

**UNIVERSITY OF VAASA**  
**SCHOOL OF ACCOUNTING AND FINANCE**

Janne Juutinen

**THE TIME-VARYING SRI AND LUXURY GOODS**

Master's Thesis in  
Finance

Master's Degree Programme in Finance

**VAASA 2020**



## TABLE OF CONTENTS

	<b>page</b>
<b>TABLE OF FIGURES AND TABLES</b>	<b>5</b>
<b>ABBREVIATIONS</b>	<b>7</b>
<b>ABSTRACT</b>	<b>9</b>
<b>1. INTRODUCTION</b>	<b>11</b>
1.1. Purpose of the thesis and hypotheses	12
1.2. Structure of the thesis	14
<b>2. GENERAL BACKGROUND</b>	<b>15</b>
2.1. Socially Responsible Investing	15
2.1.1. Corporate Social Responsibility as the foundation of SRI	18
2.1.2. Development of SRI	19
2.1.3. SRI strategies	21
2.1.4. Motives behind SRI	23
2.2. Luxury goods and the reasoning of using them	25
2.2.1. Definition of luxury goods	25
2.2.2. The behavior of luxury goods consumption	27
2.2.3. Motives behind luxury goods consumption	28
2.3. Economically good and bad times	28
<b>3. LITERATURE REVIEW</b>	<b>30</b>
3.1. Profitability of SRI	30
3.2. SRI during crisis	36
3.3. Evidence of wealth dependent preferences	38
<b>4. THEORETICAL BACKGROUND</b>	<b>42</b>
4.1. Efficient Market Hypothesis	42
4.2. Modern Portfolio Theory	43
4.3. Asset pricing and Carhart's Four Factor Model	44
<b>5. DATA AND METHODS</b>	<b>47</b>



5.1. Databases	47
5.1.1. ESG data description	49
5.2. Methodology	52
<b>6. EMPIRICAL RESULTS</b>	<b>58</b>
6.1. The alpha in general	58
6.2. The time variability of the alpha	61
6.3. The SRI and luxury goods	67
<b>7. CONCLUSIONS</b>	<b>71</b>
<b>LIST OF REFERENCES</b>	<b>76</b>



## TABLE OF FIGURES AND TABLES

<b>Figure 1.</b> The main aspects of ESG evaluation	17
<b>Figure 2.</b> The growth of PRI	21
<b>Figure 3.</b> The minimum variance frontier and the efficient frontier	44
<b>Figure 4.</b> Frequency distributions of ASSET4 ESG categories	50
<b>Figure 5.</b> Annual mean values of ASSET4 ESG scores	52
<b>Figure 6.</b> Portfolio forming process	54
<b>Figure 7.</b> 36-month rolling alphas of equally weighted top, bottom and top-minus-bottom portfolios	61
<b>Figure 8.</b> Rolling alphas of individual ASSET4 ESG Top-Bot portfolios	62
<b>Figure 9.</b> Correlation between the rolling alpha of EW Top-Bot portfolio and rolling average growth of U.S. PCE on jewelry and watches	67
<b>Table 1.</b> Thomson Reuters ASSET4 categories, amount of measures and weights	48
<b>Table 2.</b> Descriptive statistics of ASSET4 ESG score distributions	51
<b>Table 3.</b> Descriptive statistics of top and bottom groups for the whole sample period	53
<b>Table 4.</b> Descriptive statistics of monthly excess returns	55
<b>Table 5.</b> Portfolio alphas and betas for different categories	59
<b>Table 6.</b> Portfolio alphas during different time periods	63
<b>Table 7.</b> Correlations between the rolling alpha of EW Top-Bot portfolio and U.S. PCE on jewelry and watches during subperiods	69





## ABBREVIATIONS

AUM	Assets Under Management
BEA	U.S. Bureau of Economic Analysis
CAPM	Capital Asset Pricing Model
CFP	Corporate Financial Performance
CRSP	Center for Research in Security Prices
CSP	Corporate Social Performance
CSR	Corporate social responsibility
DSI	Domini 400 Social Index
EMH	Efficient Market Hypothesis
ESG	Environmental Social Governance
Eurosif	European Sustainable Investment Forum
EW	Equally Weighted
GSIA	Global Sustainable Investment Alliance
HML	High minus Low
JSIF	Japan Sustainable Investment Forum
KLD	Kinder, Lydenberg, and Domini
NBER	National Bureau of Economic Research
PRI	Principles of Responsible Investing
S&P 500	Standard & Poor's 500 index
SI	Stakeholder-relations Index
SMB	Small minus Big
SR	Socially Responsible
SRI	Socially Responsible Investing
USSIF	Forum for Sustainable and Responsible Investment of United States
WML	Winner minus Loser



---

**UNIVERSITY OF VAASA**
**School of Accounting and Finance**

**Author:** Janne Juutinen  
**Topic of the thesis:** The Time-Varying SRI and Luxury Goods  
**Degree:** Master of Science in Economics and Business Administration  
**Master's Programme:** Master's Degree Programme in Finance  
**Supervisor:** Nebojsa Dimic  
**Year of entering the University:** 2014  
**Year of completing the thesis:** 2020

**Pages:** 83

---

**ABSTRACT**

This thesis investigates the performance of Socially Responsible Investing (SRI). The thesis attempts to reveal whether it is still possible to reach abnormal returns by employing an SRI strategy based on companies' nonfinancial ESG aspects. Previous academic literature displays mixed and varies evidence but also the connection between high ESG scores and positive abnormal returns have been announced by various studies. The thesis is inspired by the recent working paper of Bansal, Wu, and Yaron (2018) in which authors reveal results supporting the possibility to achieve abnormal returns. Authors find that SRI yields excess returns in wealth dependent manner leading to a conclusion that high responsible stocks behave in a fashion akin to luxury goods. Accordingly, the thesis targets to clarify if the performance of SRI is time-varying in a way suggested by Bansal et al. (2018).

Utilizing ESG data from Thomson Reuters ASSET4 database, return data of S&P 500 firms from the Datastream database and factor data from Kenneth French data library this thesis evaluates the returns of SRI by applying the Carhart's (1997) four-factor model. ASSET4 offers five annual ratings for all companies considering the Environmental, Social, Governance, Economical and Equally Weighted dimensions. Within each category, the top, bottom and long-short portfolio referred to as the top-minus-bottom portfolio is formed based on annual ratings of the companies. The portfolios are rebalanced at the beginning of each year based on the ratings from the previous year. Portfolios are constructed based on the 10 % cut-off rate. The monthly performance of the portfolios is evaluated over the sample period of 16 years from January 2003 to December 2018.

First, this thesis concludes that considering the whole sample period in question SRI generates significantly negative abnormal returns. The Equally Weighted top-minus-bottom portfolio yields a statistically significant alpha of -0.55 % per month. Secondly, to investigate the time variability of the returns the thesis employs 36-month rolling regression. Additionally, the sample period is divided into three subperiods including the times before, during and after the recession documented by the National Bureau of Economic Research. The thesis concludes that the performance of SRI is high time-varying and finds that the negative returns of the whole sample are driven by the significant underperformance during the post-recession era. Similar wealth dependent preference shifts in line with the findings of Bansal et al (2018) are not detected. In contrast, the evidence suggests that SRI significantly underperforms during the economically good post-recession era. Finally, the thesis examines the relationship between the performance of SRI and the consumption of luxury goods. The luxury goods consumption is measured by the U.S. personal consumption expenditures on jewelry and watches. The thesis concludes that a robust positive correlation between the growth of PCE on jewelry and watches and the 36-month rolling alpha of the Socially Responsible Investing is not discovered, instead the evidence rather suggests a negative correlation.

---

**KEY WORDS:** Socially Responsible Investing, SRI, ESG, Luxury goods



## 1. INTRODUCTION

Socially responsible investing (SRI) that utilizes firms' environmental, social and governmental (ESG) actions in implementing investment decisions have received wide interest among both financial practitioners and researchers during recent years. The popularity of SRI has been rising because of several reasons that have affected increasingly in our daily life. People are nowadays willing to favor or refrain certain activities for a good cause that can be related to for example climate change, civil rights or military issues. The same trend concerns also many investors. Maybe the most influential recent developments and events that have accelerated the popularity of SRI have been the rising concern on global warming, ethical consumerism and the recent effects of the financial crisis. Nowadays the traditional view of financial theory that a company's only target is to maximize shareholder value is under severe critic. People are more aware of issues arising when a firm only targets shareholder wealth in its actions. Hence concentrating on ESG issues can offer a vital competitive advantage.

