).

Additionally, in positivism studies the researcher is independent from the study, and the research should be purely objective. Crowther and Lancaster (2008) argue that as a general rule, positivist studies usually adopt a deductive approach, which have also been adopted in this thesis. The overall theme of the positivist approach is that studies are based purely on facts and consider the world to be external and objective.

Crowther and Lancaster give some aspects of positivism:

1. Science is deterministic. Scientific approach is based on assumption that X causes Y under certain circumstances. The role of researcher when following the scientific approach is to discover specific nature of cause and effect relationships.
2. Science is mechanistic. Mechanical nature of scientific approach can be explained in a way that researchers develop hypotheses to be proved or disproved vi a application of specific research methods. Things brings to the fact that
3. Science uses method. Chosen methods are applied mechanically in order to operationalize theory or hypothesis. Application of methodology involves selection of sample, measurements, analysis and reaching conclusions about hypotheses. Therefore,
4. Science deals with empiricism. In other words, science only deals with what can be seen or measured. From this perspective, science can be assessed as objective. (Crowther and Lancaster, 2008)

Research Strategy

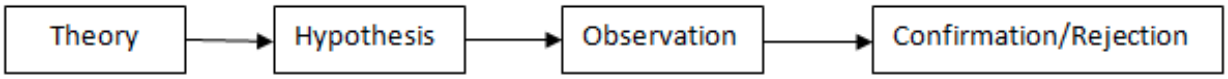
The thesis revolves around two analyses, which are rather different in scope and approach. The first analysis makes use of the theoretical perspective in that it is used in order to create the rating system. These findings will then be used to gauge sin stocks performance against the stocks in the SRI portfolios.

A traditional research model is used in the first analysis because a known theory has been chosen and then the phenomenon has been applied, however due to some limitations some additional perspectives have been used in order to accommodate the specific needs of the thesis. In the second analysis, a longitudinal study has been utilized, because an analysis of performance of funds have more impact and validity over a period time.

Research approach

As stated in the research philosophy the deductive approach has been chosen, that is because a deductive approach is concerned with developing a hypothesis based on some existing theory and using a research strategy to test the hypotheses (Wilson, 2010)

When using the deductive approach, the hypothesis formulated needs to be tested in order to confirm or deny the research question. In this thesis, the deductive approach can be confirmed by looking at the purpose of the thesis, which uses a starting point in existing theory.



Robson (2002) lists five sequential stages through which deductive research will progress:

1. deducing a hypothesis (a testable proposition about the relationship between two or more concepts or variables) from the theory;
2. expressing the hypothesis in operational terms (that is, indicating exactly how the concepts or variables are to be measured), which propose a relationship between two specific concepts or variables;
3. Testing this operational hypothesis (this will involve one or more of the techniques detailed in chapter 5);
4. Examining the specific outcome of the inquiry (it will either tend to confirm the theory or indicate the need for its modification);
5. If necessary, modifying the theory in the light of the findings

Empirical data collection

The criteria provided to select the funds, index benchmarks, and SRI screening is described in detail in the section below. The data needed for this thesis should all be publicly available, or they will not be used for this thesis. In order to ensure the data is not faulty or otherwise tampered with, only one source will be used.

Mutual Fund Data

All data on the mutual funds, as well as their benchmarks, have been collected through Morningstar Direct. As previously mentioned the main focus of this study is to investigate the performance of American mutual funds pursuing a value investing strategy. Given the specific nature of the objective, some preliminary sorting is in order. To begin with, a sorting of American mutual funds was conducted based on Morningstar's investment objectives described individually for all funds.

For the study, American mutual funds were chosen for examination as described in Scope and Delimitations, additionally the main investment universe for the included funds is "limited" to invest in domestic stocks.

When selecting, the funds included in this performance analysis, a number of requirements have been set up. In the start the selection criteria will be presented, while the possibility of survivorship bias also will be briefly discussed. The focus in this study are open-ended funds, which means that they are open to all investors, so no privately managed hedge funds will be included. Since the investigation will be of the holdings in equity funds, the thesis will follow Morningstar's definition of an equity fund, which is a minimum of 75% equity holdings in the funds. Additionally, since one objective of the study is to investigate if actively managed SRI funds outperform their benchmarks, active funds are also a requirement, and so passive funds will be left out of the sample of funds. This will briefly be touched later on, at the end of this section, but an Active Share above 60% is preferred (Cremers and Petajisto, 2009). The main focus for this study will be US SRI funds, which as explained earlier has a detailed screening process, before any investment decision is made. Small-cap funds have been excluded since the

available CSR information on small companies is limited. Furthermore, only funds that have been alive/active during the whole-time span of the study (January 2006 – December 2015) are considered eligible, therefore there might be a slight survivorship bias. A consistent set of data points is also needed throughout the period so funds that started/closed inside the time period will be excluded. To achieve data consistency across the board, the same process will be applied when analysing blacklisted stocks.

In relation to the fund selection process, some control will be applied to make sure that the data is consistent and accurate; a short section of the validity and reliability will therefore be added. The problem with the possible survivorship bias is that on average the funds included might have a slightly higher average return, because the "dead" funds, went out of business for obvious reasons.

Fund selection criteria	
Equity > 75%	✓
Open-ended	✓
Active	✓
Established SRI-screening process	✓
Fund data	✓

Additionally, the funds selected will only be based in the United States, in addition the blacklisted stocks will also mainly be based in the United States. This is done in order to maintain a steady base for the analysis of the performance of both stocks and funds. Large cap firms, which is generally a firm with a market capitalization of 5 billion USD +, and mid cap firms, which is firms with a market cap of about 1-5 billion USD

Mutual Funds	
Neuberger Berman Socially Rspns C	Parnassus Core Equity Investor
Neuberger Berman Socially Rspns R3	Sentinel Sustainable Core Opp A
Neuberger Berman Socially Rspns A	Walden Equity
Calvert Equity A	Domini Social Equity R
Neuberger Berman Socially Rspns Inv	American Century Sustainable Equity Inv
Calvert Equity C	Sentinel Sustainable Core Opp I
Calvert Equity I	Domini Social Equity A
Neuberger Berman Socially Rspns Tr	Domini Social Equity Instl
Neuberger Berman Socially Rspns Inst	Pax ESG Beta Quality Individual Investor
Calvert Equity Y	Pax ESG Beta Quality Institutional
Domini Social Equity Inv	Pax ESG Beta Quality R

Benchmarks – indices selection

A lot of emphasis is usually placed on choosing the most appropriate benchmark, and in 1992 Luther et al, concluded that funds tend to invest in small-cap companies. SRI funds today tend to focus on large-cap companies (Eurosif, 2006), and in order to avoid any potential small-cap bias in the sample, an exclusion of the small-cap categories will be implemented. There exists several small-cap funds today. The benchmarks that will be used in this thesis will be regular indexes, which will be based on the benchmark that the funds use on their own website to gauge their annualized returns against the benchmarks, based within the investment universe of the funds. The reason for choosing regular indexes and not SRI indexes, is that the screening process of the index might not match the process of the funds. The distortion of the ranking and the weightings in the process might also lead to a difference in fund returns.

In order to use the CAPM and multi-factor models to estimate Jensen's alpha, data on the risk-free rate and market proxy is necessary. Academics have not been capable of creating a standard for the two variables leaving it up to the individual researcher to select the most suitable for each particular study. Additionally, selecting the most appropriate market proxy (benchmark)

covering the investment universe similar to that of the mutual fund is important, as it will have an effect on the risk adjusted returns. Wrong benchmark selection can cause misspecification in the analysis.

To limit the occurrence of misspecification, each fund has been paired with its respective benchmark as listed on Morningstar or as listed on their website if anything else is stated, to be used as the market proxy in the analysis. The list of benchmarks used in this study is as follows:

- S&P 500 TR
- Russell 1000 TR

Monthly total return data of each benchmark as well as portfolio weights for the period January 2006 to December 2015 has been gathered through Morningstar. A valid point may be raised concerning the multitude of benchmarks included in this study and whether it may affect the validity when doing cross-sectional performance comparisons.

Risk-Free Rate

The risk-free rate represents the return an investor could theoretically expect to receive from a riskless investment over a given amount of time. In practice, though, it is difficult to determine a completely risk-free asset, because even the safest investment would carry a petite amount of risk, which is why generally a proxy is used. For this study, the 1 month US Treasury T-Bill rate is used.

Returns

Given the purpose and limitations of this study, for the performance analysis total returns are used. Furthermore, the fund returns do not take the dividends into account. It is important to remember that benchmark returns are not adjusted for fees etc., and additionally the TR for a benchmark holds the assumption that the dividends are reinvested in the market, which might create slightly higher returns than the S&P 500 Net Return. The benchmarks might show slightly higher returns compared to the funds, when taken into account the fees and other expenses of the funds. This will not be taken into consideration in the calculation, but it is important to keep in mind.

Survivorship Bias

When analyzing the performance of mutual funds, the researcher must consider whether to include mutual funds that have gone out of business during the period examined. Excluding funds that have gone out of business can create an upward bias of the average performance of the remaining funds in question since only well performing funds will be able to continue doing business (Malkiel, 1995). Similar results were obtained by Carhart et al. (Carhart et al., 2002) who found survivorship bias to be most prominent when evaluating performance persistency in mutual funds. Additionally, they found that the impact of the bias was related to the length of the evaluation period - the longer the period the greater the impact. Some scholars argue that the impact of survivorship bias is limited and therefore precautions whether to include out-of-business funds is unnecessary. Grinblatt & Titman choose to ignore the issue and estimated its impact to be as low as 0.5% per year (Grinblatt and Titman, 1994). Due to this study's focus on the individual fund's performance, active share and their correlation, it is considered that the impact of survivorship bias is insignificant.

Robustness checks

For this study, Ordinary Least Squares regression model is used to estimate the alpha estimates. In order to achieve best linear unbiased estimators (BLUE) several assumptions must hold, where the two most important being, that there must be no evidence of autocorrelation and homoscedasticity. While the presence of autocorrelation and heteroscedasticity (opposite of homoscedasticity) does not affect the consistency of the coefficients (intercept and beta), it may however disrupt the standard errors (Dahlquist et al., 2000). As a result, this has an effect on the t-statistics and p-values, that are calculated to determine the significance of the coefficients. To test for normality the Jarque-Bera and Shapiro-Wilk tests have been executed (Shapiro and Wilk, 1965; Jarque and Bera, 1987), using Gretl, a free online statistics program.

As with other studies in performance such as Dahlquist et al (Dahlquist et al., 2000), the Newey-West method (Newey and West, 1994) can be executed in order to correct the standard errors, thereby strengthening the robustness of the regression. The standards errors are heteroscedasticity and autocorrelation consistent (HAC).

Active Share

Active share is a measure recently introduced by Cremers & Petajisto in their paper from 2009 (Cremers and Petajisto, 2009). The measure is used to identify how active a fund management is and has shown some indication of future performance. Additionally, the measure can help uncover whether a particular fund is in fact a closet-index fund. A closet-index fund is a fund which visibly promotes itself as an actively managed fund, thereby justifying its higher expenses. In reality, however, the fund does little active management and instead pursues an investment strategy similar to that of a passive fund. Active Share is defined as:

$$\text{Active Share} = \frac{1}{2}\sum_{i=1}^{N} |w_{\text{fund},i} - w_{\text{index},i}|,$$

(Equation 11) wfund,i is the portfolio weights of asset I in the fund and windex, i are the portfolio weights in the index. The sum is taken over the universe of all assets (Cremers and Petajisto, 2009). In other words, it illustrates the percentage of a fund's portfolio that differs from its benchmark. For a fund to be labeled active, the authors suggest an Active Share threshold of 60% or above.

Screening

There exists many sets standard of SRI screening, which means there are many ways to screen companies in studies. Some of the main strategies were introduced earlier. Negative screening generally excludes companies based on their industry, however negative screening requires value judgements based on what is right or wrong, which is a subjective opinion. In order to use other than a subjective opinion when screening, several additional measures needs to be included. Norm-based screening fits that bill, because it excludes companies based on their actions against conventions, such as human rights, CO^2 outputs and other. The style of the screening used is comprehensive, but would be even more comprehensive if evaluated on fund basis, this is evaluated on an individual company level, in order to best serve the task of incorporating them into the creation the control groups. A list of measures included in the screening process will be added in the appendix.

The framework for the screening process will make use of the 10 principles of the United Nations Global Compact principles. To include the use of the 3BL the principles will be expanded or some added in order to take into account the financial aspect of the 3BL.

Norms	UN Global Compact Principle	Examples of issues
Human Rights	Principle 1: Support and respect human rights	Inadequate consumer protection Violations of health and safety standards Violations of the rights of indigenous communities
	Principle 2: Ensure non-complicity in human rights abuses	Complicity in human rights abuses committed by third parties Supply of military equipment to irresponsible recipients
Labor Standards	Principle 3: Uphold freedom of association and right to collective bargaining	Violation of freedom of association Violation of the right to collective bargaining
	Principle 4: Eliminate forced labor and compulsory labor	Lodging of deposits for employment/induced indebtedness Use of bonded or slave labor and use of work supplied by prisoners
	Principle 5: Abolish child labor	

	Principle 6: Discrimination in respect of employment and occupation	Failure to adhere to minimum age requirements in the workforce Discrimination at the workplace Failure to ensure maternity protection
Environment	Principle 7: Support precautionary approach to environmental challenges	Failure to prevent serious irreversible environmental damage
	Principle 8: Promote environmental responsibility	Irresponsible use of non-renewable resources Sustained environmental degradation
	Principle 9: Encourage development and diffusion of environmentally friendly	Failure to address environmental concerns in stakeholder engagement Poor environmental supply chain management

		Failure to use standard technology for environmental sustainability
Anti-Corruption	Principle 10: Work against corruption	Bribery, Extortion Offering/gaining improper advantages

Table 1

Literature review

For this thesis, an eclectic theoretical approach has been chosen to aid in the analysis of how CSR impacts funds investment strategies and their performance. This means that more than one theoretical perspective and a combination of them will be used for the analysis. The nature of the research is the reason for this, as only one theoretical perspective might hinder the progress and cause the analysis to become biased by this one view. At this moment, the literature available is limited and does not provide definitive answers regarding CSR. Therefore, it has been necessary to thoroughly examine the existing literature available on CSR and past articles regarding funds and portfolios performance with specific ESG investment strategies in order recognize different theoretical perspectives useful in the analysis. By using the eclectic approach, it is possible to create a holistic analysis in order to answer the research question, as each theoretical perspective will contribute to the overall answer.

In the following section the different theoretical perspectives chosen from the existing literature will be presented. The different perspectives will constitute the theoretical framework and will be the foundation of the analysis and the answer to the research question. The main perspectives of the research are CSR and performance. The limitations of the chosen theoretical perspective will also briefly be examined, and the reasoning for choosing them and how they will contribute

to the thesis. After presenting the different theoretical perspectives an operationalization of how the different parts of the framework will be used to guide this thesis.