Even though the attention on SRI has generally increased significantly it is still rather marginally investigated subject of research by academicians in the field of finance. Most of the studies that consider corporate social responsibility (CSR) are focusing on the corporate level strategies that can be implemented and the outcomes that are possible to be achieved or missed by these different approaches. In the field of finance, research is focusing mostly on the effects of CSR and SRI on firms' valuations and stock market performance. Results regarding the subject are mixed and vary, on the other hand several papers find robust evidence supporting the perspective of "doing good while doing well" (Kempf and Osthoff 2007, Statman and Glushkov 2009 & Edmans 2011). On the contrary, numerous papers provide evidence declaring that making investment decisions based on firms' environmental, social and governmental aspects leads to a portfolio that generates similar returns as conventional ones or even significantly negative alphas (Tippet 2001; Geczy, Stambaugh and Levin 2005; Auer & Schuhmahcer 2016). Further, some academic papers reveal significant positive returns by investing in the least responsible companies. For example, Hong and Kacperczyk (2009) show that it is possible to construct a significantly profitable portfolio by selecting only so-called "sin" companies that are known mainly by their questionable business activities.

Additionally, as the evidence varies between studies that are investigating various markets during different sample periods, academic research on SRI focuses on the performance factors that are impacting the returns during different periods. One of the most

famous subjects after the profitability issue has been the question that how stocks that are considered as good by ESG criteria are performing during market crisis. Papers regarding the problem often display findings suggesting the buffering effect of high ESG companies during these turbulent periods. In other words, the literature suggests that high ESG rated companies outperform the low ESG rated ones during crisis periods. This effect is often explained by the additional need of trust during the crisis. Consequently, high ESG rated companies manage to implement good policies in ordinary market conditions and the executed practices are likely to breed the trust of investors. In conclusion, when the reputation is good, the trust of stakeholders is high which leads to the steadier path through extremely volatile times. (Lins, Servaes & Tamayo 2017.)

This thesis investigates the idea of wealth dependent preferences of SRI and how the popularity of SRI might fluctuate over time. The original idea is based on the working paper of Bansal, Wu & Yaron (2018). Specifically, Bansal et al. (2018) reason that during good economic times, households have greater financial wealth and can consequently afford to be SRI-conscious. This drives up demand for high-SR stocks, resulting in higher realized alphas. By contrast, during bad times, households face more binding wealth constraints and therefore have to pull back on their “social consciousness” and revert to consumptions of more subsistence-like products. This reduces the demand for high-SR stocks, thereby decreasing and even reversing the alpha spreads between high- and low-SR stocks. The displayed process leads to a scenario where the performance of SRI is significantly time-varying along the business cycle. (Bansal et al. 2018.)

### 1.1. Purpose of the thesis and hypotheses

The expanding growth of SRI validates the subject of the thesis and it is important to investigate further the nature of the SRI performance. The objective of this thesis is to find further evidence to clarify the issues presented in this chapter above, by the empirical evaluation that is implemented in a relatively novel manner. First, the thesis studies the overall performance of SRI portfolios constructed for the purpose. After the general performance evaluation, the thesis aims to provide evidence to determine if the performance of SRI is significantly time-varying and examines the SRI returns in different economic conditions. Additionally, the thesis compares the time variability of the derived SRI returns to the consumption of luxury goods in a similar manner as Bansal, Wu & Yaron (2018). The luxury goods are determined here as premium-priced products offering authentic value, high-quality and prestigious image (Ko, Costello & Taylor 2017). This

thesis uses the consumption of jewelry and watches to detect possible relation between luxury products and SRI.

The idea behind this approach is the possibility that SRI funds can be seen as the luxury good of investments, as it can be that investors are preferring high ESG stocks and funds during good economic times when they can afford them. The consumption of luxury goods is high during economically good times simply because people have more money to be spent on unecessities. Similarly, when the times are good investors can give more weight to different aspects of investments besides only the returns. In other words, investors are investing in high ESG stocks because the performance is not as crucial when the times are good. The idea relates to the general theory of corporate social responsibility stating that investing in responsibility means lowering the shareholder wealth as these actions are not executed directly to improve profits. Investors are maybe doing good while doing well or just giving money to charity, both options are at least half-decent during good times.

In line with the general idea the thesis studies four hypotheses listed below:

H1: SRI portfolio generates significant positive alpha

H2: The alpha of SRI portfolio is time-varying

H3: The SRI alpha is significantly positive only during good economic periods

H4: The SRI alpha correlates with luxury goods consumption

By examining the presented hypotheses, the thesis aims to offer several contributions to the existing literature. First, as the findings of Bansal et al. (2018) are novel it is important to re-examine the issue further and possibly to provide additional evidence as the findings have not been yet scientifically replicated. This thesis also utilizes more recent data to provide timely evidence and a new set of data by employing the ESG ratings from the Thomson Reuters ASSET4 database. Despite the nature of the findings, this thesis will contribute to the previous research by adding evidence to clarify the possible time variability, wealth dependence and luxury-good-like behavior of SRI. From a practical point of view if the performance of SRI is varying in wealth dependent manner it should offer investors and fund managers important insights to their decision-making process. If the time variability exists and may be predicted the practical usefulness will be pronounced.

## 1.2. Structure of the thesis

The rest of the thesis is organized in the following way: the second chapter introduces the general background for the topic, including a brief analysis of the development of SRI, the most popular strategies used in the field of SR investing and the motives behind SR investors. Additionally, the concept of luxury goods is explained and similarities between SR investing and luxury goods consumption are discussed. Finally, the second chapter introduces how the thesis defines economic good and bad times. The third section of the thesis provides in-depth analysis of the previous literature considering SRI. The previous research is divided into three groups: the papers considering the overall performance of SRI, the studies investigating the effect of SRI during crisis and the papers finding evidence to support the wealth dependent alternative. The fourth chapter presents the necessary theoretical background of the thesis before the fifth section, in which the data and methods utilized in the empirical part are introduced.

Section five offers and discusses the empirical results displayed by the examination. The chapter is divided into three subchapters based on the hypotheses testing. First subchapter considers the overall performance of SRI, second the time variability and wealth dependence, last subchapter explores the relation between SRI and luxury goods. Finally, the seventh section concludes the thesis by restating the purpose, discussing the findings and mentioning the limitations of the study.



## 2. GENERAL BACKGROUND

This section of the thesis briefly introduces the main background information in relation to the subject of the thesis. First, the section below presents the socially responsible investing and the related concepts, development of SRI, SRI strategies and different motivations driving SR investors. Secondly, the section introduces generally how luxury goods are usually defined, how the consumption of luxury goods fluctuates over time and why the concept of luxury is used in the thesis. Thirdly, the section defines how the thesis considers good and bad economic times. The chapter also offers a discussion identifying the possible links between the general concepts of the thesis.

### 2.1. Socially Responsible Investing

Socially responsible investing refers to an investment strategy where an investor utilizes the company's non-financial concerns for example corporate social responsibility (CSR) activities and ethicality through certain criteria, to make a decision to invest or not to invest in a company (Sandberg, Juravle, Hedesström & Hamilton 2009). The terms in the scheme of SRI may appear confusing since social responsibility can be viewed from several different perspectives which all have their own definitions. Common definitions used as interchangeably for SRI depending on from which standpoint investor approaches the field and how the topic is defined includes for example the terms sustainable investing, responsible investing, ethical investing, social investing, socially aware investing, green investing, value-based investing and mission-related investing. However, during recent years the term SRI has established its position as the one consistent abbreviation used for the investment strategies that exploit at least one of the following aspects: environmental, social or governance (ESG) dimensions. (Sandberg et al. 2009; von Wallis & Klein 2015.)

Sandberg et al. (2009) who examine the heterogeneity on the field of SRI concludes that there may be some agreement at the definitional level but there are radical differences on three other levels, which they determine as the terminological-, strategic- and practical-levels. According to the paper, these differences originate to the differences of cultures, regions, and countries where actors have embraced different values, norms, and ideologies. In addition, authors clarify that cultural differences have occurred maybe because under the same definition different styles have emerged in different parts of the world almost at the same time. Secondly, they explain that heterogeneity can be due to the fact that actors and stakeholders merely possess incoherent values and norms, leading to a

situation where different participants highlight different aspects resulting in heterogeneity of the field. Finally, one interesting possibility behind the fragmentation can simply be the fact of the commercial needs of various competitive actors, the linguistic labels of products can be an important part of a strategy to attract investors and stand out in a crowd. (Sandberg et al. 2009.)