CSR

The concept of ethical behaviour has existed for thousands of years, the term CSR became popular in the 1960's, and quickly developed, which is why many different perceptions and definitions of the term itself exists. The definitions can change from country to country and from person to person. In the beginning of the academic discussions Friedman stated that the sole purpose of the firm's social responsibilities is solely to maximize profits for its shareholders, the business of business is business (1970). So according to Friedman, there is no role for CSR in the management of the business.

"There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the games, which is to say, engages in open and free competition without deception or fraud." (Friedman, 1970)

The release of Friedman's thesis (1970) was the starting point for scholars to create theoretical perspectives on the roles of social responsibility for the firm against the claims of his neo-classical view. The first wave of CSR was mainly students and NGO initiatives, against capitalism and the greed of businesses (Vogel, 2005). Still the initiative sparked a massive debate about the social responsibilities of corporations or the lack thereof, which triggered a massive backlash in the media, which in turn led to consequences for the companies involved in the form of loss of reputation, and a drop in stock prices. In the early wave, many examples exist, including the Exxon Valdez oil spill, or the Chernobyl disaster.

In the early days of CSR, the extent of the social actions of corporations was the donation of a share of the profits to charity. As the conceptualization that Carroll created in 1979 (Carroll, 1979), in which he included an additional responsibility which was the philanthropic initiative, this was also a desirable perspective for the public and could be included in both the social and environmental perspectives, but serves just as well as a separate alternative. The first wave of CSR was predominantly occupied with climbing the ladder of social responsibility in order to increase public opinion, and was therefore and external element to existing business processes.

The second wave of CSR was described by Vogel (2005), which as mentioned during the last segment began with the ending of the first wave in the early 90's. Scholars described the emergence of CSR's second wave as business' response to the evolution of CSR as more than just an approach as an external tool for public relations, but also the label as a non-strategic corporate façade Weaver et al (1999). This evolution of the term meant that CSR branched into many different perspectives and topics. The overall introduction in the second wave, and a major issue, were the introduction of regulation and minimum standards. This was done as a way of forcing companies to behave ethically within the different ESG factors in their operations. In 1995 Van der Linde & Porter (Porte & Linde, 1995) argued that the introduction of stricter regulations in the environmental perspective did not necessarily equal losses in form of competitiveness. This Porter hypothesis investigated the impact of the regulations and higher minimum standards, and as the conclusion above, it was supported by a number of cases that showed the tighter regulations eventually reduced costs/quality from a top-down perspective. However, there were also critics who argued that if companies do want to implement these they would simply do so, and if not it means that the implementation would not be profitable (Palmer et al 1995).

In conclusion, in the second wave of CSR the academic discussion revolves around distancing itself from looking at CSR simply as a marketing tool to increase public image. The work now instead revolves around the competitiveness and the core business in order to actually make CSR work both internally and externally as a beneficial add-on Porter & Kramer (2006). Aguilera et al (2007) furthered this argument by arguing that the assumption that companies get pressured both internally and externally (Stakeholder) to engage in CSR actions, in order to meet the different and changing expectations about businesses and its social responsibilities. However, if companies CSR practices are only on a superficial level as opposed to implemented into the core business strategy of a company, the CSR field is experiencing a decoupling effect, because the CSR practices do not correspond with what is advertised by the firm (Meyer and Rowan 1977).

The focus of CSR has evolved from being more than just donations to charity as in the first wave, to a focus on a much broader range of problems and issues and is connected with a firm's core business processes. This holistic view of CSR will also help to create different categories within the financial, social and environmental perspectives, in order to assist in the screening process.

Difference in perceptions of corporate social responsibility

Many different perceptions of CSR exist, that is because the term is socially constructed, and therefore the perceptions are naturally also culturally related. The resulting several terminologies, makes it a difficult task for stakeholders, investors and so on to accurately measure how a company performs on ESG factors, or in this case, financial, social and environmental factors in accordance with the 3BL. Therefore, a short introduction below to the American perception of CSR will be needed in order to determine CSR as a cultural term in the United States.

The consequence of the different perceptions means that it changes how companies/funds act and how they prioritize certain aspects because of their values. Traditionally CSR in the US have taken a philanthropic perspective, which Carroll (1979) added as an additional responsibility besides financial, social and environmental. This means that companies make profits unimpeded except the obligation to pay taxes. A portion of the profits is then donated to different charitable organizations and causes. The corporate philanthropy model is traditionally a US phenomenon, where companies that do not contribute anything face harsh critique from the public through NGO's, media and other stakeholders.

SRI

Investors approach to Social Responsibility

When measuring CSR, and creating something useful for the financial community, two approached have been revealed when examining the literature: the use of Socially Responsible Investments (SRI), and the process of adding the additional financial value added by CSR in the traditional financial value analysis.

SRI is the process of screening companies from an investor's perspective to determine if the company would be a socially responsible investment. This type of portfolio selection, are

focused on integrating the financial, social and environmental perspectives into a financial analysis of a company, and as SRI is viewed as best practice and the broadest perspective for investors to include CSR in their investment decisions, a brief description of the evolution of SRI will be given in order to better understand the term.

The evolution of socially responsible investments

Just like with regular CSR, socially responsible investments have certain differences in approach, but nevertheless share a set of steps and ultimately want to achieve the same goal. Louche & Lydenberg (2006) argued that SRI is embedded in the 1970's just like CSR, but at the same time also following the trend of going back farther than that. Some religious organizations in the US did this by including ethical considerations into investments by simply excluding the corporations or firms with relations to alcohol, firearms or gambling referring to them as "sin stocks". In general, religious organizations steered away from investments which they thought to be unethical, which again speaks to the different perceptions of the term CSR and the cultural aspect as well as personal.

SRI funds in Europe mainly started in Britain, but the late 1980's and early 1990's saw the emergence of several European SRI funds being started, within these new funds several so called green funds also emerged where environmental and sustainable investments were the focus. These funds helped inspire the second wave of CSR by including these criteria into SRI worldwide. In the United States Schueth (2003) studied the emergence of American SRI funds, according to Schueth the modern emergence happened during the 1960's due to a number of factors.

"During that tumultuous decade, a series of themes from the anti-Vietnam war movement to civil rights, to concerns about the cold war and equality for women, served to escalate sensitivity to issues of social responsibility and accountability. These movements broadened to include management and labor issue and anti-nuclear sentiment during the 1970s" (Schueth, 2003)

After this the numbers of socially responsible investors grew dramatically, which Schueth links to social environmental catastrophe's like Bhopal, Chernobyl and Exxon Valdez incidents. By 2003 the amount of invested capital in social investing had reached $2.2 trillion, and this number had tripled by the release of the USSIF report 2014 (The Forum for Sustainable and Responsible investment) to $6.57 trillion, which equated to almost 1 in every 6 dollars of invested capital in the United States.

The practice of SRI was refined by investors opening up specific SRI departments meant for analysis, ethical councils and the emergence of SRI Service providers. Sparkes (2001) and Cowton (1999) were the first to increase the focus on SRI, by attempting to describe and define the process of ethical and SRI academically in the literature. Sparkes gave his distinction on the difference between ethical investment SRI by saying that ethical investment was the process of avoiding stocks purely based on ethical reasons, and something that you would not be comfortable investing in. Socially responsible investments distinct itself from ethical reasons alone, by looking for both social and environmental goals in addition to the financial goal of an investment. Cowton described ethical investors as being investors who were not only interested in how much the investment gave in returns, but also how the investment generated said returns. Sparkes and Cowton recognize that SRI has many different terms to describe it, and USSIF says that depending on the emphasis from investors, the labels used range from "community investing," "ethical investing," "green investing," "impact investing," "mission-related investing," "responsible investing," "socially responsible investing," "sustainable investing" and "values-based investing," (USSIF, 2014).

With SRI going from margin to mainstream investing, and with an increasing number of investors adopting the CSR policies, increases the possibility of influencing the CSR of companies. The methods of SRI have also shifted from purely negative screening in order to leave out unwanted stocks to include positive screening often using a best-in-class approach to create a rating system. The most prevalent method, and still given the most attention is the comparison of performance of SRI funds against CSR funds.

Studies of SRI Fund performance

Several studies of performance SRI funds exist, and several of them have some strong arguments against SRI funds. Vogel (2005) said that SRI funds perform neither better nor worse than other funds in terms of profitability and the same argument was presented for socially responsible indices. According to Vogel if stocks of socially responsible companies were undervalued the market that is self-adjustable, investors will automatically invest more in these stocks raising the prices of them, and establishing balance back to the market.

Bello's (2005) findings in his study of SRI funds against conventional funds showed that they do not differ in performance, and in addition to that the effect of diversification does not differ between the two groups. Although several authors share the same skepticism, there are also arguments that SRI has a positive influence on the economic performance of a firm, but these arguments are separated into examining different initiatives of the CSR's influence on the financial performance. (United Nations Environment Programme Finance Initiative 2007)

Scholars researching the relationship between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP), have reached some inconclusive results cumulative and the research does not provide a clear answer if there is any causal relationship between CSP and CFP (Orlitsky et al, 2003). However, a 2009 study based on a correlation and regression analysis of large German listed firms showed support of positive and significant relation between CSP and CFP, it also showed that a firm with a superior CFP could use the surplus of resources monetary or otherwise to increase CSP.

A review on the literature of SRI by Renneboog et al. (2007) asked a number of questions regarding the purpose of SRI, one of them, are investment decisions within SRI affected by indicator of a non-financial character? Their conclusion was, that the stock market reacts to news regarding corporate social and environmental responsibility/performance, but it could not be determined that those reactions were not caused by cash flow related news. In addition, corporate governance and environmental standards are associated with shareholder value, but again no direct causality can be proved. The fact that there is no direct evidence between CG, ES and the shareholder value, means that it cannot be determined if higher shareholder value

is due to CSR initiatives, or if it is because of the financial health of a company that it undertakes the specific CSR initiatives.

Table 1: Summary of SRI Fund Studies

Study	Country	Data	Time Period	Findings for SRI Funds
Amene, Sourd (2008)	France	62 mutual funds compared to conventional indices	January 2002 to December 2007	• No significant performance differences
Areal, Cortez, Silva (2010)	United States	38 SRI funds compared to the Vice fund and S&P 500 benchmark	October 1993 to September 2009	• SRI funds performed better during a crisis • Evidence of both higher and lower returns
Asmundson & Foerster (2001)	Canada	2 SRI Funds (over 10 year period) vs. TSE 300 Index	January 1990 to December 1999	• Evidence of both higher and lower returns • Lower risk
Bauer et al. (2002)	Germany, UK, & U.S.	103 SRI Funds and 4,384 traditional mutual funds	January 1990 to March 2001	• Evidence of both higher and lower returns • Differences are not statistically different
Bauer et al. (2006)	Canada	8 ethical, 267 conventional mutual funds	January 1994 to January 2003	• No significant performance differences between funds
Bello (2005)	United States	42 SRI funds, 84 conventional funds	January 1994 to March 2001	• Risk adjusted returns of SRI funds indistinguishable from returns of conventional funds • Fund characteristics did not differ between the two groups
Cortez, Silva, Areal (2009)	United States, Austria, Belgium, France, Germany, Italy, Netherlands, UK	39 European market mutual funds and 7 US mutual funds compared to conventional and socially responsible indexes	August 1996 to August 2008	• No significant performance differences for European funds • Significant underperformance for US and Austrian funds
Derwell & Koedijk (2005)	United States	8 SRI bond funds	1987 - 2003	• SRI bond funds provided returns similar to or superior to conventional bond funds • Found to perform in-line during an economic expansion, and significantly outperform during an economic contraction
Derwall and Koedijk (2008)	United States	15 SRI mutual bond funds and 9 balanced mutual funds vs. their conventional counterparts	1987 to 2003 (months not specified)	• Higher returns • No results statistically significant • Expenses for SRI funds did not cause underperformance
Geczy et al. (2003)	United States	35 no-load SRI funds and 859 no-load traditional mutual funds	July 1963 to December 2001	• Lower returns • Difference is significant under certain conditions
Gil-Bazo, Ruiz-Verdu, Santos (2008)	United States	86 SRI mutual funds compared to 1,761 conventional funds	1997-2005 (months not specified)	• Higher risk adjusted performance before and after fees
Kreander et al. (2005)	Europe	30 SRI funds matched with 30 similar non-SRI funds	January 1995 to December 2001	• No difference in performance on a risk adjusted basis
Magnier, Luchet, Schaff (2008)	Europe, North America, Australia, Asia	171 SRI mutual funds compared to non-SRI indexes and non-SRI funds	October 2006 to October 2008	• No significant performance differences • Best-in-class funds that did not use exclusion criteria performed better than those that did
Scholtens (2005)	Netherlands	12 SRI funds compared to SRI and non-SRI indexes	November 2001 to April 2003	• Slight outperformance of SRI funds vs. the index • Slight underperformance of SRI funds vs. non-SRI funds • Neither result was statistically significant
Schroeder (2003)	Germany, U.S.A., UK	30 U.S. funds, 16 German and Swiss funds, and 10 SRI indices	Minimum of 30 months of data before 2002	• No significant performance differences • Some SRI funds exhibited insignificantly higher returns
Sourd (2012)	France	87 SRI funds compared to both cap-weighted and efficient benchmarks	January 2008 to December 2011	• Most results insignificant • Significant values were negative • Efficient benchmarks were beat less often

* As reported in ABN-AMRO (2001).

Lack of Theoretical Perspectives

As seen from the above literature review on the social responsibility from investment perspective, most of the available literature revolves around the performance of SRI funds and the influences of CSR on economic performance. Several attempts have been made to incorporate CSR within existing financial models, but what is needed is theory accurately explaining the relationship between CSR and performance. Due the limited amount of theories within the specific field, a use of current theory combined with theoretical perspectives will serve as the basis of the framework used. Although several studies have been made trying to connect CSR with performance, nothing conclusive have been achieved, so statistical models are still the best way to investigate this. Schaltegger (1988) proposed a theoretical framework, which will be shortly mentioned in the chapter Theoretical framework.

Summary of how the Reviewed Literature Contributes to the Area of Study

To sum up the findings from the literature, it is evident that the field of study for CSR is broad and embraces numerous perspectives such as philanthropy, sustainability, corporate citizenship, long-term value, profit, stakeholder pressure, to point out just a few. Within the reviewed literature it is clear that the concept of CSR has changed drastically within the last 10 years alone. From something that was simply used a branding and marketing mechanism to increase public reputation, to something that requires investment in the company's long-term competitiveness. The area of CSR within investments originated with ethical reasoning, which evolved into SRI. The existing empirical studies of the SRI funds' performance vs. conventional funds, are generally varying, not only in scope but also in method using both unconditional models, as well as conditional models. Most were inconclusive on whether or not SRI funds were in fact outperforming. The existing literature on the link between CSR and financial performance proved scarce, which leads to the fact that the subject is unexplored and the theoretical approaches were limited. However, literature on the studies of screening and the exclusion of certain companies not fulfilling certain CSR criteria exist in the investment world. This allows the exploration of the studies between the SRI and performance and the screening process. By gauging some of the blacklisted companies against some of the portfolio holdings

of the funds, and examining the SRI funds it should give a picture if an SRI fund performs better without investing in those types of stock. An important thing to remember about conventional funds is that they might invest in some of the same stocks as an SRI focused fund, but do not blacklist any stocks, which might give bias to an investigation of performance between the funds, which is why the benchmarks listed by Morningstar is used.