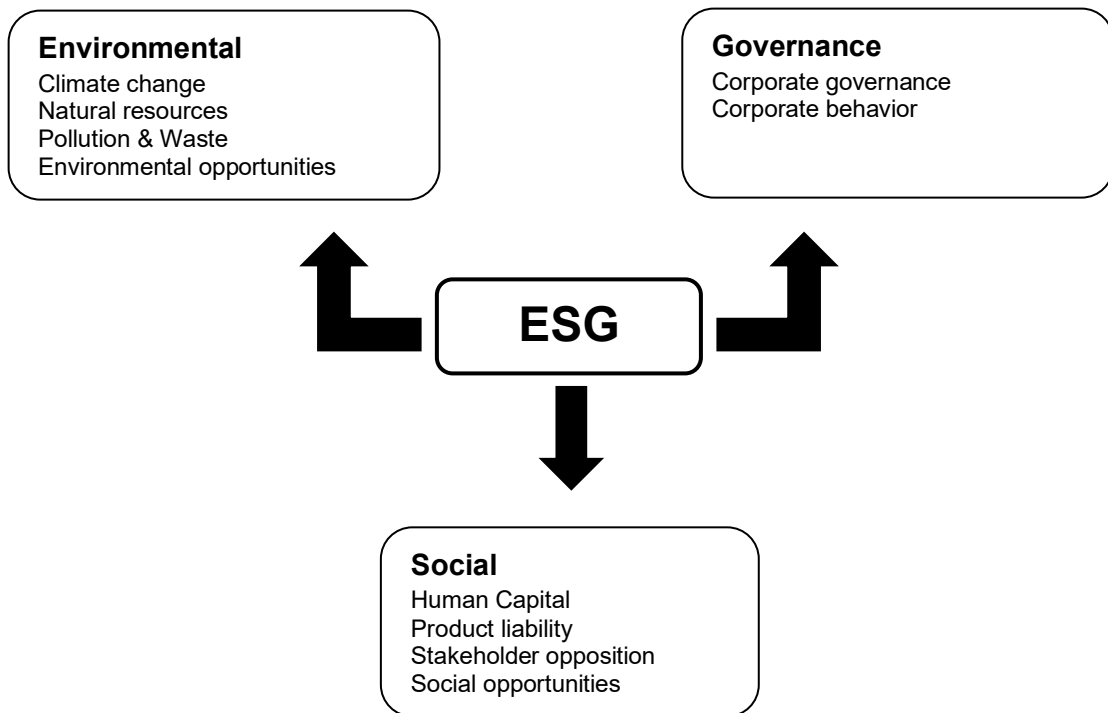
Although SRI as the universal abbreviation has its established position, the field is still very heterogeneous and has many undefined aspects, as mentioned above. Sandberg et al. (2009) also discuss the alternative of standardized field but admit that referring the facts it is unlikely that the SRI industry can be homogenous in a terminological and practical way. As one SRI director from the interview of Sandberg et al. (2009) noted: “SRI is whatever the client wants it to be”. Similarly, Dorfleitner & Utz (2012) conclude that sustainability depends heavily on individual preferences and basically any non-financial aspect of an investment can be included under the term sustainability. Because of the heterogeneity, it is hard to see how the field can be standardized as people from different cultures have such a huge difference with their norms and values driving their SRI actions. Dorfleitner & Utz (2012) do not see the need for a plain definition but for example, Sandberg et al. (2009) mention that to some extent the homogenization might be desirable for example to ease the academic research.

Regardless of the heterogeneity, nowadays many academicians and organizations define SRI based on ESG evaluation:

*“SRI is an investment process that integrates social, environmental, and ethical considerations into investment decision making” (Renneboog, Ter Horst & Zhang 2008a).*

*“SRI is an investment discipline that considers environmental, social and corporate governance (ESG) criteria to generate long-term competitive financial returns and positive societal impact” (USSIF 2019).*

Consequently, the most commonly used definition of SRI is based on ESG and the most commonly used practices to implement SRI include evaluation of ESG criteria. The ESG screening methods vary among participants but the general aspects under the evaluation are rather similar. For example, MSCI (2019) reports that their ESG rating method includes several sub-criteria through which the company’s overall ESG score is derived. MSCI’s (2019) guideline represent rather universal process and Figure 1 below displays the general aspects of their environmental, social and governance evaluation.



**Figure 1.** The main aspects of ESG evaluation (MSCI 2019).

More specifically all of these sub-categories are divided into different measurable aspects to rate the firm in question. For example, climate change includes carbon emissions and product carbon footprint, pollution & waste considers toxic emissions and package materials, and environmental opportunities to evaluate investments in cleantech. Instead, product liability holds social aspects such as product safety, quality, privacy, and data security. Additionally, corporate governance and behavior facets observe for example board diversity, executive salaries, tax transparency, and business ethics. (MSCI 2019.)

As explained above the heterogeneity of the SRI movement is obvious, therefore this thesis uses the term SRI as the abbreviation is most widely known, the investment decision process which includes evaluation of ESG factors. For the ESG evaluation, the thesis uses a similar classification as MSCI (2019). The section of data & methods presents the ESG scoring process behind the utilized ESG ratings in more detail. In the data & methods section also the SRI strategy used for the portfolio construction is presented. In general, different SRI implementation strategies are presented in sub-section 2.1.2.

### 2.1.1. Corporate Social Responsibility as the foundation of SRI

In addition to the terms used as synonyms for SRI, the field involves plenty of other terms and concepts. First, corporate social responsibility that contains firms' ethical and responsible behavior and strategic decisions mainly on ESG matters. By implementing different CSR policies, companies offer a basis for a modern SR investor to evaluate different options, often via ESG criteria. The evaluation of strategic CSR choices has been also under intense investigation for decades, but the field concentrates mostly on the corporate finance view. Therefore, the research regarding CSR usually evaluates the relation between corporate social performance (CSP) and corporate financial performance (CFP), and the cash flow changes which might be achieved by increasing CSR activities. (von Wallis & Klein 2015.)

The European Commission (2019) defines CSR as the responsibility of companies for their impact on society, hence CSR should be led by companies and regulation plays only a supportive role. According to the European Commission, actions to become a socially responsible company includes integrating social, environmental, ethical, consumer, and human rights concerns into business strategies. Barnett (2007) distinguish CSR activities from other corporate's investments by stating that CSR targets for increasing social welfare instead of shareholders' wealth. Hence, CSR takes into account also other stakeholders in addition to owners. In summary, by investing in CSR activities firms are ignoring the wealth maximizing as their only responsibility.

Corporate Social Responsibility is a highly controversial concept and has its critiques. One party argues that CSR is a highly important part of a company's everyday actions generating positive value and increasing profitability for example based on improved access to financing (Moskowitz 1972; Waddock and Graves 1997). Additionally, Porter and Kramer (2006) state that appropriate CSR implementation offer opportunities and competitive advantage, and further the modern stakeholder theory claims that responsible actions toward a wide group of stakeholders result in improved CFP (Freeman 1984; Donaldson & Preston 1995). On the contrary, the opposite view is that a company's only responsibility is to create value for shareholders and creating value for other stakeholders via CSR actions only induce additional costs for "social good" (Friedman 1970; Vance 1975). CSR initiatives may also increase agency costs as managers pursue personal aims to build their better reputation at the expense of shareholders (Barnea & Rubin 2010). The conflict is obvious and both views have their own reasonings. Furthermore, several academic papers are debating whether CSR improves or reduces a company's financial

performance. Overall, to some extent, the relation between CSP and CFP is still an open question.

This thesis centralizes its focus purely on SRI and the value that responsible stocks might offer to investors. The examination of the thesis is executed by comparing ESG matters relative to stock performance and the effects of corporate social responsibility are not directly investigated. This thesis offers only indirect evidence for the CSR based research as the ESG ratings are derived based on firms' CSR actions.

### 2.1.2. Development of SRI

The beginning of SRI bases on hundreds of years of old religious education and ideology that had a major impact on the behavior of individuals at the time. More precisely the origin dates back to the early biblical times when Jewish, Christian and Islamic traditions guided people on how to use and invest money in an ethical and equitable manner. Initially, religious investors were practicing SRI by investing in mainly nonviolent firms that did not participate in slave trade nor produced products designed to kill. These methods can be viewed as the first SRI "screens" for investing and were implemented for example by early Quaker immigrants in the U.S. already in the 1700s. One similar negative screening method which gained popularity in the wake of first SRI screens was so-called "sin screens". At the time avoiding sin stocks was one of the most used screens and usually sinful companies were classified as firms from alcohol, tobacco, weapon, and gambling industries. (Schueth 2003; Renneboog et al. 2008a.)

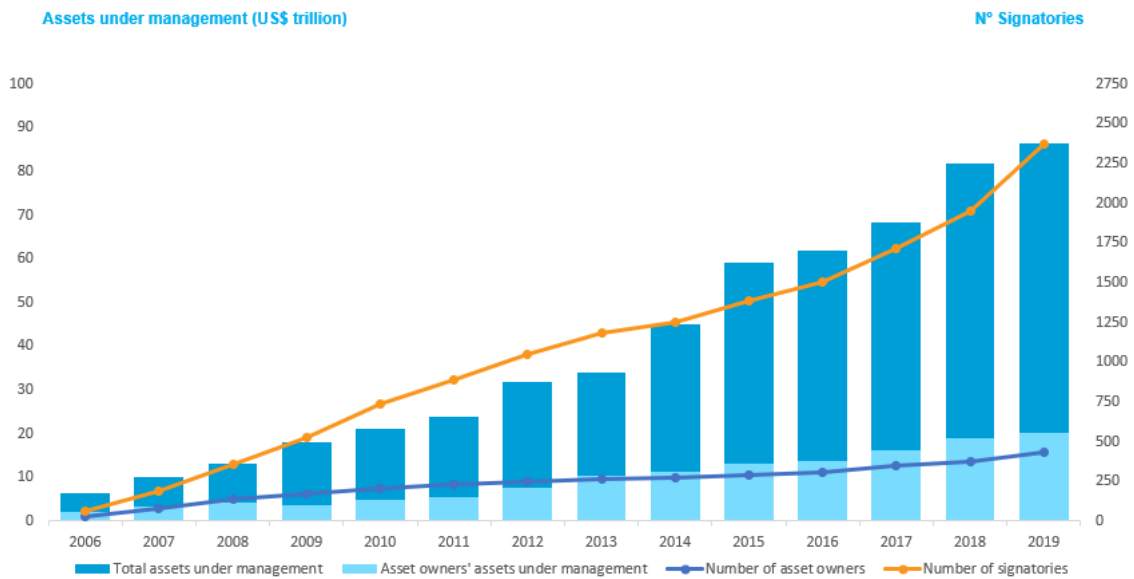
Currently evolving, more modern, SRI is based on an individual's convictions and has its roots in the 1960s when several themes regarding corporate social responsibility offered a propitious premise for socially conscious investors. The most current concerns at the time ranged from the Vietnam war to civil rights and gender equality, also cold war had an effect. Through the 1970s and 1980s the popularity of SRI grew dramatically embracing new factors such as labor issues and nuclear resistance. The major international issue during the era that received wide attention among SR investors was the racist apartheid of South Africa. Since then much has happened. First, incidents such as Chernobyl and Exxon Valdez and profound new information on global warming shifted SRI strongly towards green thinking. Even more recently school killings, human rights issues and ethical consumerism around the world have had a great impact alongside financial crisis again towards more balanced ESG evaluation. At the same time increasing concerns

regarding the environment have been on the carpet all the time. (Schueth 2003; Renneboog et al. 2008a.)

Today the SRI industry is bigger than ever before and there is no end in sight for the growth. During the growth, also several institutions and alliances have been founded to foresee and promote the industry, Global Sustainable Investment Alliance (GSIA) and Principles of Responsible Investment (PRI) both being good examples. Both are influential actors in the field and encourage firms and investors to pay attention to ESG issues. GSIA is a collaboration of membership-based sustainable investment organizations including members worldwide, for example the Forum for Sustainable and Responsible Investment of United States (USSIF), the European Sustainable Investment Forum (Eurosif), and the Japan Sustainable Investment Forum (JSIF). All these members of the alliance are leading associations in their own continent for the promotion and advancement of SRI. Instead, PRI is the world's leading independent proponent of responsible investing supported by the United Nations. It operates on the behalf of its signatories to develop the field of responsible investing and to create a more sustainable global financial system. To achieve these objectives the six principles of PRI have been created to guide the signatories. These principles are listed below. (GSIA 2019; PRI 2019.)

- *Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.*
- *Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.*
- *Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.*
- *Principle 4: We will promote acceptance and implementation of the Principles within the investment industry.*
- *Principle 5: We will work together to enhance our effectiveness in implementing the Principles.*
- *Principle 6: We will each report on our activities and progress towards implementing the Principles.*

As mentioned above the popularity of socially responsible investing has been growing substantially during the recent years, for example the assets under management (AUM) by signatories of PRI have increased steadily in a remarkable way since its establishment in 2006. Figure 2 below shows the PRI related data, including the amount of PRI signatories and the worldwide AUM of the signatories. (PRI 2019.)



**Figure 2.** The growth of PRI (PRI 2019).

As the figure displays the assets under management of the signatories were approximately 86 trillion U.S. dollars at the end of 2019, the average growth rate of the AUM being 17 % per year during the past ten-year period (PRI 2019). At the same time, USSIF (2019) reports that in the United States at the beginning of 2018 more than one out of every four professionally managed dollars was invested via SRI strategies, which equals approximately 26% of total 46,6 trillion dollars. Further, the industry of professional SR investing enjoyed a growth of more than 38 percent from the year 2016 to 2018, from AUM of \$8,7 trillion to \$12 trillion. Based on the data it is safe to say that SRI has become a mainstream investment strategy in recent years. (USSIF 2019.)

As the popularity of SRI is growing massively it also underlines the relevance of the subject and validates the importance of this thesis.

### 2.1.3. SRI strategies

In general, socially responsible investors have the same main aim as conventional investors, which is making money. Additionally, SR investors are interested in making a difference while making the money and based on the previous literature sometimes these objectives can be in conflict. To achieve these objectives, SR investors have the same

asset classes available as conventional investors. This thesis concentrates on stocks and therefore equity is the only asset class considered. SRI regarding fixed income products and alternative investments are beyond the scope of this study. As conventional investors, SR investors also have numerous or even unlimited possibilities to construct a portfolio for the desired purpose. Frequently screening, shareholder advocacy, and community investing approaches are mentioned as the three most popular strategies in academic literature. (Schueth 2003; von Wallis & Klein 2015.)

Screening can be viewed as the most common strategy and can be defined as a practice of including or excluding certain companies based on their CSR activities on ESG matters. First, a portfolio can be constructed with negative screens, which means narrowing the investment universe by industries or companies who practice harmful business activities or are just not able to reach a certain level of ESG rating. The most traditional and primitive screening was based on negative screens avoiding “sin industries” including military weapons, tobacco, alcohol, gambling, and nuclear power. Nowadays, negative screening is more commonly based on avoiding firms that do not meet investors’ ESG related minimum standards. Usually, the evaluation is based on environmental, social, ethical and administrative aspects, including for example product quality, environmental record, political donations, cultural diversity, and consumer relations. In general, companies implementing shady practices in a certain area or doing sinful business are screened out from the portfolio. Of course, negative screening methods vary greatly between practitioners because of personal values and beliefs. For example, for some people gambling is harmless enjoyment and for others a denied sin that might lead to an addiction. (Schueth 2003; von Wallis & Klein 2015.)

Another possibility is the positive screening performed by investing in companies that at least fulfill or even exceed specific ESG standards settled by regulators or required by investors. Positives screens can be exploited in different ways and probably the most popular methods are regular positive screening and the best in class method. Regular positive screening considers the whole investment universe equally. Such screening can lead to a situation in which the portfolio is unbalanced and badly diversified for instance between industries. For example, the petroleum industry may be screened out from the portfolio because of the environmental aspect even if some oil companies might act in a highly responsible manner relative to its peers. Because of the above-mentioned risk many investors prefer the best in class method, in which the screening is executed by choosing the top-rated firms in each sector separately. Preferring the method, the final portfolio consists of much prudent diversification but usually is not as desirable when evaluating



it purely by ESG factors. Today SR investors also utilize so-called two-stage approaches where a portfolio is constructed by starting with the negative screening to narrow potential companies and then making the final decisions based on positive screens. (Schueth 2003; von Wallis & Klein 2015.)