The literature review should provide validation to the research area, and create a basis for the discussion in the next section of theoretical contributions and why they add value to the thesis.

Theoretical framework

As described in the literature review, only limited complete theories exist within the CSR field of study, and the empirical studies available were often inconclusive or careful in concluding if the performance were better or worse. The theoretical part of this thesis will have a basis within established theories, with a discussion of further perspectives within the theory to create a foothold in which this thesis can investigate further. The theoretical analysis in this thesis revolves around why certain stocks get blacklisted and how funds perform against their proxy. The used theories will help to investigate this.

Schaltegger & Wagner (2006) identified three approaches when studying the link between the CSR performance, economic performance and competitiveness. The first approach is empirical studies, and the second approach is a normative study, the third approach is a theoretical approach. This approach divides into two arguments, how CSR relates to competitiveness and the relationship between Economic, Social and Environmental (ESG) performance of a company and its economic results. The last argument might prove interesting, because the first approach is to empirically describe the process of categorizing stocks and classify them within a rating system and the industry. Afterwards a comparison with a positive control group, comparable in size with a number of the blacklisted stocks will be performed.

In the following section, the theory used in the theoretical analysis, will be Triple Bottom Line and Stakeholder theory, which will be described, and then summarized on how they will be

used in this thesis. In addition, a short section of the strengths and weaknesses will be added in the end.

Standard Financial Theory

A brief introduction to two theories from Standard Financial Theory (Statman, 1995) is included. The introduction of Standard Financial Theory serves the purpose of illustrating the conventional perception of the market and its mechanisms.

Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) first coined by Eugene Fama (Malkiel and Fama, 1970) is one the most debated financial concepts in academic literature (Elton et al., 2009). The EMH states that markets are efficient, meaning that stock prices reflect all the current available information (Malkiel and Fama, 1970). This is due to the assumption that information is available for everyone and will spread quickly between investors. Consequently, all new information will almost immediately be incorporated into a stock's price, leaving little room for investors to take advantage of any new information that might become available. The implication of this is that no stocks are over- or underpriced and consequently no one is able to continuously beat the market using publicly available information (Allen et al., 2006). In effect, neither fundamental nor technical analysis would enable investors to consistenly achieve returns greater than those that could be obtained by holding a randomly selected portfolio (Malkiel, 2003).

According to Henriksson (Henriksson, 1984), fund managers would be unable to display any ability to outperform the market, if markets are efficient, and they should instead focus on pursuing a passive buy-and-hold strategy. The EMH is based on 3 underlying assumptions. Firstly, investors are considered to be utility maximizing and rational. Secondly while irrational investors do exist in the market, their actions are considered random, cancelling out any long-term effects they might have. Thirdly, since irrational investors are assumed to exist their actions will create arbitrage opportunities. Rational investors will bring prices back to their equilibrium and will thus utilize these arbitrage opportunities (Shleifer, 2000).There are three forms of market efficiency:

- Weak

  A weakly efficient market is characterized by stock prices that reflect all historical data.
- Semi-strong

  In the semi-strong form, markets reflect all historical and public information known and reflected in the stocks prices. Consequently, technical and fundamental analysis are useless in determining future price movements of stocks
- Strong

  A market in which historical, public and insider information is reflected in a stock's price, leaving no room for any money managers to produce excess returns compared to the market, as all information is already known. (Ref)

The efficiency of today's markets is an area receiving much attention. Supporters of the EMH continue to believe that today's markets are highly efficient resulting in no consistent outperformance can be achievable (Malkiel, 2003). These assumptions combined with the fact that today's stock markets are highly regulated to avoid market participants exploiting any non-disclosed information, the semi strong form might be the best fit. Nevertheless, as mentioned, critics have challenged the EMH and its underlying assumption.

Testing the EMH and its validity is almost impossible due to the "joint hypothesis problem" (Fama, 1991). As testing for market efficiency requires using a market equilibrium model any abnormalities that may appear might as well be due to misspecification of the equilibrium model applied.

Consequently, Fama developed a modified version of the EMH that allowed for mispricing to occur temporarily (Fama, 1991). This would allow investors to utilize these mispricing before arbitrageurs eliminated the effect.

Capital Asset Pricing Model

Based on Markowitz mean variance model (Markowitz, 1952), Sharpe, Lintner and Mossin (Lintner, 1965; Mossin, 1966; Sharpe, 1964) developed the Capital Asset Pricing Model (CAPM), which can be used to determine the price of an asset. According to the CAPM equation (see below) there

is a linear correlation between an asset's expected return and its beta (risk). This implies that for two assets to exhibit different expected returns one must be riskier than the other.

$E(r_i)=r_f+\beta_i[E(r_m-r_f]$,

(Equation 1)

E(ri) is the expected return on the portfolio, rf is the risk free rate and known as the required return for investing in a stock. βi is the beta of fund i and rm is the expected market return.

The CAPM is built on a number of assumptions that have been criticized for not being possible in the real world (Mullins, 1982):

- Investors are rational and risk averse. Investors want to maximize their own utility function.
- Investors receive the same information at the same time and have identical return
- expectations
- No single investor can affect the price of an asset.
- Investors can borrow and lend at the risk-free rate at any time.
- No short selling restriction and no transaction costs are assumed.
- Likewise, no income tax
- All assets are divisible, implying that investors can buy any asset regardless of their size and wealth.

Since its creation, several scholars have found evidence both for and against the CAPM's legitimacy. Black, Jensen and Scholes (Jensen et al., 1972) found support for the linear relationship between average returns and beta presented in the model through their own empirical analysis. Similar results were found by Fama and Macbeth (Fama and MacBeth, 1973), who also found support for a linear relationship between return and beta. Not all scholars agree on the linear relationship between average returns and beta. Fama and French among others, found empirical evidence of other variables such as size and book-to-market ratio that better explain the variation in expected returns than beta (Fama and French, 1992).

As mentioned, the main assumption underlying the CAPM is the linear relationship between return and risk, in this case being beta. Inherently, this means for an investor to achieve greater returns, he must take on more risk in the form of beta. Later, Fama and French found however, that for the period 1963 – 2004 a positive value premium for US stock was present, not

explainable by CAPM as growth stocks exhibited higher markets betas than value stock for the period (Fama and French, 2006). This correlation contradicts the CAPM and exposes possible flaws with it, and its inability to explain a value premium.

Triple bottom line

The term 3BL was originally coined by the think tank AccountAbility, but it was John Elkington (Elkington, J. (1998). who first coined the term Triple Bottom line as a public occurrence in 1997 in the book "*Cannibals with Forks: The Triple bottom line of 21st century business*". It was first thought out to be an accounting framework to measure more than just the financial bottom line but also an overall measure of corporate sustainability and performance. By incorporating measures of social and environmental dimensions in the bottom line reporting, the sustainability goals of a company can be evaluated in terms of where they currently are, and which direction they intend to go. The framework is also called the three P's, Profits, people and the planet. Andrew Savitz defined the Triple Bottom line as:

"captures the essence of sustainability by measuring the impact of an organization's activities on the world ... including both its profitability and shareholder values and its social, human and environmental capital" (Savitz et al, 2006)

With the comprehensive results within the 3BL, it can also serve as a model for rating companies within different sustainability criteria. To create a sustainability rating system, the results will have to be converted into something measurable that will serve as an overall grade, so comparisons can be made between companies. The 3BL concept has already been explored in the investment community, and many screening companies use the rhetoric of the 3BL, and www.tbli.org hold yearly conferences about the concept. The theoretical perspective used in this thesis, allows the use of 3BL to be further explored and widened to be tailored to the specific needs of this thesis, which goes beyond just the screening of companies.

The reasoning behind choosing 3BL and not Carroll's pyramid of responsibilities was the fact that Carroll simply added the philanthropic perspective as a responsibility. When the purpose is to screen companies the philanthropic perspective does not add much in terms of measurable criteria, therefore the social and environmental perspective has consumed it as added criteria. When looking a philanthropic perspective, the amount does not matter, because the rating of a

company's philanthropic involvement should not be decided by the size of the charitable donation, because in this way a major firm/company/corporation could simply boost their rating in an imperfect system. It would also be difficult to determine the importance of charitable contributions, because the individual preferences of the company cannot be determined in order to create a rating system. For this purpose, the philanthropic initiative will be a checklist within the rating system, within both the social and environmental responsibilities. The importance of this will be downgraded, because internal actions for the purpose of external progress are rated higher than charity donations.

Steve Schueth argues that Socially Responsible investing in the US could be defined in a few words: *"The process of integrating personal values and societal concerns into investment decision-making."* Additionally, he adds within this context three strategies aimed both at making money and making a difference. These three strategies are screening, shareholder advocacy/activism and community investing. All three can add to a screening process in terms of criteria, and will help in producing a comprehensive system, that will not leave out any important criteria. The three strategies will be summarized below.

Negative/Positive Screening:

Screening is traditionally a double bottom line process of social and environmental criteria, and when using the foundations of 3BL, it adds the economic perspective to the criterias. The European Social Investment Forum, a non-profit organization focusing on SRI investments, classifies the screening methods into three overall categories (Eurosif, 2006):

Negative screening generally excludes companies based on their involvement in certain industries or practices. The most common industries are alcohol, tobacco, and weapons. Another type of negative screening is the norm-based screening which primarily excludes companies based on violations of international standards and conventions, e.g. the United Nations Universal Declaration of Human Rights, UNICEF Convention on the Rights of the Child, and the ILO Labour Standards.

- Positive screening includes companies that enhance or are committed to having a positive impact on SRI practices. Only if the companies fulfil the criteria set by the SRI researchers can they be included in the fund. Another type of positive screening is best-in-class screening, which seeks to invest in the leading companies on SRI issues within their industry.
- Engagement is a method for fund managers to educate and influence their holdings' SRI practices. This is usually done via a direct dialogue with the company or by using their shareholder votes. Engagements can be divided into Request for awareness and request for change.

Schueth (2003) argued under the screening process a reality check existed, social investors know there are no perfect companies. The process of social screening with the qualitative research and evaluation, generally seeks to identify the better managed companies. The social screening process results in the creation of investment portfolios that meet the investor's social criteria, and potentially produce the required returns of their portfolios. The screening decision is a grey area; investments that do meet the social criteria might be close to fall under the category of blacklisted investments and vice versa. Therefore, the screening should always be backed up by careful research, in order to make the tough choices.

Shareholder advocacy/activism

Shareholder activism is a method of shareholders trying to influence the behaviour of a corporation by exercising the rights as owners through their shares. Although the shareholders do not run a company, there are ways of influencing the board or management, if they do not meet the social criteria of the investor. The numerous options that exist range from simple management dialogue to voice minor concerns or formal proposals that have to be voted by all shareholders with voting rights at annual meetings.

Community investing

Investing in communities' means providing capital to low-income and at-risk communities who might have difficulty accessing it through regular channels. The purpose may be housing, training or other things where those neighbourhoods might be lacking. There are specific depository institutions as community development banks and credit unions are popular options. As a sustainable investment community investing, have proved that it is a path to job creation, small business development and home ownership.

Usually a specific amount/percentage of funds capital will be earmarked to Community Development Financial Institutions (CDFI's).

Triple Bottom Line in this thesis

In this thesis 3BL will be used as screening framework, in order to determine blacklisted companies. The purpose of finding these companies is to use a norm-based screening process which means exclusions will be based of companies' violations of certain regulations set out by conventions. The rating system will be determined, based on the criteria in the screening.

The framework will use the concept of the 3BL, but follow everything exactly. More following the concept of the 3BL and the performances.

Strengths and weaknesses of Triple Bottom Line – for the purpose of this thesis

The measurement of 3BL is difficult and complex, when using this phenomenon in its original form as an accounting framework, intangible assets such as loyalty or reputation become difficult to

measure. In order to expand a company's reporting and measurement systems, they have to report consistently and constantly on any new actions they enact. So where should the limit be in terms of resource consumption? Furthermore, the objectivity and reliability of the values the company report, is highly doubtful. So, some attention should be given to the measurement and how to do it and the reliability of the end results.

"A system consists of individual parts that can be looked at individually; the whole cannot be entirely defined without recognizing the relationships among those parts. In essence, sustainability is dependent upon healthy systems. If any interactions between the parts are win-lose, one will, by definition, sub-optimize the whole." (Sridhar et al, 2011)

By adapting the 3BL to the purposes of this thesis, it is possible to avoid the pitfalls of it, which is also a strength of it, because it is so easily adaptable.

Stakeholder Theory

The Triple bottom line, has the assumption that a company's responsibilities lies with the stakeholders, therefore stakeholder is assumed to be coupled with the 3BL, as the rating system that will be used also will base criteria of the needs of the stakeholders. It is not the stakeholders of the company that will be rated, but the assumption will be the stakeholders of a mutual fund. A short description of stakeholder theory – as an underlying assumption of the 3BL will be briefly introduced.

Stakeholder theory is used to analyse the groups, which the company should be responsible to, and radically alters from the neo-classical view of Friedman were value maximizing for shareholders were the sole objective. Freeman (1984) defines a stakeholder as:

"Any group or individual who can affect or is affected by the achievement of the organization's objectives".

There exist both primary and secondary stakeholders. The primary stakeholders are the ones, that without them, the firm could not survive, and secondary stakeholders who are influenced or affected by the corporation but not essential for the survival of it. Stakeholder theory doubles

as both an ethical and a managerial theory, for which the purpose is finding efficient methods to manage relationships between the corporation and its stakeholders. In practice this means, the ability to combine profit maximization with all the expectations of the stakeholder.

This makes it ideal to implement under the 3BL because the stakeholders are the very same people that a fund is trying increase profits. This follows shareholder activism, because a stakeholder in a mutual fund is probably a shareholder.

Strengths and weaknesses of Stakeholder theory – for the purpose of this thesis

The main weakness of stakeholder theory is the fact that it is not possible to please every stakeholder, so by involving stakeholders a balance will have to be found, and at best compromises are reached, which are anything but optimal. In today's world, you simply cannot please each individual.

However, by including stakeholders, it might also improve decision making, because stakeholders who get involved feel more appreciated and might accept decisions more easily.

Performance Measures

When analyzing the performance of mutual funds, it is common practice to use a variety of performance measures as no single measure can provide investors with the entire picture (Grinblatt and Titman, 1989b). Therefore, this study includes commonly used ratios when evaluating the performance of mutual funds. Some of these ratios have their origins from Markowitz classical portfolio theory (1952) (Markowitz, 1952) such as the Sharpe Ratio and Treynor Ratio. Additionally, as a consequence of the criticism of the CAPM and its reliance on beta as its sole variable to explain expected returns (Fama & French, 1992), this study also includes ratios not exclusively relying on beta. These ratios include the Modigliani ratio (Modigliani and Modigliani, 1997), the Sortino Ratio (Sortino and Van Der Meer, 1991a) and Fama & French's multifactor models (Fama and French, 2015).

Sharpe Ratio

The Sharpe Ratio is one of the most commonly used performance ratio among investors and it is frequently used when discussing mutual fund performance. In essence, the ratio illustrates

how much excess return you get for the added volatility you take on from holding a particular asset. The assumption relates to the fact that an investor should be compensated for accepting additional risk. If there were no compensation in holding a riskier asset, then an investor would be better off holding a risk-free asset. The Sharpe ratio is defined as:

$$Sharpe\ Ratio = \frac{R_p - R_{rf}}{\sigma_p}$$

(Equation 2)

The numerator of the equation $R_p - R_{rf}$, states the excess return the portfolio earns compared to holding a risk-free asset. The denominator σ_p is the standard deviation of the portfolio's excess return. The ratio produces a unit-less figure easiest to understand when used as a ranking tool among a group of assets. Generally, a high "rank" illustrates the ability of a fund manager to construct the most efficient portfolio. According to Sharpe there are two ways to interpret price deviations: 1) either temporary due to markets being highly efficient and because mutual funds managers have the possibility of diversification or 2) as the difference in the mutual fund managers' ability to diversify (Sharpe, 1966).

Possible limitations on the Sharpe Ratio; Due to its origination from modern portfolio theory, it assumes normally distributed return data. As a result, it only uses standard deviation as its measure of risk. Additionally, the Sharpe Ratio is unable to distinguish between negative or positive volatility. From an investor's perspective that can be important as upside volatility isn't always considered bad, however, it is penalized in the Sharpe Ratio. In response, the Sortino Ratio is introduced later as an alternative performance measure that takes this into account.

Treynor Ratio

While the Sharpe Ratio uses total risk, the Treynor Ratio uses beta or systematic risk as the measurement of volatility. Hence the correlation between the mutual fund and market is what determines its Treynor rank. The Treynor Ratio is also referred to as a reward-to-volatility ratio. It is defined as:

$$Treynor\ Ratio = \frac{r_p - r_f}{\beta_p}$$

(Equation 3)

Looking at the two ratios it is clear that they both display similar features, differing only in their unit of risk. Because the Treynor Ratio uses beta, it implicitly assumes that the investors have a diversified portfolio eliminating unsystematic risk. In contrast, the Sharpe Ratio evaluates the investor based on return and diversification captured by the standard deviation

Modigliani Ratio

The Modigliani Ratio (M^2) is a risk-adjusted performance measure introduced by Modigliani and Modigliani (Modigliani and Modigliani, 1997). Compared to the Sharpe Ratio, M2 is an easy to deduce measurement because it reports the results in percentages rather than unit-less figure, as is the case with the Sharpe Ratio. M2 represents the annual rate of return the mutual fund would have achieved had it leveraged up or down to the same risk as its benchmark. Equivalent to the other performances ratios, a higher M2 result is associated with a higher expected return given any level of risk (Simons, 1998).

$$M^2 = r_f + \frac{\sigma_m}{\sigma_p}\left(r_p - r_f\right)$$

(Equation 4)

As evident from equation 4, the formula for M^2 is a linear transformation of the Sharpe Ratio. (rp – rf) representing the reward for taking risk in the original portfolio. σm is the benchmark standard deviation and σm/σp is the leverage ratio.

Sortino Ratio

Developed by Frank Sortino and Robert van der Meer (Sortino and Van Der Meer, 1991b), the Sortino Ratio uses volatility on returns below the minimum acceptable return (MAR) as its denominator.

$$\text{Sortino Ratio} = \frac{\text{Portfolio Return} - \text{Target Return}}{\text{Downside Risk}}$$

(Equation 5)

With downside risk defined as following:

$$\text{Downside risk} = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(\text{return} - \text{target return})^2 \, f(t)}$$

F(t) = 1 if return < target return

F(t) = 0 if return ≥ target return

The advantages of only using the standard deviation of the return below the MAR, is that mutual funds managers aren't penalized for upside volatility. The more positively skewed the distribution is, the higher the ratio. Likewise, a negatively skewed distribution is penalized by a lower ratio.

Information Ratio

The Information Ratio (IR) is a generalized version of the Sharpe Ratio, used to calculate the risk adjusted return achieved. The difference between the two ratios is what the expected return of an investment is compared against. Instead of using a risk-free asset for comparison the Information Ratio uses an index benchmark e.g. the S&P500. In other words, the Information Ratio measures the ability of a fund manager to create excess return relative to a benchmark. The ratio is defined as:

$$Information\ ratio = \frac{(R_P - R_B)}{S_{P-B}}$$

(Equation 6)

Where R_P is the portfolio return, R_B is the benchmarks return and S_{P-B} is the tracking error. Apart from measuring performance the IR illustrates the consistency of a portfolio manager's ability to create excess return indicated by a high IR. The ratio can be used as a gauge for determining fund manager skill (Goodwin, 1998).

Jensen's alpha

In 1968, Michael Jensen developed the performance measure known today as Jensen's alpha (Jensen, 1968). Assuming a linear relationship between an asset's risk premium and the systematic risk i.e. the asset's beta, Jensen's alpha determines the abnormal return of an asset or portfolio. Jensen's alpha is still one of the most commonly used measures when evaluating mutual fund performance (Bodie et al., 2011). One of the advantages of the model is that it presents its findings in percentages making it easier to interpret. Additionally, as the model is a linear regression, its results can be tested for statistical significance. Alpha is measured by the intercept αi in the following regression:

$$r_{it} - r_{Ft} = \alpha_i + \beta_i(r_{Mt} - r_{Ft}) + \varepsilon_{it}$$

(Equation 7)

r_i, is the return on asset i, r_f, is the risk-free rate, r_m, is the return on the market portfolio and ε_i, is the random error. Outperformance is identified when alpha is significantly positive and underperformance is identified if alpha is negative and significant.

Equation 7 holds striking similarities with the CAPM. Accordingly, alpha is derived from the CAPM causing it to be subject to the same biases and flaws outlined in the SFT section. One of these flaws rests on the fact that the measure is dependent on the choice of the market portfolio. As there is no consensus on what the market portfolio should be, inevitably selecting different benchmarks will affect the results (Grinblatt and Titman, 1989a).

Multifactor models

Whether beta is sufficient as the only systematic risk factor needed to explain stock return is a discussion that has received a lot of attention over the years. While Jensen et al. (Jensen et al., 1972) found a positive correlation between beta and return during 1926-1968, Lakonishok & Shapiro (Lakonishok and Shapiro, 1986) were unable to establish the existence of this correlation for the period 1963 – 1990. Since then the academic literature has attempted to determine the most suitable additional systematic factors to explain the expected return of an asset. The addition of multiple factors to the single-index model resulted in multi-factor models of which they are known today. Multifactor models can be interpreted within the Arbitrage Pricing

Theory framework (ABT) (Huberman, 1989). ABT states that expected return of any asset is a linear function of assorted macro-economic factors where beta coefficients to each factor represent the asset's sensitivity to change (Roll and Ross, 1984). In the following section, three well-known multi-factor models are introduced with a conclusion on the choice of model at the end.

Fama and French 3-factor model

In 1992, Eugene Fama and Kenneth French published their paper "*The Cross Section of Expected Stock Returns"* that would become one of the most cited papers at the time due to its summation of a new improved asset pricing model (Fama and French, 1992). Based on empirical research, Fama and French found that the expected stock return cannot be explained by a single factor beta, as in the original Jensen CAPM-model (Jensen, 1968). Instead they introduced two additional variables, size (SMB) and value (HML) with the purpose of increasing the model's explanatory powers (Fama and French, 1992)

In short, the size factor or SMB, measures the difference in returns between small and big companies. The value factor (HML) measures the return difference between *growth* and *value* stock based on its book-to-market ratio. The reason for including these two additional factors is based on prior empirical investigations which found that value companies tend to outperform growth companies with regard to return. With regard to the size factor, small cap companies tend to outperform large cap, when using the original CAPM model these stocks will show as outperforming.

Based on these results, Fama and French (Fama & French, 1992) concluded that value stock must inherently be riskier and therefore investors must be compensated for the additional risk they bear. Including the two factors to the original regression by Jensen, we get the following extended edition:

$$ri_{,t} - rf_{,t} = \alpha i + \beta 1 \left({}_{,t} - rf_{,t} \right) + \beta 2\ SMBt + \beta 3 HMLt + \varepsilon i_{,t}$$

(Equation 8)

Alpha is still represented by α and still measured as the intersection on the y-axis.

Carhart 4-factor model

In a later study done by Jegadeesh and Titman (Jegadeesh and Titman, 1993), another abnormality was identified. In the short term, there was a tendency for the best performing stocks to continue their performance in the following 12 months and vice versa for the worst performing stocks. This anomaly was termed Momentum, and was later included in a new further development of Fama and French's 3-factor model. The new model was created by Carhart (Carhart, 1997) and coined the 4-factor model as it added a 4th factor - the momentum factor (WML) - to the traditional 3-factor model from Fama and French. The model is expressed as follows:

$$ri,-rf,t=\alpha i+\beta 1(rm,t-rf,t)+\beta 2SMBt+\beta 3HMLt+\beta 4WMLt+\varepsilon i,t$$

(Equation 9)

According to Carhart, this new extended model is an improvement compared to Fama and French's 3-factor model, with regard to its explanatory power (Carhart, 1997).

Fama and French 5 – factor model

Fama and French Recently (Fama & French, 2015) created a revised version of their famous 3 factor model. The new version includes two additional factors, *profitability* and *investment*. The two factors are drawn from the dividend discount model (Fama & French, 2015) which states that a stock's value today is reliant on its future expected dividends. According to Fama and French their new model is an improvement of their 3-factor model as it explains a larger part (70-94%) of anomaly average returns. With the additional factors the model has the following:

$$Rit - RFt = ai + bi(RMt - RFt) + siSMBt + hiHMLt + riRMWt + ciCMAt + eit.$$

(Equation 10)

In equation 10, RMWt is the return spread between diversified portfolios of stocks with strong and weak profitability and CMAt is the return spread of diversified stock portfolios of conservative and aggressive investment firms. In the case where the exposure to the five factors captures all variation in expected stock returns then the intercept *ai* or alpha should be equal to zero.

However, a drawback of the 5-factor model is that with the addition of two new factors, the HML factor becomes redundant with regard to capturing abnormal returns. If the sole purpose of the analysis is to investigate abnormal returns, a four-factor model which excludes the HML factor performs just as well as the 5-factor model. However, as this study investigates a specific style of mutual funds, shedding light on portfolio tilts is also of interest and may provide an initial picture as to whether the investigated mutual funds are pursuing the investment strategy stated. In this particular case, one would expect positive factor loadings on the HML factor as it works as a proxy for value stock.

Critics of the multifactor model such as MacKinlay (MacKinlay, 1995) contest the ability of the multifactor model to explain the anomalies not captured by the CAPM model. Others argue whether the additional factors should be considered as compensation for systematic risk. Following this discussion, Mathijs van Dijk (Van Dijk, 2011) finds the size factors to have no explanatory power in today's stock markets. Following Fama and French's paper from 1993,

Kothari et al. (Kothari et al., 1995) found a substantially lower correlation between B/M and expected return as previously identified by Fama and French (Fama & French, 1992). Furthermore, they point out possible flaws in Fama and French's data collection and failure to address the question of survivorship bias. Fama and French's selection of database receives criticism as well, as it contains an inappropriately high amount of companies with high B/M ratios.

Summary

Evaluating the performance of mutual funds using a single measure is not practical as it will not be able to provide the full picture of the situation. Therefore, it is common practice to include several performance measures each contributing to the overall evaluation. In this study, the following performance ratios have been included: Sharpe Ratio, Treynor Ratio, Modigliani Measure, Sortino Ratio and the Information Ratio.

Considering the criticism on the ratios, it is clear that any model is disposed to criticism. One can only attempt to minimize the possibility of downsides by enlightening the problem from different angles. Therefore, this study will use both the single-index model as well as a multi-factor model. Given that a majority of economic scholars still recommend using the CAPM (Welch, 2008), it is deemed relevant to include the model in this study. With regard to multi-factor models, the Fame and French 5-factor model is chosen on the basis that it is the most recent addition to the literature on multifactor models. Ceteris paribus, it is fair to assume its underlying foundation is based on the newest knowledge and empirical studies, having the most relevance for the current financial situation.

Analysis

Each criteria of the screening process are set within the 3BL which means that any economic gain from unethical actions, as well as actions with a negative social impact and actions with a hurtful ecological effect will count towards a negative rating and a potential blacklist of the analysed stock. In the norm based screening process the criteria are based on accords approved through different conventions on what is seen as ethical behaviour in the activities of the companies and exclusions are based on these. The accords include OECD guidelines, Global Compact, UN norms on the Human Rights Responsibilities of Transnational and other Companies and the UN Human Rights norms.

The norm based screening process was chosen because the interest of this thesis is to locate and extract data from the excluded stocks, to be examined against some of the funds holdings. This is an exclusion process rather than an inclusion process, so negative aspects are favoured. This rules out several screening methods like Best-in-class and other processes within the positive screening methods.
The analysis will not include any analysis of ethical stocks, because the selection of the funds, which have all been chosen based on their included screening process which give weight to the assumption that only ethical stocks are included in their portfolios.

Since many norms based screening processes of stocks has to be exhaustive in order to be excluded as an investment opportunity, the process in this thesis will be slightly less exhaustive and each screening will only use issues that can be backed up by the facts available. Stocks will not be excluded based on rumours or other claims that cannot be substantiated with reasonable evidence. The screening process will include elements of negative screening which bases the exclusion purely based on the industry the business is in. This is done in order to categorize the excluded stocks in order of industry to determine which industries generally have more stocks in the list of excluded companies. Some of these industries include alcohol, tobacco, firearms, gambling and pornography (Pornography is often excluded by religious investment funds).

This is based on value judgements, but since most funds exclude those industries, it can be assumed that value judgements is involved.

As established in the theoretical framework several principles and ethical screens will be applied in order to determine what kind of industries as well as the operations of a company would result in a rating that excludes them from being invested in, based on the different requirements of the investment funds included in the research. The included funds used different screening methods, however the screening processes all concluded with exclusion based on industry involvement as well business practices in some form or another.
If a company fulfilled any of the 10 different principles or worked within one of the industries seen as unethical resulted in an exclusion, in order to keep this to a manageable number, only a small number of companies within each industry would be allowed to be included in the research. Additionally, many investment funds has an upper limit of the number of holdings, with several funds having between 25-45 holdings and no holding larger than 5% percent of their net assets.

In the appendix, the rating system have been added, and an overview of the included criteria.