Shareholder advocacy is a more challenging way of doing SRI, it is described as a method where an investor takes an active role to change the operations of a firm. Advocacy efforts usually include engaging in dialogue with companies and managers on issues and problems that could be managed in a more responsible manner. Besides, shareholder activists usually propose different improvements and are also prepared to use their voting rights. The main target is to improve the CSP and CFP of the firm. Finally, the community investing is an option aiming to provide a better premise to people in unfortunate and poor communities. The main goal is to enable capital flows to communities who cannot raise these funds through conventional channels. For example, low income housing and small business financing in disadvantaged communities are often achieved by community investing. Often community investors are more willing to sacrifice higher returns for good cause than other investors. (Schueth 2003; von Wallis & Klein 2015.)

In this thesis the screening methods are mostly discussed as these methods are the most used and also the most accessible way of doing SRI for investors. For the empirical research this thesis uses a screening method explained in the data & methods section for the portfolio construction.

#### 2.1.4. Motives behind SRI

This section presents different motives behind the investment decisions of SR investors based on previous research. Motives are important as the subject of the thesis is closely related to the idea that investors may give up their socially responsible preferences when times are bad and can afford responsible thinking only during good times. If investors consider SRI as a luxurious investment decision the motives behind it should be diverse and not only performance driven.

Traditionally investment decisions should be based only on risk and return. According to Markowitz (1952) every investor is maximizing the return at a certain level of risk which represents their risk aversion. With socially responsible investing the case might be different as individual investors have different preferences regarding SRI. For example, Pasewark and Riley (2010) state that investor's personal values are taken into account in

decision making, and that the general motivations of socially responsible investor are a desire to achieve return, a desire to affect social change and a desire for personal satisfaction. Furthermore, for example Schueth (2003) notes that two kinds of SR investors exist: the first, so-called “feel good” investors, have an internal need to invest in a manner that is close with their personal values. The second type wants to be a part in a process acting towards a better future for society as a whole. Concluded, others want to feel good while others have a desire to do good. These different non risk-return related motivations drive the decision-making process of SR investor.

In addition to the fact that individual investors have different preferences, the motivation behind implementing SRI varies also between different market participants. Money managers mostly raise the client demand as their top motivation whereas for example institutions note fulfilling a mission and pursuing social benefits as their main objective. Common motivation for SR investors seems to be the intention to reach solid financial performance while investing in a way that is likely to provide non-financial benefits. Some market participants even believe that ESG incorporation is a vital way of doing risk management leading to a better long-term performance. (USSIF 2018; PRI 2019.)

As USSIF (2018) reports money managers and institutions at least do not mention the performance as the main target when implementing SRI and individuals’ main aim is to support their personal values and goals. Motivation behind SRI is hence at least partially unrelated to the performance. The evidence of some papers even suggest that SR investors are consciously willing to sacrifice better performance for ESG matters. For example, Sparkes (1998) states that more than every third investor would invest ethically, even if returns were lower than conventional gains. Similarly, Lewis and Mackenzie (1999) find that almost 95% of socially responsible investors would not change their SR investments for higher performing conventional options.

Furthermore, Lewis and Mackenzie (2000) find that SR investor’s main motivation is to avoid harmful companies but also the aim to support companies that make a positive change for society. The evidence of the paper again supports the hypothesis that the motives of SR investors are not purely performance driven. The questionnaire-style research of Lewis and Mackenzie (2000) shows evidence that 42 % of ethical investors are even expecting lower returns from their SR investments than from conventional ones. In conclusion, the paper suggests that several ethical investors are expecting costs from implementing SRI. Also, Renneboog, Ter Horst and Zhang (2011) find that SR investors are less concerned about negative returns than investors of conventional funds.

Because individual SR investors are aiming for the good cause and responsibility, it also leads to the possibility that SRI fund managers may not pursue the highest risk-adjusted returns as their second incentive is to provide socially responsible ways to make money (Renneboog et al. 2008a). In general, if SRI underperforms conventional investments it might be that Friedmans (1970) critique is right and investors should invest in conventional high performing funds and seek to make a positive change by donating.

The motivations found by academic research are mostly non-performance driven. As these motivations have not been studied during different economical market conditions it can be that SRI is like donating for many SR investors as they are willing to sacrifice a reasonable investor action for a good feeling. If we think about the relation to luxury goods, we can consider that when individuals are buying luxurious products, he or she is similarly making a decision based on personal feelings. On the contrary, the idea of this thesis supposes that possible SR investors shift their preferences when times are bad, thus indicating that SR investors are performance driven. The possible explanation is that SR investors are performance driven when times are not economically good but shift their preferences towards non-performance related features when the aggregate wealth is high. It is possible that during good times when the primitive need of decent returns is easily reached the responsibility aspects emerge. Similarly, during good times consumers can easily afford high standard of living and the consumption of luxury goods increase.

## 2.2. Luxury goods and the reasoning of using them

In addition to the SRI it is important to briefly explain the general background information about luxury goods since the research of the thesis is partially related to the consumption of luxury goods and this unnecessary consumption forms a foundation to the main idea of the thesis.

### 2.2.1. Definition of luxury goods

As defining SRI, also the definition of luxury goods is not unambiguous. There are several challenges in defining luxury, not least the fact that it is a relative concept. For example, someone's luxury might be self-evident to another and additionally the concept of luxury has definitely fluctuated over time. For example, Heine (2012) defines that fundamentally

luxury is something that is more than necessary. More accurate defining can be complemented from that foundation.

When searching more precise definition, luxury goods can be defined for example based on consumer perceptions, product attributes, and managerially determined dimensions. Usually in the previous literature definition of luxury includes at least dimensions such as high-quality, rarity, exclusivity, premium pricing and high level of aesthetics. Furthermore, luxurious goods often offer a high level of symbolic value and are desired by consumers, for example to display their individual uniqueness and status. What forms the position of luxurious brands and products is at the end the consumer behavior. Certain managerial decisions and strategies such as premium pricing or pursuing superior quality can increase the likelihood of being categorized into the luxury segment. Nonetheless, these actions or any strategy are not the unmistakable paths to the luxury status because in the end, all depends on consumers' approval. Often luxury brands are related to products such as perfumes, jewelry, watches, leather goods, shoes, cars, wine, champagne, tableware, and porcelain. (Dubois & Duquesne 1993; Tynan, McKechnie & Chhuon 2010; Ko, Costello & Taylor 2017.)

In addition, Ko et al. (2017) propose a more specific theoretical definition that is based on five key elements that create a luxurious brand. The specification of Ko et al. (2017) is rather universal and similar to other previous literature for example with Heine (2012). Definition of Ko et al. (2017) first mention the high-quality. Second, authentic value by offering desired functional or emotional benefits. Third, a prestigious image via qualities such as artisanship, craftsmanship or service quality. Fourth, justified premium pricing and last, deep connection or resonance with the consumer. In general, luxury brands offer products or services that consumers perceive to fulfill these five above mentioned aspects. (Ko et al. 2017.)

One of the purposes of this thesis is to compare the similarities between luxury goods and socially responsible investing. When comparing the definition of luxury goods to SRI some similarities can be found. Based on previous research investing in high SR-rated stocks gives emotional and personal benefits for a group of investors (Schueth 2003; Pasewark & Riley 2012). Also, previous studies show that a group of SR investors approve the possible premium pricing or lower returns of "good" stocks to have the benefits of implementing SRI (Sparkes 1998; Lewis & Mackenzie 1999). As explained above also consumers of luxury goods accept premium pricing while seeking individual benefits. In other words, similarities between SR investors and luxury consumers may be detected. In

this thesis the personal consumption expenditures on jewelry and watches are used for the empirical purpose to reflect the overall luxury goods consumption.