Empirical study (US SRI Fund performance)

This section will present the results from the empirical analysis.
Initially, a short introduction to the market and general overview of the funds selected. Thereafter, a performance evaluation of the mutual funds is conducted based on the introduced performance measures, Jensen's alpha and Fama & French's 5-factor model. The 10-year period have been included to show the impact of the financial crisis on the included funds and benchmarks. In the end a regression based on the 2008-2009 years have been added, to investigate the impact of the financial crisis during the period. In the end 15 holdings from the mutual funds and 15 excluded stocks during the screening have been checked for performance.

General overview

From 2009 to 2015, the world's stock markets were recovering from a period of extreme volatility due to the 2008 Financial Crisis. The market experienced an upward trend after 2009, with only short downturns, and the bull market continued until the end of the observation period. Because this study examines a period where most of the negative effects by the recession had surpassed in terms of the initial wave, the returns generated by the benchmarks and mutual funds respectively, will most likely be unprecedented.

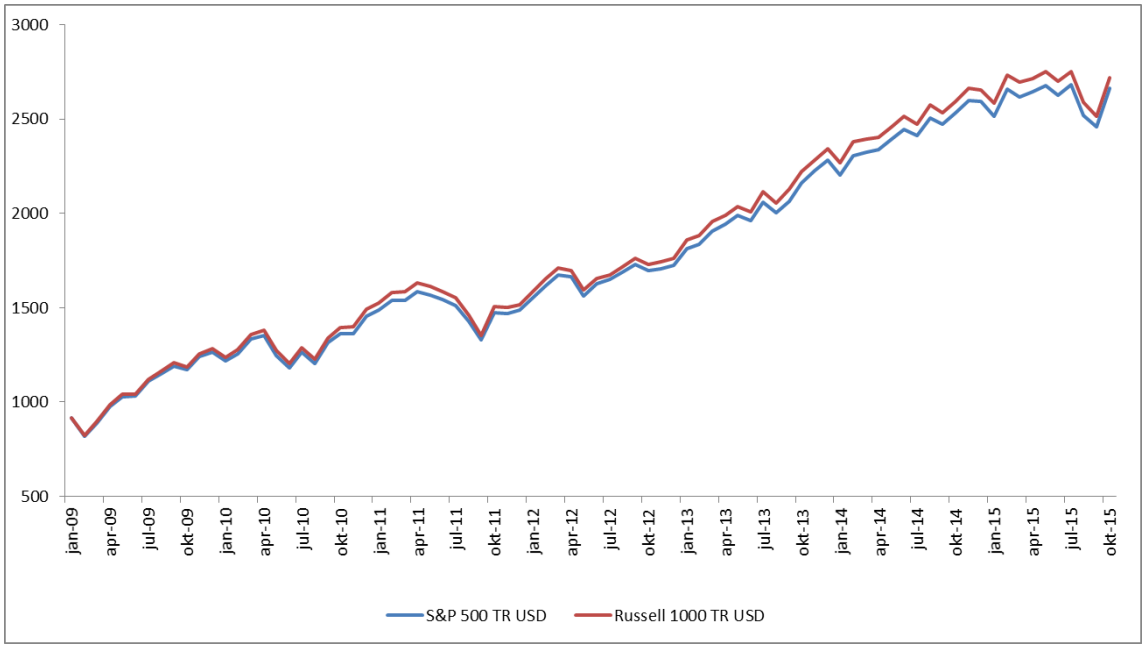


Figure 2

Based on the benchmark data retrieved from Morningstar Direct, figure 2 illustrates the market movements during the period investigated. Following the same methodology as Morningstar, the historical returns of the benchmarks and funds have been indexed to create an easier to understand visualization of the development in returns during the last 7 years. The returns used are total returns, but not adjusted for risk.

As of December 2015, the annual returns generated by the included benchmarks are very similar - 14.81% p.a. by S&P 500 TR to 15.12% p.a. by Russell 1000 TR. The average annual return by the benchmarks comes out to about 15% over the period. Considering the high annual returns generated by the benchmarks, it is not unlikely that this will have a negative effect on the mutual funds' ability to outperform the market for the period.

Table 2 **Mutual Funds**	**TER (% p.a.)**	**Size (US millions)**	**Annual return (%)**	**Std. Dev (% p.a.)**
Neuberger Berman Socially Rspns C	1,79%	$2214.6M	13,72%	14,513%
Neuberger Berman Socially Rspns R3	1,29%	$2214.6M	14,30%	14,502%
Neuberger Berman Socially Rspns A	1,05%	$2214.6M	14,58%	14,500%
Calvert Equity A	1,20%	$2160.15M	14,95%	14,719%
Neuberger Berman Socially Rspns Inv	0,85%	$2214.6M	14,80%	14,514%
Calvert Equity C	1,86%	$2160.15M	14,10%	14,701%
Calvert Equity I	0,63%	$2160.15M	15,57%	14,716%
Neuberger Berman Socially Rspns Tr	1,03%	$2214.6M	14,60%	14,515%
Neuberger Berman Socially Rspns Inst	0,67%	$2214.6M	15,01%	14,509%
Calvert Equity Y	0,82%	$2160.15M	15,34%	14,712%
Domini Social Equity Inv	1,14%	$870.26M	13,50%	15,397%
Parnassus Core Equity Investor	0,87%	$14005.5M	14,28%	13,071%
Sentinel Sustainable Core Opp A	1,21%	$353.22M	13,48%	14,613%
Walden Equity	1,00%	$175.89M	12,86%	14,022%
Domini Social Equity R	0,82%	$870.26M	13,92%	15,384%
American Century Sustainable Equity Inv	0,99%	$222.25M	13,74%	14,285%
Sentinel Sustainable Core Opp I	0,93%	$353.22M	13,88%	14,613%
Domini Social Equity A	1,18%	$870.26M	13,53%	15,377%
Domini Social Equity Instl	0,80%	$870.26M	13,99%	15,397%
Pax ESG Beta Quality Individual Investor	0,90%	$190.23M	15,74%	15,257%
Pax ESG Beta Quality Institutional	0,65%	$190.23M	16,04%	15,261%
Pax ESG Beta Quality R	1,15%	$190.23M	15,45%	15,256%

In 2016 the US mutual fund market had a combined $18.1 trillion in assets (Investment Company Institute, 2016). As of December 2015, the sample of mutual funds in this study account for USD 20.192 billion or 0.11% of the entire American mutual fund industry.

The initial findings illustrated in table 2 show that the sample of Large-cap American SRI Funds has a few outliers in size, *Parnassus Core Equity, Neuberger Norman Socially Responsible and Calvert Equity*. The expenses of the funds remain relatively similar, typically ranging from 0.63% – 1.86%, the institutional parts of the funds from *PAX ESG Beta Quality, Neuberger Berman* and *Calvert* have expense ratios from 0.63-0.67%. The annual returns for the majority of the funds are almost the same with a few funds showing small +/- outliers in returns during the

observation period compared with their peers. There is no real standout in the sample, the honorable mentions are PAX ESG Beta Quality and Calvert Equity I and Y all achieving annual returns above 15%, while still maintaining normal standard deviation levels based on the group average.

Normality test

In the section on robustness checks the concept of normality in the data distribution was introduced, and it was shown how it could potentially affect CAPM models. As mentioned to test for normality, Grelt was used. A Shapiro-Wilk test (Shapiro and Wilk, 1965) and Jargue-Bera test are used (Jarque and Bera, 1987). The results are presented below (table 3).

Table 3 7 Year Normality Test	**Shapiro-Wilk**	p-value	**Jarque-Bera**	p-value
Neuberger Berman Socially Rspns C	0,99	0,460	0,78	0,676
Neuberger Berman Socially Rspns R3	0,99	0,488	0,77	0,681
Neuberger Berman Socially Rspns A	0,99	0,484	0,77	0,679
Calvert Equity A	0,97	0,074	2,09	0,351
Neuberger Berman Socially Rspns Inv	0,99	0,471	0,76	0,683
Calvert Equity C	0,97	0,075	2,13	0,345
Calvert Equity I	0,97	0,077	2,10	0,350
Neuberger Berman Socially Rspns Tr	0,99	0,473	0,82	0,664
Neuberger Berman Socially Rspns Inst	0,99	0,472	0,79	0,673
Calvert Equity Y	0,97	0,078	2,11	0,348
Domini Social Equity Inv	0,99	0,722	0,81	0,667
Parnassus Core Equity Investor	0,98	0,212	5,56	0,062
Sentinel Sustainable Core Opp A	0,98	0,399	3,07	0,216
Walden Equity	0,99	0,505	2,78	0,249
Domini Social Equity R	0,99	0,707	0,77	0,680
American Century Sustainable Equity Inv	0,98	0,232	4,66	0,097
Sentinel Sustainable Core Opp I	0,98	0,439	2,91	0,233
Domini Social Equity A	0,99	0,701	0,80	0,671
Domini Social Equity Instl	0,99	0,707	0,80	0,671
Pax ESG Beta Quality Individual Investor	0,99	0,826	0,26	0,880
Pax ESG Beta Quality Institutional	0,99	0,836	0,25	0,884
Pax ESG Beta Quality R	0,99	0,858	0,23	0,890

The results from table 3 show that for the Shapiro-Wilk test, 22 of the 22 funds have a p-value of >0.05, the critical value for a confidence interval of 95%. We can therefore accept the null-hypothesis stating that the returns follow a normal distribution.

The same results are achieved when using the Jarque-Bera test assuming a confidence interval of 95%. In 22 out of the 22 cases we can accept the null hypothesis of data distribution with a skewness = 0 and an excess kurtosis = 0. Considering that all of the mutual funds exhibit normal

data distribution, the Newey-West method has not been applied to adjust for standard errors. In the multifactor models, two data sets were computed, but it showed no difference in the results.

Performance measures

For the following section, multiple performance measures are used to evaluate the performance of the mutual funds. A common understanding when analyzing mutual funds and their performance is to include a variety of measures as no single measure can stand alone and provide a full picture.

Therefore, to come to any meaningful conclusions this study will include some of the most well-known performance measures in the academic literature.

Table 4	Sharpe	Treynor	Beta
Parnassus Core Equity Investor	1	1	0,858
Calvert Equity I	2	3	0,950
Pax ESG Beta Quality Institutional	3	2	0,9744
Calvert Equity Y	4	5	0,950
Neuberger Berman Socially Rspns Inst	5	6	0,932
Pax ESG Beta Quality Individual Investor	6	4	0,9738
Calvert Equity A	7	9	0,951
Neuberger Berman Socially Rspns Inv	8	7	0,932
Pax ESG Beta Quality R	9	8	0,9737
Neuberger Berman Socially Rspns Tr	10	10	0,932
Neuberger Berman Socially Rspns A	11	11	0,931
Neuberger Berman Socially Rspns R3	12	12	0,931
Calvert Equity C	13	13	0,949
American Century Sustainable Equity Inv	14	15	0,959
Sentinel Sustainable Core Opp I	15	16	0,972
Neuberger Berman Socially Rspns C	16	14	0,932
Sentinel Sustainable Core Opp A	17	17	0,973
Walden Equity	18	20	0,936
Domini Social Equity Instl	19	18	1,013
Domini Social Equity R	20	19	1,012
Domini Social Equity A	21	21	1,011
Domini Social Equity Inv	22	22	1,013

In table 4 the sample funds are listed with their corresponding Sharpe, Treynor and beta ratios over the 7-year period examined. As mentioned in the section Performance measures, Sharpe

and Treynor ratios are risk-adjusted return measures. The Sharpe and Treynor ratios differ in their measure of risk. For the Sharpe Ratio risk is measured by the standard deviation of returns, also known as total risk, while the Treynor Ratio is based on systematic risk, also known as beta. Generally, a high ranking of either represents a portfolio manager's ability to generate a higher return per unit of risk compared to the other mutual funds in the sample.

In table 4, the mutual funds have received a rank based on the Sharpe- and Treynor ratio values. Of the sample, Parnassus Core Equity is the best performing fund in terms of total risk adjusted performance as illustrated by its top Sharpe ratio ranking. Looking at the Treynor ratio ranking, Parnassus also ranks as the top performer. Parnassus beta shows that the volatility or systematic risk of the portfolio is slightly lower than the market, almost 14% less volatile in theory than the market, which considering their returns are impressive. In theory if the market has an annual return of 10% Parnassus should have returns almost 14% lower. The other top performers are Calvert Equity I and PAX ESG Beta Quality Institutional. In general, the sample is relatively similar when the Sharpe or Treynor ratio is used, and no large deviations are detected. None of the sample funds other than Parnassus show a considerable difference in regards to volatility from the market, which might be attributed to the investment universe of the funds and the benchmarks used.

Due to the complications interpreting the Sharpe ratio, the Modigliani measure (M^2) (Modigliani and Modigliani, 1997) can be used as an alternative performance measure. In regards to interpretation, the Modigliani is superior since it is calculated in percentages, presenting the reader with an easier to understand visualization. In an addition to the Modigliani ratio, table 5 includes the Information- and Sortino Ratio. The reason for including the Information ratio, is the ratio's ability to gauge for skill amongst mutual fund managers by measuring the consistency of mutual funds outperforming their benchmark (Goodwin, 1998). Arguably, managers who consistently outperform over long periods are more likely to do so due to skill rather than luck.

Table 5	Information Ratio	M2 Ratio	Sortino Ratio
Benchmark: S&P 500 TR USD		**14,81%**	
Neuberger Berman Socially Rspns C	-0,251	13,88%	-0,36
Neuberger Berman Socially Rspns R3	-0,117	14,49%	-0,17
Neuberger Berman Socially Rspns A	-0,053	14,77%	-0,08
Calvert Equity A	0,035	14,99%	0,05
Neuberger Berman Socially Rspns Inv	-0,004	14,98%	-0,01
Calvert Equity C	-0,183	14,16%	-0,25
Calvert Equity I	0,193	15,61%	0,28
Neuberger Berman Socially Rspns Tr	-0,049	14,77%	-0,07
Neuberger Berman Socially Rspns Inst	0,045	15,20%	0,07
Calvert Equity Y	0,134	15,39%	0,19
Domini Social Equity Inv	-0,401	12,88%	-0,55
Parnassus Core Equity Investor	-0,128	15,79%	-0,17
Sentinel Sustainable Core Opp A	-0,554	13,51%	-0,74
Walden Equity	-0,800	13,40%	-0,95
Domini Social Equity R	-0,272	13,29%	-0,38
American Century Sustainable Equity Inv	-0,606	14,05%	-0,71
Sentinel Sustainable Core Opp I	-0,385	13,91%	-0,54
Domini Social Equity A	-0,391	12,93%	-0,53
Domini Social Equity Instl	-0,253	13,34%	-0,35
Benchmark: Russell 1000 TR USD		**15,12%**	
Pax ESG Beta Quality Individual Investor	0,145	15,34%	0,23
Pax ESG Beta Quality Institutional	0,216	15,63%	0,35
Pax ESG Beta Quality R	0,077	15,06%	0,12

Following the same methodology as Goodwin (Goodwin, 1998), the funds are ranked as follows: an IR of 0.50 is good, 0.75 is very good and an IR of 1 or above is exceptional. All of the funds in the sample have done poorly based on their IR ratios with ratios substantially below 0.50. In

fact, only 7 funds are even able to generate a positive IR rating, with the best performer being Pax ESG Beta Quality. A ratio of 1 is a rare feat, with only a small percentage of mutual funds achieving such a number according to Goodwin (1998).

From table 5, we see that the top best performing funds based on M^2 are Parnassus Core Equity, Calvert Equity I and Pax ESG Beta Quality Institutional, which are also the top performers when ranked based on the traditional performance measures, Sharpe and Treynor. Interestinglym Parnassus has an information ratio of -0.17 which could indicate that the performance of the fund is not attributable to manager skill but rather luck. Among the worst performers, we find Walden Equity, Sentinel Sustainable Core Opp A and American Century Sustainable Equity Inv, which have the worst Information ratios of the sample. This is also in line with the other performance measures, where the above three are also some of the worst performers.

The Sortino ratio is calculated with a minimum accepted return (MAR) equal to that of the proxy (market). In this case the market will be the benchmarks used on each fund as used on Morningstar and the websites of the funds. Essentially the MAR can be any value, as long as there is consistency when making the comparisons.

Looking at table 5 it is clear to see that most of the funds generate negative Sortino ratios. Only two funds out of the sample have positive ratios, Calvert Equity and Pax ESG Beta Quality, and out of those Calvert had the best performance with outperformance in 46 out of the 84 months during the sample period, while Pax ESG had the highest excess return of 5.24%, interestingly during a month where both the funds and benchmarks showed high negative returns. During the period, Parnassus suffered the worst negative excess return during a month of -4.02%, no other in the sample had a negative excess return of over -3%. The worst overall performer was Sentinel Sustainable Core which had negative excess returns in 50 out if the 84 months. It is important to keep in mind that the results are against a benchmark, and while only two benchmarks are included it will affect the Sortino ratio. For that reason, it is important to review the funds based on a series of different performance measures.

Jensen's alpha

This part of the analysis investigates how well the mutual funds have been at creating risk-adjusted performance. To do this Jensen's alpha (Jensen, 1968) is applied where the null hypothesis and the alternative hypothesis are as following:

$$H0: \alpha = 0 \qquad H1: \alpha \neq 0$$

A rejection of the null hypothesis would imply a significant positive or negative risk-adjusted performance. For this analysis, a confidence interval of 95% is selected. Consequently, for the estimated alpha to be significant, they must produce a t-stat equal to or greater than the critical value of 1.96. To examine the robustness of the alpha estimates the full-length analysis is divided into smaller time-periods and the linear regressions run again. The included linear regressions will 10, 7, 5, 3 and 1. The 10-year Jensen Alpha analysis, have been included to show the impact of the financial crisis.

Jensen's Alpha 10-year horizon (2006-2015)

10y Alpha

S&P 500 TR USD	Alpha	T-stat	Beta	R^2
Neuberger Berman Socially Rspns C	-1,62%	-1,024	0,995194	0,99353121
Neuberger Berman Socially Rspns R3	-1,11%	-0,700	0,995198	0,993528882
Neuberger Berman Socially Rspns A	-0,86%	-0,545	0,995169	0,993507234
Calvert Equity A	0,04%	0,025	0,998088	0,995063545
Neuberger Berman Socially Rspns Inv	-0,66%	-0,417	0,995108	0,993530446
Calvert Equity C	-0,73%	-0,527	0,998031	0,995067287
Calvert Equity I	0,57%	0,415	0,998088	0,995064145
Neuberger Berman Socially Rspns Tr	-0,83%	-0,527	0,995148	0,993509561
Neuberger Berman Socially Rspns Inst	-0,48%	-0,302	0,995433	0,993499988
Calvert Equity Y	0,35%	0,254	0,998795	0,995060835
Domini Social Equity Inv	-0,75%	-0,648	1,007215	0,996583163
Parnassus Core Equity Investor	0,19%	0,124	0,980607	0,993710118
Sentinel Sustainable Core Opp A	-1,79%	-1,780	0,996918	0,997373479
Walden Equity	-1,49%	-1,455	0,991072	0,99725514
Domini Social Equity R	-0,41%	-0,354	1,00725	0,996555823
American Century Sustainable Equity Inv	-0,83%	-1,263	0,9842	0,998845419
Sentinel Sustainable Core Opp I	-1,44%	-1,428	0,997097	0,997379267
Domini Social Equity A	-0,75%	-0,644	1,007159	0,996579426
Domini Social Equity Instl	-0,36%	-0,314	1,008115	0,996584344
Russell 1000 TR USD				
Pax ESG Beta Quality Individual Investor	0,43%	0,236	1,014198	0,99158
Pax ESG Beta Quality Institutional	0,69%	0,373	1,014697	0,99162
Pax ESG Beta Quality R	0,20%	0,110	1,014148	0,99154

Table 6

As previously mentioned, all mutual funds have been grouped together with their respective benchmarks as listed in Morningstar Direct.

The 10-year period covers a period where the world's stock markets were recovering from one of the worst financial crisis in history. The 10-year period includes both the impact of the crisis itself and the recovery period, therefore the results will be impacted by this. The high average returns during the recovery period will impact the Alpha's, but should still give an overview of the period.

With the mutual funds benchmarked against S&P 500, all but one of the funds showed negative alpha, however none of them show significant underperformance on a 5% significant level.

Sentinel Sustainable Core Opp A with a negative alpha of -1.79% (t-stat -1.780) came close to a level of significant underperformance, as well as Walden Equity with a negative alpha of -1.49 (t-stat-1.428).

The Pax ESG Beta Quality fund benchmarked against the Russell 1000, show positive alpha's across the board on the investor shares, institutional shares and R shares, which is of course to be expected, with the difference in the alpha's and returns are due to the expenses and load charges. The slight underperformance from Sentinel Sustainable is not statistically significant at the 95% level, it is however significant at 90% level.

Overall the mutual funds show very similar volatility to the market, which can probably be related to the financial crisis. None of the included funds differs in volatility by more than 1% from the market.

Jensen's Alpha 7-year horizon (2009-2015)

7y Alpha

S&P 500 TR USD	**Alpha**	**T-stat**	**Beta**	**R^2**
Neuberger Berman Socially Rspns C	-0,55%	-0,334	0,943367	0,91167
Neuberger Berman Socially Rspns R3	-0,03%	-0,018	0,942609	0,91163
Neuberger Berman Socially Rspns A	0,22%	0,131	0,942256	0,91123
Calvert Equity A	0,42%	0,284	0,961997	0,93032
Neuberger Berman Socially Rspns Inv	0,40%	0,243	0,943421	0,91176
Calvert Equity C	-0,32%	-0,217	0,960867	0,93046
Calvert Equity I	0,96%	0,649	0,961756	0,93037
Neuberger Berman Socially Rspns Tr	0,23%	0,139	0,94324	0,91105
Neuberger Berman Socially Rspns Inst	0,59%	0,358	0,942859	0,91122
Calvert Equity Y	0,77%	0,515	0,961349	0,92998
Domini Social Equity Inv	-1,25%	-0,999	1,025187	0,95534
Parnassus Core Equity Investor	0,34%	0,236	0,868259	0,92199
Sentinel Sustainable Core Opp A	-1,06%	-1,155	0,984334	0,97328
Walden Equity	-1,41%	-1,583	0,94686	0,97297
Domini Social Equity R	-0,87%	-0,693	1,023982	0,95489
American Century Sustainable Equity Inv	-0,77%	-1,168	0,970902	0,98557
Sentinel Sustainable Core Opp I	-0,71%	-0,762	0,98411	0,97284
Domini Social Equity A	-1,21%	-0,966	1,023482	0,95496
Domini Social Equity Instl	-0,82%	-0,653	1,025033	0,95508
Russell 1000 TR USD				
Pax ESG Beta Quality Individual Investor	0,71%	0,437	0,985569	0,92229
Pax ESG Beta Quality Institutional	0,97%	0,596	0,986137	0,92294
Pax ESG Beta Quality R	0,46%	0,283	0,985433	0,92223

Table 7

The 7-year period comes immediately after the big blow of the financial crisis, with the recovery period of the market. This 7-year sample shows that half of the mutual funds manages to show a positive Alpha against their benchmarks, with the top performer being Calvert Equity I, however none of them is statistically significant at the 95% level. The other funds with negative alpha do not show any statistical significance at the 95% level, Walden Equity is once again one of the bottom performers. Parnassus Core Equity has the lowest beta of the group with 0.86.

The better performing funds for this period have the lowest beta ranging from 0.93-0.91.
In the 10-year period every mutual fund in the sample showed an R2 measure of above 99%, which is in line with the beta estimates, which all were within 1% of the market. The patterns in the mutual fund performance is thus in line with the index. The 7-year period shows slightly lower R2, an also differs in the range of beta estimates, from 2.5% more volatile, to 14% less volatile than the market.

Jensen's Alpha 5-year horizon (2011-2015)

5y Alpha

S&P 500 TR USD	**Alpha**	**T-stat**	**Beta**	**R^2**
Neuberger Berman Socially Rspns C	-2,90%	-1,796	1,00507	0,91672
Neuberger Berman Socially Rspns R3	-2,38%	-1,473	1,004621	0,91674
Neuberger Berman Socially Rspns A	-2,12%	-1,311	1,002954	0,91587
Calvert Equity A	-1,01%	-0,649	0,964073	0,91563
Neuberger Berman Socially Rspns Inv	-1,93%	-1,193	1,003708	0,91648
Calvert Equity C	-1,74%	-1,120	0,963459	0,91592
Calvert Equity I	-0,48%	-0,308	0,962826	0,91582
Neuberger Berman Socially Rspns Tr	-2,09%	-1,291	1,00367	0,91604
Neuberger Berman Socially Rspns Inst	-1,75%	-1,076	1,003801	0,91598
Calvert Equity Y	-0,66%	-0,421	0,963314	0,91545
Domini Social Equity Inv	-2,94%	-2,097	1,03872	0,93961
Parnassus Core Equity Investor	0,95%	0,640	0,853173	0,90433
Sentinel Sustainable Core Opp A	-1,90%	-2,283	1,012916	0,97691
Walden Equity	-2,29%	-2,277	0,977792	0,96422
Domini Social Equity R	-2,62%	-1,854	1,037391	0,93871
American Century Sustainable Equity Inv	-0,34%	-0,560	0,989897	0,98677
Sentinel Sustainable Core Opp I	-1,62%	-1,942	1,014595	0,97681
Domini Social Equity A	-2,93%	-2,082	1,039926	0,93969
Domini Social Equity Instl	-2,55%	-1,805	1,039303	0,93922
Russell 1000 TR USD				
Pax ESG Beta Quality Individual Investor	-2,34%	-1,588	1,098882	0,94246
Pax ESG Beta Quality Institutional	-2,08%	-1,415	1,0983	0,94272
Pax ESG Beta Quality R	-2,60%	-1,751	1,099209	0,94148

Table 8

The 5-year period covers a relatively stable period in that - apart from a setback in late 2011 – early 2012 - the period sees a general upward trend, as illustrated by figure 6. In the 5-year period only 1 fund manages to slightly outperform the benchmarks, and it is still not significant at any confidence levels. It does however hint that the Parnassus fund with a low systematic risk performs best.

The rest of the funds all underperform their benchmarks, and 4 of them at a statistically significant 95% confidence level, 2 of them were close at being statistically significant at 98% confidence level. If the 90% confidence level is included the number of significant underperformers rise from 9 out of 22 in the sample. The funds that underperform at significant levels all have betas above 0.97. The average negative alpha across the 5-year alpha horizon is -1.96%.

Once again, the R2 measure experiences a decrease compared to the previous period. As mentioned R2 measures the explanatory power of a model, however the drop is not low enough to be considered as a misspecification of the benchmarks. If the measure drops it could be the benchmarks ability of accurately explaining the price movements in the mutual funds that is the culprit. This is where the Multifactor models, with their additional explanatory variables could alter that.

Jensen's Alpha 3-year horizon (2013-2015)

3y Alpha

S&P 500 TR USD	Alpha	T-stat	Beta	R^2
Neuberger Berman Socially Rspns C	-0,87%	-0,427	0,980792	0,90532
Neuberger Berman Socially Rspns R3	-0,37%	-0,181	0,982344	0,90559
Neuberger Berman Socially Rspns A	-0,11%	-0,055	0,979724	0,90481
Calvert Equity A	0,43%	0,268	0,885074	0,92693
Neuberger Berman Socially Rspns Inv	0,10%	0,051	0,979168	0,90470
Calvert Equity C	-0,31%	-0,192	0,88579	0,92686
Calvert Equity I	0,95%	0,596	0,884184	0,92681
Neuberger Berman Socially Rspns Tr	-0,08%	-0,039	0,980049	0,90481
Neuberger Berman Socially Rspns Inst	0,28%	0,980	0,980298	0,904911
Calvert Equity Y	0,77%	0,480	0,88481	0,92650
Domini Social Equity Inv	-2,90%	-1,651	1,017663	0,93253
Parnassus Core Equity Investor	0,47%	0,253	0,943167	0,91589
Sentinel Sustainable Core Opp A	-2,22%	-2,056	0,989382	0,97206
Walden Equity	-2,03%	-1,651	0,966395	0,96229
Domini Social Equity R	-2,56%	-1,453	1,016138	0,93199
American Century Sustainable Equity Inv	-0,91%	-1,046	0,973375	0,98116
Sentinel Sustainable Core Opp I	-1,96%	-1,814	0,990815	0,97196
Domini Social Equity A	-2,92%	-1,658	1,017448	0,93256
Domini Social Equity Instl	-2,50%	-1,415	1,016036	0,93174
Russell 1000 TR USD				
Pax ESG Beta Quality Individual Investor	-1,10%	-0,700	1,023053	0,94659
Pax ESG Beta Quality Institutional	-0,83%	-0,533	1,022256	0,94663
Pax ESG Beta Quality R	-1,32%	-0,840	1,020617	0,94583

Table 9

The 3-year period shows the timeframe of 2013-2015 and therefore shows the period after the brief downturn in 2011 and 2012 and as illustrated by figure 6, the period was marked by growth with no noticeable negative movements. The average annualized return of the included funds in the 5-year period was 10.51%, against the average annualized returns in the 3-year period being 13.80% and increase of 3.29%. Both could be even higher if the low return year of 2015, were excluded. If the 2011-2015 period were changed to exclude 2015, the avg. ann. Returns would rise 3.04%, and additionally if excluded from the 2013-2015 period, the returns would increase to 21.93% from the 13.80%, that is a rise of 8.13%. Both would however still underperform the market on average with 2015 excluded.

6 funds in the S&P 500 benchmark, slightly outperform but again nothing statistically significant, once again the ones with the lowest beta tend to be the best performers, but Neuberger Berman Socially Responsible Inst and Inv, both have high beta and positive alpha. Once again Sentinel Sustainable A is underperforming at a statistically significant level of 95%, 3 additional funds underperform at a significant level, Sentinel Sustainable I, Domini Social Equity A, Domini Social Equity Inv and Walden Equity.