### 2.2.2. The behavior of luxury goods consumption

It is obvious that luxury goods consumption declines during economic downturns as spending in general to nonessential offerings decrease during such periods. Common consumer theory states that the demand of luxuries should be more cyclical through economic cycle than the demand of necessities. Some economists even define luxury goods as goods for which the demand rises proportionally more than income when income increases (Tynan et al. 2010). In other words, the income elasticity of demand is equal to or greater than one for luxury goods. Basically, people are willing to spend more on these unnecessary when the level of wealth exceeds the long-run needs and economic conditions are favorable. Conversely, when the current level of wealth falls short, from the long-run-required level, consumers generally start saving by first holding down the money spent on luxuries. Hence, as luxurious purchases are easier to postpone, luxury goods consumption usually goes through a harder path during recessions than other goods. This is why the luxury goods consumption is seen as one of the indicators of economic conditions. (Bils & Klenow 1998; Ikeda 2006; Reyneke, Sorokáčová & Pitt 2012.)

The idea to use luxury goods in this thesis to study the behavior of SRI returns is based on an idea of Bansal et al. (2018). In their paper, Bansal et al. (2018) argue that investors view SRI as a luxury good and making an investment on high ESG rated companies is a discretionary decision. They claim that preference for investing in “good” stocks is time-varying and dependent on aggregate wealth, similarly like the demand for luxury goods is procyclical with the economic cycle. Bansal et al. (2018) reason that during periods when aggregate wealth is at high level households can afford to be SRI-conscious. Thus, during good times they are willing to deviate from the full-universe mean-variance frontier to the portfolios including high-SR stocks. Authors’ theory leads to higher abnormal returns of these high rated stocks during good times as households can afford to drive up the demand of these stocks. When the economic environment is not as beneficial investors are forced to restrain their discretionary desires to reach their essential needs. As Bansal et al. (2018) state, investors shift their portfolios back towards the full mean-variance frontier, which drives down the demand of SR funds and leads to lower alphas during economically bad times. Similarly, consumer theory states that during economically challenging times households restrain their spending on luxuries to maintain their purchasing power toward necessities.

Based on the idea the returns of SR based investing should be highly cyclical over time, as the consumption of luxury goods. If SRI is the luxury good of investors, SR based investing should thrive during good economic times, similar to sales of luxury goods is booming during times of high level of wealth.

### 2.2.3. Motives behind luxury goods consumption

There are a variety of proposed reasons why individuals consume luxury products. Maybe one of the most recognized reasons is the individual needs to declare wealth and status by consuming in a visible manner to luxury products. Another essential motive behind luxury consumption is social comparison. People use luxury goods to conform to social standards or to reach their aspirations of who they are and hope to be. Consumers may also seek out luxurious products to enhance their self-concept in various ways. For example, consumers with an interdependent self-concept are more likely to consume on mainstream luxury goods to feel good about themselves and to be identified as a member of a reference group. While an independent self-concept encourages to buy luxury goods to differentiate from others. The need for originality can be easily satisfied due to high prices, rarity and restricted distributions of luxury products. Even though the individual reason can be almost opposite, whether to buy for originality or group affiliation, the basic need for both is to enhance the self-concept. (Dubois & Duquesne 1993; Ko et al. 2017.)

In summary, external and internal motives drive the decision to buy luxury products. Some consumers want to declare their identity and position by luxury brands while others pursue inner satisfaction, uniqueness, and pleasure. In some way, consumers desire to buy luxury products and investors need for SR-funds springs from similar personal aspirations. Based on previous literature investors are not usually declaring their responsibility by investing in high ESG rated funds but more likely a group of “feel good” investors are buying these stocks to get inner satisfaction by doing good (Schueth 2003; Pasewark & Riley 2010). In brief, there is some evidence that even the motivations behind buying luxury goods and investing in SR stocks have similarities.

### 2.3. Economically good and bad times

This thesis also examines the time variability of SRI returns to detect if the wealth dependent preference shifts detected by the paper of Bansal et al. (2018) can be confirmed.

For the purpose, this thesis employs information from the National Bureau of Economic Research (NBER) that offers the U.S. business cycle data regarding the dates of expansions and contractions. To conduct the analysis this thesis defines economic good times as the expansion periods offered by the NBER. The economic bad times are defined by the NBER recession periods starting from the peak of a business cycle and ending at the trough of the cycle. The recessions are determined as significant declines in economic activity spreading across the economy and lasting longer than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. (NBER 2020.)

Based on the presented information of the second section, the thesis concludes that it is safe to say that SRI has experienced phenomenal growth around the world over the past decades to become a mainstream investment strategy. This thesis also assumes that the growth has not reached its peak yet and SRI is not going to vanish like a momentary trend. Instead, it is likely that investors will value ESG aspects even more in the future and the growth of SRI will proceed. Even if the human race can manage to improve on, or somehow repair the existing issues it is probable that new issues will occur. As social responsibility is an important and rising factor in finance and investing, it is vital to enhance the research of the field. This thesis will contribute to the field by examining one of the less researched parts that seek to explain the motives behind SR investors. If there are a link and strong similarities between luxury goods and SRI or if SRI investing is time-varying in a way that most profits by the strategy are gained during economically good times it might signify that SRI is something that investors can only afford during good times.

### 3. LITERATURE REVIEW

This section discusses the previous literature regarding the general profitability of SRI investing. The literature review introduces three alternative hypotheses regarding the performance which all have gained academic support: “doing good but not well”, “doing good while doing well” and “no effect”. Also, different possibilities to implement the research are presented in the process e.g. with stocks, mutual funds, and SRI-indices. On top of that previous literature on the buffering effect of SRI during the crisis is presented as it is one of the most closely related topics to the thesis. Finally, the paper by Bansal et al. (2018) and the literature supporting the wealth dependent possibility is discussed in depth.

#### 3.1. Profitability of SRI

During recent years, SRI has established its position as an intriguing investment opportunity among practitioners. Naturally, at the same time, academic interest on the topic has emerged and nowadays academic literature regarding SRI is rather extended. While there are plenty of papers aiming to clarify the definition and boundaries of SRI as presented in the previous section, there are also many studies targeting to explain the financial performance of SRI. This thesis is in line with the performance driven research and adds contribution to the existing literature to understand the profitability of SRI. Previous literature on SRI has displayed three alternative possibilities of how social responsibility can influence the performance of funds. These alternatives are presented below.

First, the hypothesis of underperformance as known as the theory of “doing good but not well” which states that increased efforts on CSR entail costs to shareholders leading to negative abnormal returns (Statman & Glushkov 2009). From a different point of view, the theory suggests that SR investors are narrowing their options to invest by taking social responsibility into account. The restrictions of the investment universe necessarily lead to a situation in which otherwise profitable companies are foregone, the diversification is limited and eventually, the risk is increased (Revelli & Viviani 2015). At the same time because of the restrictions SR investors might drive the value of high SR companies up which results in lower expected returns (Hamilton, Jo & Statman 1993). Supportive evidence for the underperformance theory has been stated in various academic publications (Rudd 1981; Kahn, Lekander & Leimkuhler 1997; Renneboog 2008b; Trinks & Scholtens 2017).



The second theory is “doing good while doing well” stating that high ESG rated stocks yield higher risk-adjusted returns than comparable conventional investments. The reasoning behind the over performance theory is that corporate’s elevated CSR policies can result in benefits that are underestimated by investors and managers (Statman & Glushkov 2009). Similarly, Hamilton et al. (1993) suggest that consistent underestimation by investors to intangible assets gained by high-quality CSR policies is the reason why the case of “doing good while doing well” is possible. In practice, highly responsible firms are less prone to costly crises such as stakeholder relation scandals, environmental disasters or otherwise disadvantageous media attention (Hamilton et al. 1993; Statman & Glushkov 2009). Additionally, Chan & Walter (2014) state that poor social responsibility may destroy long term firm value due to reputational losses or litigation costs. Furthermore, Sauer (1997) suggests that socially responsible firms may outperform their less responsible peers by building up to a higher level of loyalty with their customers, vendors, and employees. Also, the overperformance theory is identified by various academic proponents (Derwall, Guenster, Bauer & Koedjik 2005; Kempf and Osthoff 2007; Edmans 2011).