The R2 measure drops again slightly for the 3-year period compared to the previous time periods, but nothing below 0.90.

Jensen's Alpha 1-year horizon (2015-2015)

1y Alpha

S&P 500 TR USD	**Alpha**	**T-stat**	**Beta**	**R^2**
Neuberger Berman Socially Rspns C	-3,20%	-2,210	0,859346	0,98693
Neuberger Berman Socially Rspns R3	-2,71%	-1,930	0,858612	0,98773
Neuberger Berman Socially Rspns A	-2,47%	-1,700	0,858038	0,98684
Calvert Equity A	1,86%	0,681	0,881908	0,95705
Neuberger Berman Socially Rspns Inv	-2,26%	-1,540	0,856157	0,98654
Calvert Equity C	1,11%	0,408	0,881868	0,95718
Calvert Equity I	2,35%	0,862	0,880556	0,95734
Neuberger Berman Socially Rspns Tr	-2,40%	-1,643	0,85756	0,98668
Neuberger Berman Socially Rspns Inst	-2,08%	-1,433	0,857413	0,98677
Calvert Equity Y	2,17%	0,793	0,881579	0,95697
Domini Social Equity Inv	-9,12%	-3,375	0,929671	0,96210
Parnassus Core Equity Investor	-2,52%	-1,034	0,81599	0,95995
Sentinel Sustainable Core Opp A	-3,25%	-1,481	1,002506	0,97815
Walden Equity	-1,96%	-0,897	0,966096	0,97679
Domini Social Equity R	-8,74%	-3,205	0,92965	0,96149
American Century Sustainable Equity Inv	-3,23%	-2,068	0,948952	0,98753
Sentinel Sustainable Core Opp I	-3,01%	-1,367	1,00419	0,97809
Domini Social Equity A	-9,22%	-3,399	0,935737	0,96232
Domini Social Equity Instl	-8,81%	-3,235	0,927954	0,96142
Russell 1000 TR USD				
Pax ESG Beta Quality Individual Investor	1,60%	1,082	1,081089	0,99107
Pax ESG Beta Quality Institutional	1,89%	1,279	1,078173	0,99105
Pax ESG Beta Quality R	1,36%	0,949	1,077243	0,99153

Table 10

The 1-year horizon covers January 2015-December 2015, and this period experienced some of the worst returns of the 10-year period in their average annualized returns, if you exclude the 2008. The average annualized return over the period is -0.79%. 6 funds have statistically

significant underperformance during 2015 at the 95% level, Domini Social Equity show significant underperformance at 99% level, at all of the 4 Class shares with a 2015 alpha of –8.74%-9.22%. 2 funds show statistically significant underperformance at the 90% level. 8 funds have alpha of -3 or worse, Sentinel Sustainable interestingly do not show statistical significance at any level with the over -3% alpha. 7 funds do show significant alpha of 1.11% alpha or above of outperformance, but nothing statistically significant. The sample has the lowest average beta of the sample horizons. The R2 measure has risen again, which can probably be attributed to the shortness of the dataset.

Multifactor model

In addition to the single-index model, Fama and French's 5-Factor model (Fama and French, 2015) is included in this study. The reason for this is as mentioned in the Performance measures section, that the model should be better at explaining what drives returns amongst the mutual funds due to the added factors of the model. Using French's data library (French, 2016), data on each factor has been collected. The North American 5 factors have been chosen, due to the investment universe of the funds mainly being in the domestic market.

For the market factor and risk-free rate, the benchmark listed on Morningstar.dk for each fund as well as the U.S. Treasury Bill 1 month is used. Furthermore, due to the nature of the study, only data spanning the 7-year period have been used.

Multi factor model	Alpha p.a	T-test	Beta	T-test	SMB	T-test	HML	T-test	RMW	T-test	CMA	T-test	R^2
Neu. Ber. Soc. Rspns C	-0,01%	-0,6999	0,920	27,99	0,00325	5,331	-0,00072	-0,97	0,001291	1,34	-0,000437	-0,39	93,62%
Neu. Ber. Soc. Rspns R3	-0,50%	-0,339	0,920	27,89	0,00322	5,267	-0,00068	-0,92	0,001306	1,35	-0,000464	-0,41	93,57%
Neu. Ber. Soc. Rspns A	-0,25%	-0,170	0,919	27,81	0,00323	5,27	-0,00067	-0,90	0,001313	1,35	-0,000486	-0,43	93,54%
Calvert Equity A	-0,13%	-0,094	0,959	32,29	0,00225	4,076	-0,00103	-1,54	0,000574	0,66	-0,001664	-1,64	94,89%
Neu. Ber. Soc. Rspns Inv	-0,07%	-0,049	0,921	27,92	0,00322	5,273	-0,00070	-0,95	0,001290	1,33	-0,000438	-0,39	93,59%
Calvert Equity C	-0,87%	-0,650	0,958	32,36	0,00223	4,067	-0,00101	-1,52	0,000576	0,66	-0,001708	-1,69	94,91%
Calvert Equity I	0,42%	0,313	0,959	32,31	0,00225	4,088	-0,00102	-1,53	0,000584	0,67	-0,001673	-1,65	94,90%
Neu. Ber. Soc. Rspns Tr	-0,25%	-0,168	0,921	27,76	0,00321	5,22	-0,00070	-0,94	0,001293	1,33	-0,000501	-0,44	93,51%
Neu. Ber. Soc. Rspns Inst	0,12%	0,080	0,920	27,78	0,00322	5,235	-0,00069	-0,93	0,001305	1,34	-0,000442	-0,39	93,52%
Calvert Equity Y	0,22%	0,164	0,958	32,24	0,00227	4,112	-0,00102	-1,53	0,000586	0,67	-0,001682	-1,66	94,88%
Domini Social Equity Inv	-1,67%	-1,637	1,013	44,67	0,00226	5,373	0,00060	1,19	0,002375	3,56	-0,002935	-3,79	97,31%
Parnassus Core Equity I	-0,61%	-0,441	0,900	29,75	0,00080	1,429	-0,00057	-0,84	0,003286	3,69	0,001343	1,30	93,54%
Sentinel Sust. Core Opp A	-1,07%	-1,217	0,970	49,8	0,00106	2,924	0,00045	1,02	0,000510	0,89	-0,001791	-2,69	97,81%
Walden Equity	-1,80%	-2,025	0,953	48,29	0,00090	2,456	-0,00068	-1,54	0,000773	1,33	0,000643	0,95	97,57%
Domini Social Equity R	-1,32%	-1,282	1,012	44,35	0,00231	5,458	0,00051	0,995	0,002366	3,53	-0,002800	-3,68	97,27%
Am. Century Sust. Equity I	-1,06%	-1,669	0,976	69,26	0,00057	2,176	-0,00068	-2,16	0,000522	1,26	0,001618	3,36	98,80%
Sentinel Sust. Core Opp I	-0,71%	-0,810	0,970	49,47	0,00105	2,89	0,00045	1,01	0,000511	0,89	-0,001849	-2,76	97,78%
Domini Social Equity A	-1,63%	-1,596	1,011	44,49	0,00227	5,383	0,00057	1,12	0,002321	3,47	-0,002959	-3,81	97,29%
Domini Social Equity Instl	-1,23%	-1,203	1,013	44,39	0,00226	5,348	0,00058	1,14	0,002325	3,47	-0,002932	-3,76	97,27%
Pax ESG Beta Quality Indi.	-0,08%	-0,057	0,995	32,55	0,00219	3,836	-0,00203	-2,96	0,000022	0,02	-0,001923	-1,84	94,99%
Pax ESG Beta Quality Inst.	0,18%	0,131	0,996	32,67	0,00215	3,776	-0,00205	-3,00	-0,000021	-0,02	-0,001881	-1,81	95,02%
Pax ESG Beta Quality R	-0,31%	-0,229	0,995	32,57	0,00214	3,748	-0,00205	-2,99	-0,000084	-0,09	-0,001959	-1,88	94,99%
Table 11													

With the introduction of additional risk factors from F&F's 5-factor model (Fama and French, 2015), it is clear that the ability of the mutual funds to produce positive alpha isn't as evident as when the CAPM is used. This is to be expected as the additional risk factors are meant to capture the variation in expected returns better than the CAPM. From table 11 only 4 funds are able to post positive alpha, but not at any significant level. The remaining funds show negative alpha's but still performing neutrally overall. Walden Equity does show significant underperformance on 95% level, and American Century Sustainable Equity show significance at the 90% level. Additionally, two funds are close to significant underperformance at the 90% level.

Looking at the size factor, all the funds show positive loadings on a 95% significant level, positive loading on this factor represent an exposure toward small-cap companies. This has to be taken with a grain of salt however, the funds are all Large-Cap according to their Morningstar category, and the benchmarks are Large-cap indexes.

When looking at the HML factor 16 have negative loadings, but only Pax ESG Beta show results on significant level. Negative HML ratio suggest a lean towards growth stocks, which corresponds with the Morningstar category. 6 show positive loading without significance, which point towards value. Since none of the funds included, are restricted to a certain investment style other than ESG, this should not have major influence.

The new factors Profitability and Investment show some significant results, for profitability 5 show significant confidence levels at the 99% level, which show a robust profitability. The rest show no significant RMW levels. 9 of the funds in the sample show significant negative loadings in the CMA factor, which indicates a tilt towards companies that invest a lot. 1 fund show positive loading which indicates a more conservative approach.

In terms of explanatory power compared to the single-index 7-year model the multifactor model does show improvements explaining the variation in expected returns with many of the regressions showing R-square estimates a few percentage points above the single-index model.

Overall no fund show any significant stock picking ability among the sample funds, however Walden Equity show a significant underperformance after the additional factors are added to the model, which are in line with the annualized returns where Walden is underperforming the benchmark by an average 1.95% in returns over the 7-year period, additionally it is 0.62% behind the next worst performing fund over the period. For an average investor, the mostly insignificant alpha estimates, illustrate an opportunity achieve similar returns if invested in a SRI Index fund, with similar exposure. This would also decrease the paid fees, which is well below the actively managed funds.

Mutual Fund Performance at the height of the financial crisis

Fin. Crisis 08-09

S&P 500 TR USD	Alpha 08-09	T-stat	Beta	R^2	Alpha 2008	Alpha 2009
Neuberger Berman Socially Rspns C	-0,78%	-0,174	0,984	0,9340	1,2%	6%
Neuberger Berman Socially Rspns R3	-0,31%	-0,069	0,985	0,9336	1,7%	6%
Neuberger Berman Socially Rspns A	-0,03%	-0,006	0,985	0,9338	2,0%	7%
Calvert Equity A	3,65%	0,987	0,983	0,9542	2,5%	7%
Neuberger Berman Socially Rspns Inv	0,19%	0,042	0,986	0,9339	2,2%	7%
Calvert Equity C	2,85%	0,770	0,982	0,9541	1,6%	6%
Calvert Equity I	4,23%	1,142	0,984	0,9542	3,1%	7%
Neuberger Berman Socially Rspns Tr	-0,02%	-0,004	0,986	0,9340	2,0%	7%
Neuberger Berman Socially Rspns Inst	0,33%	0,073	0,985	0,9336	2,4%	7%
Calvert Equity Y	3,87%	1,044	0,984	0,9541	2,6%	7%
Domini Social Equity Inv	3,97%	1,450	1,078	0,9785	3,2%	6%
Parnassus Core Equity Investor	8,81%	2,270	0,844	0,9330	16,4%	6%
Sentinel Sustainable Core Opp A	-2,86%	-0,818	1,007	0,9607	-8,7%	3%
Walden Equity	2,02%	1,044	0,896	0,9844	4,1%	1%
Domini Social Equity R	4,22%	1,526	1,076	0,9781	3,2%	7%
American Century Sustainable Equity Inv	-1,35%	-0,742	0,941	0,9874	1,4%	-2%
Sentinel Sustainable Core Opp I	-2,30%	-0,655	1,006	0,9603	-8,3%	4%
Domini Social Equity A	3,91%	1,430	1,077	0,9786	3,1%	6%
Domini Social Equity Instl	4,21%	1,536	1,079	0,9786	3,1%	7%
Russell 1000 TR USD						
Pax ESG Beta Quality Individual Investor	1,47%	0,292	1,033	0,9282	4,84%	13%
Pax ESG Beta Quality Institutional	1,67%	0,333	1,032	0,9289	4,93%	13%
Pax ESG Beta Quality R	1,32%	0,262	1,033	0,9277	4,89%	13%

Table 12

This period covers the hit of the financial crisis in 2008, as well as the recovery the market experienced in 2009. The results are very different when you look at the periods previously analysed, and 15 out of the 22 show positive alpha. Parnassus show significant outperformance at the 95% confidence level, 4 are very close to a being significant at 90% confidence level. Parnassus had an Alpha of 8.81% by far the largest alpha across all samples, which would increase to 16.4% if only 2008 were chosen. The socially responsible funds show only 2 negative alpha during 2008 and 1 during 2009, it is possible that SRI funds were not hit as hard as the benchmark, due the nature of the invested stocks.

Portfolio holdings vs excluded stocks

10 Year Returns	7 Year Returns	5 Year Returns	3 Year Returns
7,30%	14,81%	12,57%	15,13%
Sin 10	Sin 7	Sin 5	Sin 3
2,23%	10,76%	-2,26%	0,94%
13,32%	20,54%	16,72%	20,00%
7,05%	9,80%	14,14%	18,34%
2,98%	36,72%	2,88%	2,00%
3,70%	5,97%	1,29%	-2,56%
8,83%	15,00%	11,54%	18,36%
9,98%	21,85%	19,78%	26,82%
-1,07%	-0,93%	-8,14%	-23,13%
5,77%	2,30%	4,07%	-0,52%
5,04%	20,79%	27,44%	30,14%
7,91%	4,47%	-4,24%	-0,55%
2,03%	17,51%	12,49%	19,46%
7,86%	11,19%	6,49%	7,75%
-4,67%	7,43%	8,88%	24,97%
8,21%	19,47%	0,84%	16,38%
5,28%	13,52%	7,46%	10,56%
ESG 10	ESG 7	ESG 5	ESG 3
9,17%	12,3%	11,89%	12,49%
4,34%	7,6%	4,18%	12,94%
6,03%	6,8%	7,50%	8,53%
15,16%	20,5%	24,54%	28,07%
9,65%	10,2%	10,12%	6,85%
5,28%	11,3%	8,71%	12,13%
-1,27%	4,0%	0,86%	40,73%
8,25%	11,8%	11,57%	14,16%
6,02%	12,1%	10,30%	12,29%
8,22%	12,1%	11,98%	16,53%
-1,53%	6,3%	0,56%	18,39%
1,03%	0,7%	1,04%	-1,85%
13,05%	18,8%	14,87%	18,91%
8,95%	10,3%	3,55%	-0,03%
17,43%	26,1%	24,54%	29,83%
7,32%	11,39%	9,75%	15,33%

The sample for this, were chosen at random, but different industries were included.