The final option is the “no effect” hypothesis stating that expected returns are not significantly different between the socially responsible stocks and conventional ones. Empirical evidence supporting the hypothesis can be found for example in the papers of Auer & Schuhmacher (2016), Statman (2000) and Sauer (1997). In theory, the “no effect” should be the case if social responsibility is not priced in stock markets, as non-risk related factors should be according to the theoretical framework of finance. Furthermore, the hypothesis might be correct if the actions to increase social responsibility are exactly equally costly as the benefits that spring from the improvements on the ESG aspect. For example, a raise in employee salaries presumably increases employee satisfaction which might result in a situation where productivity is advanced, but employee costs are equally increased. (Hamilton et al. 1993; Statman & Glushkov 2009)

Clearly, the question regarding the performance of SRI is an intriguing issue that is still open for future academic research. The previous literature shows mixed and vary results regarding the performance in different fields of SRI. Plenty of research exists and every hypothesis has their own proponents as mentioned above. Below the thesis presents a more detailed analysis of some of the most important papers regarding the financial performance of socially responsible investing.

One of the earliest papers to support the underperformance hypothesis is the paper by Rudd (1981). In his paper Rudd examines SRI in connection with the classical portfolio theory and argues that socially responsible portfolio management limits the diversifying possibilities, leading to an increased risk. As indicated by modern portfolio theory this additional risk emerging from optional restrictions heightens the risk and induce additional costs while the expected return of the portfolio is decreased (Rudd 1981). The study by Kahn, Lekander & Leimkuhler (1997) shows empirical evidence to support the underperformance hypothesis as authors examine the performance of SRI in the U.S. stock market by comparing the performance of S&P 500 portfolio to the tobacco-free S&P 500 portfolio. Kahn et al. (1997) study the performance of SRI by evaluating the effects of negative screening on tobacco companies. Tobacco firms are a suitable group for the examination as the industry is one of the most famous targets of negative screens but still a profitable business segment. Based on their investigation Kahn et al. (1997) conclude that restriction to not invest in the tobacco industry is a moral decision involving costs related to increased risk, restricted possibilities, and transaction costs.

One of the studies endorsing the “doing good but not well” hypothesis is the paper by Renneboog, Ter Horst & Zhang (2008b), in which authors globally investigate the performance of socially responsible mutual funds. The final sample of Renneboog et al. (2008b) consists of 440 SRI mutual funds and 16 036 conventional funds from 17 countries located in Europe, North America, and Asia-Pacific. By utilizing the Fama & French (1993) three-factor model and Carhart’s (1997) four-factor model the authors are able to identify that for most of the countries risk-adjusted returns of the SRI funds range from -2.2% to -6.5% per annum. Renneboog et al. (2008b) still conclude that this underperformance is mostly supporting the “no effect” hypothesis as in most of the countries the underperformance is not statistically significant. Specifically, only in four out of 17 countries, including France, Ireland, Sweden and Japan, the underperformance theory is supported by statistically significant results. In those four countries, Renneboog et al. (2008b) report abnormal returns of SRI varying from -4% to -7% per annum. Similar results regarding the significant underperformance of SRI mutual funds can be found in papers of Geczy, Stambaugh & Levin (2005), Tippett (2001) and Mueller (1991).

Supportive evidence for the “doing good but not well” hypothesis can be found also from the paper of Hong & Kacperczyk (2009) as authors empirically confirm that portfolios consisting of so-called “sin stocks” yield abnormal returns. Hong & Kacperczyk (2009) conclude that social norms impact on stock markets and investors may experience ethical penalty by refraining investments based on those norms. Also, the recent paper by Trinks

& Scholtens (2017) focuses on studying the effects of controversial investments. Trinks & Scholtens (2017) examine a wider set of sinful companies based on fourteen controversial issues that are known to be also a target of negative SRI screening. Authors end up with a sample of 1763 stocks over the years 1991-2012 and evaluate the performance by Carhart's (1997) factor model. In conclusion, Trinks & Scholtens (2017) state that by negative screening investors may experience significant opportunity costs as in many segments controversial investments yield abnormal risk-adjusted returns. In other words, SR investors are paying a price for being responsible (Trinks & Scholtens 2017).

As the evidence to support the underperformance hypothesis is not exhaustive, the "no effect" hypothesis is more widely recognized. Numerous studies including the paper by Hamilton et al. (1993) state that there is no statistically significant difference between the performance of SRI and the performance of conventional investments. Hamilton et al. (1993) examine the returns by calculating the Jensen's alpha of 32 SRI mutual funds during the 1980s and find that when comparing the returns of SRI relative to value-weighted NYSE returns no significant results are found. Furthermore, the authors reveal only statistically insignificant differences by comparing the performance of socially responsible mutual funds to conventional mutual funds.

Recognizing the evidence of prior research Sauer (1997) criticizes the confounding effects related to the mutual fund -based findings and states that for example management fees, transaction costs and manager's picking ability might distort the evidence. To provide pronounced evidence Sauer (1997) utilizes the Domini 400 Social Index (DSI) as a well-diversified SRI portfolio that is not subject to the confounding effects to compare the returns of the index with two unrestricted and well-diversified benchmark portfolios. The employed benchmarks are the S&P 500 index and CRSP (Center for Research in Security Prices) value-weighted market index. The study is conducted by measuring raw monthly returns, Jensen's alphas and Sharpe ratios of these three portfolios over the period from 1986 through 1994. The findings of the research suggest that the use of socially responsible screens as a guideline for investment decisions has neither a negative nor positive impact on the risk-adjusted returns of a well-diversified portfolio. (Sauer 1997.)

In line with Sauer (1997) also Statman (2000) considers the performance of the DSI relative to the S&P 500 index and reveals similar results. The risk-adjusted returns of the DSI do not differ from the returns of the S&P 500 index in a statistically significant manner during the years 1990-1998. The paper of Statman (2000) evaluates the performance of socially responsible mutual funds as well and states that during the period in question

SRI funds performed better than conventional ones however the difference is not statistically significant. Furthermore, similar results regarding socially responsible mutual funds and indices can be found for example from the papers of Bauer, Koedijk & Otten (2005), Kreander, Gray, Power & Sinclair (2005) and Schröder (2004).

One of the more recent papers trying to clarify the performance behavior of SRI is the paper by Auer & Schuhmacher (2016). Employing a new ESG dataset, based on large, mid and small-capitalization companies, authors examine if it is possible to gain abnormal risk-adjusted returns based on high or low ESG rated stocks. The dataset of Sustainalytics covers firms from the Asia-Pacific region, the United States and Europe during the period from August 2004 to December 2012 and offers novel ESG scores based on 70 specific indicators. In their paper Auer & Schuhmacher (2016) construct various equally weighted portfolios based on the highest and lowest ESG scores with five different cut-off rates (5%, 10%, 15%, 20%, and 25%). The total amount of 600 constructed portfolios is derived by using different regional, sectoral and ESG based selection with each cut-off rate and includes both the most and the least responsible portfolios. By calculating the Sharpe ratio for each portfolio Auer & Schuhmacher (2016) are able to find that in the Asia-Pacific region and in the United States an investment strategy based on high or low ESG ratings does not consistently yield significantly different returns relative to the passive benchmark portfolios. Similarly, in Europe high ESG scores do not appear to lead to abnormal returns. Instead, authors indicate that within certain industries some ESG based strategies might even end up significantly lower returns than the benchmarks. Concluded, it is possible for fund managers to provide “responsible profits” for ethical investors but abnormal returns must be sought elsewhere. (Auer & Schuhmacher 2016.)

In contrast, prior to the study of Auer & Schuhmacher (2016) various academicians provide also evidence to support the positive abnormal returns of ESG based strategies. For example, early studies of Luther, Matatko & Corner (1992), Diltz (1995) and Mallin, Saadouni & Briston (1995) find suggestive signs of weak overperformance by ethical funds relative to the conventional ones. Derwall, Guenster, Bauer & Koedijk (2005) provide more sturdy evidence to support the “doing good while doing well” hypothesis by studying the relation between corporate eco-efficiency scores and performance. The paper of Derwall et al. (2005) examine portfolios of the most and the least eco-efficient stocks based on Innovest database during the period of July 1997 through December 2003. To measure the performance in an unbiased manner, authors utilize the multifactor model of Carhart (1997) and are able to detect that the most eco-efficient companies outperform the least eco-efficient ones significantly. Consequently, the evidence suggests

that investors should evaluate also the environmental scores while investing in stocks (Derwall et al. 2005).