The 10-year period shows that the ESG screened stocks have a slightly higher average over the benchmarks which ranks at 7.30% compared to the 7.32% of the ESG stocks. The excluded stocks show lower average returns of 5.28%. In the 5-year period the excluded stocks show an average return over the period of 13.52% which is slightly higher than the 11.39% of the ESG stocks, it does however not reach the levels of the benchmark. For the 5 and 3-year period it shows an average of 7.46% and 10.56% respectively for the excluded stocks, this is not enough to

outperform the benchmark. For the ESG screened stocks it shows averages of 9.75% for the 5-year and 15.33% for the 3-year. The 5-year return is not performing better than the benchmark, however the 3-year return shows slightly higher return but nothing remarkable.

Summary

This section evaluates the performance of 8 American SRI mutual funds. Data for the analysis covers monthly returns from January 2006 to December 2015. The different class types of the funds were added to showcase the effect of fees on the performance, and in some cases, there were a noticeable difference. The January 2009 to Dember 2015 is the main time frame, the 3 previous years were added to showcase the effect of the 2008 financial crisis.

Several ex-post performance measures have been applied. Furthermore, as the sample group consists of mutual funds pursuing socially responsible investment strategies, CAPM based models, e.g. Jensen's alpha, may not provide correct results, or the full picture to be more exact. Consequently, Fama & French's 5-factor (Fama and French, 2015) model was included because it incorporates multiple explanatory variables to better illustrate what drives the returns.

The initial performance evaluation, which is based on traditional ratios, serves as more of comparison between the funds, and not as much as an evaluation of their ability to outperform a benchmark. Nonetheless, based on the Sharpe- and Treynor Ratios (Sharpe, 1966; Treynor, 1965), the 3 top ranking funds are *Parnassus Core Equity, Pax ESG Beta Quality Institutional* and *Calvert Equity I*. The observations show that there is no major difference in the rankings, with the top 3 being the same in both Sharpe- and Treynor ratios, and a difference of no more than 2 ranks across the other sample funds.

After applying the additional three performance measures, Information Ratio (IR) Modigliani ratio (M2) and the Sortino ratio (Goodwin, 1998; Modigliani and Modigliani, 1997; Sortino and Van Der Meer, 1991a) the results are somewhat similar, but with Parnassus dropping a few places according to the IR, however the M2 ratio for Parnassus is leading the pack. Calvert

Equity and Pax ESG Beta Quality once again scores high on both. It is worth noticing that none of the mutual show any consistency across the sample in their investment performance, which is likely skewered by the high index returns. The Sortino ratio largely keeps the ranking intact with Calvert and Pax ESG leading the rankings, however Parnassus ranks 10th in the Sortino ratio, with less than half of the months outperforming the benchmark.
The worst performers are the Domini, and Walden Equity fund with performance ratios at the bottom or close to the bottom of every measure.

In regards to the alpha a summary is given in the table below, all of which show statistical underperformance.

Significant results	90%	95%	98%	99%
10 Year	1	0	0	0
7 Year	0	0	0	0
5 Year	5	4	0	0
3 Year	3	1	0	0
1 Year	2	2	0	4

The five-factor model only show 1 underperforming significant result with Walden Equity at the 95% level. Compared to the 7-year period, a slight increase in R2 show the models ability to slightly explain the drivers better. RMW showed 5 significant results, showing robust investment performance. CMA tend to show that the funds tilt towards companies who invest a lot, with 9 significant results.

It is evident that the choice of performance model will have an effect on the underlying results. Therefore, investors should be aware of the methodology used when comparing performance of mutual funds. Nevertheless, based on the findings the majority of funds examined show no significant ability to outperform the market.

The analysis of the SRI funds against the benchmarks during the financial crisis gave some interesting results most of the funds had higher alpha during 2008, this suggests that they were not as effected by the crisis as a whole like the benchmark. Additionally they also showed higher alpha during 2009, and as Areal, Cortez, Silva (2010) study showed, the SRI funds tend to perform better during a crisis.

The evaluation of the ESG stocks and Sin stocks showed no outperformance from the sin stocks but a small outperformance of ESG stocks in 2 periods it would be interesting to investigate the entire sample stocks on the S&P 500 in the two groups, and measure their performance, and check for any statistical significance in the sample. This sample however does not show overall better performance of the market.

Discussion

The purpose of this chapter is to evaluate the quality of this study's research, and also critically evaluate the analytical findings and the applied approach. This is conducted through the commonly used criteria validity and reliability (Bryman, 2015). The evaluation will cover both the data analysis presented in this study as well the method by which the data was selected and collected. Since this study evaluates the sample of mutual funds quantitatively, reliability, validity and generalizability will be considered in regards to the quantitative approach. In regards to the screening process, the process is based on well-known factors, and the included firms (Blacklisted stocks) should appear on any list of excluded firms.

Reliability

In the following section, the consistency of the study is discussed. The consistency is considered in regards to the measures and methods used throughout the analysis. A study is believed to be reliable when the study and the consequent findings are replicated (Bryman, 2015).

Reliability assess the consistency of the study. By ensuring that the factors used throughout the study are kept constant across entities, internal reliability is heightened. Concerning the measures employed in the analysis, every mutual fund has been susceptible to the same performance evaluating measures (Bryman, 2015). In the context of time, replicating this study at a later point in time would still not affect the results considering that the data employed for this study are all historical. Therefore, their values are unlikely to change from T0 to T1. Additionally, to enforce internal reliability only one data source has been used to retrieve data on the mutual funds and their benchmarks. By relying on a single data source, consistency is assumed. Due to lack of possibility to assess Morningstar Directs methodology and calculations, a test has not been conducted. In terms of the performance measures employed in this study, all are well-known and often used in performance studies such as this one. Therefore, any inconsistencies are unlikely to occur.

Validity

To capture and convey the discussion of validity, the evaluation criteria is divided into two categories internal and external.

Internal validity

Internal validity seeks to uncover the integrity of the causal link between a dependent and an independent variable (Bryman, 2015). The assumed causal link between expected returns and the investment strategies of the mutual funds is out of the scope in this study. As outlined in the literature review, the presented performance measures, calculates performance differently by stressing various variables. However, there is no emphasis on the explanatory variables of the performance measures. This means that the explanatory variables, such as beta in CAPM (Sharpe, 1964), capability to explain the investment return has not been considered. The purpose of the study has merely been to describe the performance of the mutual funds comprehensively, by emphasizing the measure of fit determined with R^2. However, in an attempt to improve the internal validity, several steps have been taken. Apart from applying methods that use a single explanatory variable to determine performance this study also includes multi-factor models. Using a multi-factor model ensured the performance of the mutual funds was viewed from a different angle, which was proved to be better capable to explain the performance. This approach is especially relevant considering the literature (Fama & French, 2006) on CAPM and its limitations.

Furthermore, the internal validity is sought strengthened by using many observations thereby avoiding exceptionally lucky years and any "one-off" actions performed by the mutual funds such as cutting costs / increasing their expenses one year that affect the results. With regard to the data used, its normality was tested using the Jarque-bera and Shapiro-Wilk test (Jarque and Bera, 1987; Shapiro and Wilk, 1965).

The internal validity could have been strengthened further, by increasing the scope of the analysis to include variable that seek to use variables to increase the explanatory power of the returns and what drives them. One variable to use could be expenses, because performance difference in funds could to some degree be explained in the varying expense ratios.

External validity

The study seeks to apply its findings *"… beyond the confines of the particular context in which the research was conducted"* (Bryman, 2015, p. 163). Thus, generalization in relation to this study concerns only other large-cap mutual funds pursuing a socially responsible investment strategy. To be able to generalize academics are often preoccupied with samples and their representativeness, as this parameter is the key to generalization (Bryman, 2015). However, the sample used in this analysis was picked after the so-called *non-probability sampling method* also called convenience sampling (Bryman, 2015). Reasons to why the sample is not randomly chosen. Firstly, it would have been extremely difficult to obtain access to more databases, as most databases are not accessible to students or private individuals. Secondly, even if capable of assessing more databases, these could require a costly fee. Additionally, the outline of the large databases could prove difficult due to limitations in space or the like. Also, quite some time may have to be spent on identifying possible differences in the measurements reported in the databases. Thus, the sample used in the analysis has been based on convenience sampling, which is determined by what is assessable to the researcher (Bryman, 2015).

Given the sampling method, the frame of the sample is possibly inadequate to use as a basis to establish a general tendency (Bryman, 2015). The findings from a convenience sample is not directly transferable to the population, as it does not necessarily constitute a representative sample. Yet, the findings from a convenience sample can be used as a springboard for further research. Moreover, the findings could reinforce elaborations on links from the existing research (Bryman, 2015). The purpose of this study is merely to describe the actual return of actively managed mutual funds in the light of the available theories.

Future Research

As mentioned in Scientific Contribution, this study of actively managed mutual funds performances is not exhaustive and should therefore be viewed as a preliminary examination more than a complete study. Thus, this study poses significant potential for future research to investigate. This applies to both studies that go into greater depth or are of more expansive nature.

For this study, unconditional performance measures are applied. This means that risk and return are constant over time, and is the method applied for this study. For future research, a time varying beta and alpha in the form of Conditional Performance Models (CPM) that takes into account the state of the economy could advantageously be included. To capture the full effect of conditional performance models the time-period investigated in this study may sought extended in order to cover multiple market cycles. This could be especially interesting when looking at times of financial crisis.

In line with traditional studies conducted on mutual fund performance, the benchmark selected is of an index type such as the S&P 500. As these types of index benchmarks are not subject to the same expenses as mutual funds are, it affects the alpha estimates of mutual funds negatively, possible causing fewer funds to exhibit outperformance.
An alternative to using index benchmarks could be using Exchange Traded Funds (ETF) or index funds. These types of benchmarks are subject to similar expenses as mutual funds and represent a more realistic investment alternative for the private investor.

It could be fascinating to look into a qualitative investigation. Create a survey that asks the institutional and individual investors about what they are willing to sacrifice in terms of percentages and secure peace of mind. Would they be willing to accept less return, knowing that there money is invested in socially responsible fund, assuming they underperform.

In an investigation of Large-cap mutual funds, it is interesting to check for Active Share, the evidence during the evaluation, pointed towards the funds closely followed the benchmark. So, a few closet-indexers might be present.

Lastly looking into to the top/bottom performers of the sample, it could be interesting to look at what made them perform better or worse than the sample.

Conclusion

The background for study was the theoretical paradox existing when an actively managed mutual fund pursues socially responsible investing. The exists a paradox because some studies suggest a positive performance some neutral and some negative. When these are combined, a paradox is created. On this basis, the study is aimed at determining if socially responsible mutual underperform or outperform the market. The central question posed was:

- How do the American mutual funds pursuing a socially responsible investing strategy perform compared to the market?

To better constrain the topic, three sub-questions were posed, i.e.:

- 1: Do mutual funds pursuing a socially responsible investing strategy outperform the market?
- 2: How did socially responsible funds perform during the height of the financial crisis?
- 3: Do positive ESG screened stocks show superior performance to stocks excluded by ESG criteria?

With regards to the first question, despite evaluating the performance of the mutual funds using several different measures there is no evidence in the data that in the American market, Large-cap funds outperform the market, in fact there were more evidence to the opposite, with several significant negative alpha.

With regard to the second question, the mutual funds' performance against the benchmark, were surprisingly positive, there were evidenceof significant outperformance from several funds both in 2008 and 2009, hinting that SRI funds perform better during a crisis.

With regard to the third question, in the sample tested, positive ESG screened showed no real evidence of outperforming the excluded stocks. This could be due to the sample size or other relevant factors.

The outcome of this analysis is that American mutual funds pursuing a socially responsible investment strategy do not appear to outperform the market. However, there is evidence that mutual funds within this investment strategy perform better than the market during a crisis.

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Appendix 1 : ESG Rating

	Environment			Social					Governance		Products				
Industry	Climate/Clean Tech	Pollution/Toxics	Environment/Other	Community Development	Diversity & EEO	Human Rights	Labor Relations	Dealing with nations considered hostile, Iran, Sudan and so on	Board Issues	Executive Pay	Alcohol	Animal Welfare	Defense/Weapons	Gambling	Tobacco
Alcohol															
Anheuser-Busch Inbev S.A. (BUD)											X				
Craft Brew Alliance, Inc. (BREW)											X				
Diageo Plc. (DEO)											X				
Molson Coors Brewing Company (TAP)											X				
Brown Forman Corporation (BF.A)											X				
Constellation Brands Inc. (STZ)											X				
Gambling															
Las Vegas Sands Corp. (LVS)														X	
MGM Resorts International (MGM)														X	
Boeing Company (The) (BA)													X		
British American Tobacco Plc. (BTI)															X
Cabot Oil & Gas Corporation (COG)	X	X	X												
Chevron Corporation (CVX)	X	X	X												
Cimarex Energy Co (XEC)	X	X	X												
Concho Resources Inc. (CXO)	X	X	X												
ConocoPhillips (COP)	X	X	X												
Continental Resources, Inc. (CLR)	X	X	X												
Devon Energy Corporation (DVN)	X	X	X												
Enbridge Energy, L.P. (EEP)	X	X	X												
EOG Resources, Inc. (EOG)	X	X	X												
EQT Corporation (EQT)	X	X	X												
Exxon Mobil Corporation (XOM)	X	X	X												
General Dynamics Corporation (GD)													X		
Halliburton Company (HAL)	X	X	X												

X

Harris Corporation (HRS)															
Hess Corporation (HES)	X	X	X												
Honeywell International Inc. (HON)													X		
L-3 Communications Holdings, Inc. (LLL)													X		
Lockheed Martin Corporation (LMT)													X		
Magellan Midstream Partners L.P. (MMP)	X	X	X												
Marathon Oil Corporation (MRO)	X	X	X												
Marathon Petroleum Corporation (MPC)	X	X	X												
National Oilwell Varco, Inc. (NOV)	X	X	X												
Noble Energy Inc. (NBL)	X	X	X												
Northrop Grumman Corporation (NOC)													X		
Occidental Petroleum Corporation (OXY)	X	X	X												
Philip Morris International Inc. (PM)															X
Phillips 66 (PSX)	X	X	X												
Pioneer Natural Resources Company (PXD)	X	X	X												
Plains All American Pipeline, L.P. (PAA)	X	X	X												
Raytheon Company (RTN)													X		
Reynolds American Inc. (RAI)															X
Rockwell Collins, Inc. (COL)													X		
Tesoro Corporation (TSO)	X	X	X												
Textron Inc. (TXT)													X		
Transdigm Group Incorporated (TDG)													X		
United Technologies Corporation (UTX)													X		
Valero Energy Corporation (VLO)															
Altria Group (MO)															X
Anadarko Petroleum Corporation (APC)	X	X	X												
Apache Corporation (APA)	X	X	X												
Baker Hughes Incorporated (BHI)	X	X	X												