Another paper finding the positive effect of SRI is Kempf and Osthoff (2007), in which the SRI returns are examined by a simple long-short portfolio based on ESG criteria. The ESG data of the research, including six criteria: community, diversity, employee relations, environment, human rights, and products, is gathered from the database of Kinder, Lydenberg, and Domini (KLD) and it covers the period from 1992 to 2004. Based on the ESG ratings authors construct various high and low rated portfolios to evaluate the performance. In addition, the long-short strategy is implemented by taking a long position with the high rated stocks and by shorting the low rated ones. More specifically, the positive, negative and best in class screening approaches with various ESG aspects and cut-off rates are employed to build the portfolios and Carhart's (1997) four-factor model is exploited to measure the accurate effect. The empirical evidence of the paper firmly states that substantial performance increase can be achieved by implementing SRI during the period in question. Particularly the paper proposes that the long-short portfolios based on the positive screens and the best in class approach yield significant alphas. The highest abnormal return of a singular portfolio reported in the paper is 8.7 % per year and is achieved by following the best in class method. The abnormal returns reach the level of significance even after accounting realistic transaction costs. (Kempf & Osthoff 2007.)

In line with Kempf & Osthoff (2007) also Statman & Glushkov (2009) find evidence to support the outperformance of SRI relative to conventional portfolios. In their paper, Statman & Glushkov (2009) analyze the returns of the ESG based best in class portfolios based on KLD data and conclude that by using certain ESG aspects abnormally positive returns can be reached. Notably, the paper suggests that socially responsible investors should concentrate on high scores of communal, employee relational and environmental aspects of stocks and to gain the highest returns investors should implement the best in class approach without shunning sin industries. Authors still admit the conflicts that might occur when socially responsible investors should include sin companies in their SRI portfolios to enhance profitability. Nevertheless, evidence to support the "doing good while doing well" hypothesis is provided. (Statman & Glushkov 2009.)

Moreover, supportive evidence for the overperformance theory can be found from the paper of Edmans (2011), in which the relationship between employee satisfaction and stock prices is under investigation. The employee relations data is based on the list of the "100 Best Companies to Work for in America" published by Fortune magazine. By

evaluating the listed firms Edmans (2011) confirm that abnormal long-term returns can be achieved based on employee satisfaction. Hence, the evidence states that capital markets are not able to value intangibles correctly and SRI screens may offer additional value for investors (Edmans 2011). Similar conclusions based on the environmental dimension of individual companies are made by Chan & Walters (2014). They report that their environmentally oriented portfolios yield approximately 7 % annual alpha based on Carhart's (1997) four-factor model (Chan & Walter 2014).

Further, Borgers, Derwall, Koedijk, and ter Horst (2013) examine whether the quality of firms' stakeholder relations, in general, is an incorrectly priced intangible asset that impacts stock prices as Edmans (2011) stated. The methods of Borgers et al. (2013) include building a stakeholder-relations index (SI) for U.S. firms over the period 1992-2009. By building the SI based portfolios authors are able to detect abnormal returns between the years 1992-2004. Nonetheless, the effect ceases to exist after the mentioned period, probably because of the learning of investors. As the standard economic theory explains the mispriced information disappears through time as investors learn about the effect. Borgers et al. (2013) explain that increased financial media attention, academic interest, and proposals by institutional investors started the learning effect of investors leading to the disappearance of SI based returns in 2004. Bebchuk, Cohen & Wang (2013) provide similar evidence of learning effect with their study in which abnormal alphas related to good governance disappear after the governance issues gain more public attention.

As shown above mixed and vary results regarding the profitability of SRI exist. One of the possible reasons is the heterogeneity of the field but also the different time periods and methods confound the field. Some recent studies declare that the learning hypothesis can resolve the heterogeneity regarding the performance issue. This thesis will centralize its focus to understand the results by investigating the option of time-varying SRI returns.

### 3.2. SRI during crisis

This thesis examines the possibility that SRI is only booming during times when aggregate wealth is at a high level, hence a strand of pervious literature studying the SRI during market crisis provides an interesting addition to the literature review. This thesis concentrates on economic downturns and recessions as the below presented literature focus on crisis periods. It is important to notice that these time periods differ in length and in timing and are not the same.

Perhaps the most seminal paper investigating SRI during the crisis period is the paper by Lins, Servaes & Tamayo (2017). In their paper Lins et al. (2017) examine the effect of additional trust and social capital on firm performance. Authors state that the advantage exists, and this additional trust achieved by implementing high-quality CSR policies can be an important factor during a market crisis. Lins et al. (2017) conduct their study by utilizing firms' ESG data from the MSCI ESG STATS (former KLD) database to detect the high and low ESG rated firms. The final sample consists of data of 1673 firms during the recent financial crisis from August 2008 to March 2009. The paper of Lins et al. (2017) provides empirical evidence suggesting that firms with high social capital are trustworthy during the market crisis and hence less prone to perform poorly relative to the conventional firms. Specifically, firms that entered the recent financial crisis period with high ESG ratings performed statistically significantly better than companies that entered the crisis with low ratings. Further, Lins et al. (2017) state that there is no difference in returns based on ESG ratings during the post-crisis period. Summarized, CSR based social capital can be viewed as an insurance policy that may pay off when a severe crisis is faced (Lins et al. 2017).

Also, an earlier study by Godfrey, Merrill & Hansen (2009) investigates the insurance-like feature possibly gained by CSR actions. Godfrey et al. (2009) suggest that the relationship between corporate social responsibility and corporate financial performance exists and examine the insurance-like behavior during different events. The results show that during various events implemented CSR strategies might offer value for shareholders and the significance of the effect depends on the target of these CSR activities. Godfrey et al. (2009) conclude that to gain the hedging effect CSR must be implemented on behalf of secondary stakeholders or society in general. Another paper finding the relation between downside risk protection and social responsibility is the paper by Nofsinger & Varma (2014) in which mutual fund data is examined to certify how ESG screens impact on the returns. Particularly, Nofsinger & Varma (2014) report that SR mutual funds employing positive screening methods outperform conventional funds significantly during the market crisis but during non-crisis periods such social responsibility induces costs. In conclusion, risk-averse investors may pay an additional cost during steady periods to gain protection in case of the most turbulent times (Nofsinger & Varma 2014).

The same issue is approached by several additional studies including for example research by Nakai, Yamaguchi & Takeuchi (2016) and Bouslah, Kryzanowski & M'Zali (2018). Nakai et al. (2016) find the buffering effect of Japanese SRI funds during the recent

financial crisis and conclude that SRI funds significantly outperformed the conventional ones during the recent crisis. Bouslah et al. (2018) instead examine the relation of social performance and firm-risk during the period 1991-2012. The paper of Bouslah et al. (2018) reveals that firms who have reached a high level of social performance offer investors significant risk reduction possibilities during the crisis. The empirical evidence is based on MSCI ESG STATS data and further indicates that the relation between firms' ESG based strengths and overall risk mostly explains the effect. Consequently, authors suggest that during crisis significant volatility reduction can be gained by investing in firms that possess high-quality CSR strengths (Bouslah et al. 2018). In contrast, for example Leite & Cortez (2015) and Syed (2017) do not find a significant difference in returns of European SRI funds and conventional funds during the recent crisis. In summary, the research of Leite & Cortez (2015) considers French SRI funds and does not find the hedging effect of SRI relative. Instead, the evidence of the paper suggests that SR investors might pay a price for ethics during non-crisis periods and can match the performance of non-SR investors during market downturns (Leite & Cortez 2015). In addition, Syed (2017) examine the performance of French and British SRI funds, overall findings do not show statistically significant evidence on behalf of under- or overperformance during crisis periods.

In conclusion, previous studies mostly suggest that high-quality CSR is a much-appreciated feature during the crisis and socially responsible firms outperform their benchmarks during market meltdowns because of several reasons including trust, brand, reputation, employee morale, customer loyalty and social capital in general (Lins et al. 2017; Bouslah et al. 2018). As the intention of this thesis is to study the possible luxurious behavior of SRI the previous evidence is somewhat contrary to the hypothesis of the thesis. The hypothesis suggests that ESG based investment strategies perform well only when the aggregate wealth is at a high level. It is still important to notice that economically bad times are not the same as crisis periods. For example, economically bad times tend to last longer than crisis periods and usually, recovery periods from the crisis are economically bad times. For example, Lins et al. (2017) use the period from August 2008 to March 2009 as the crisis period and the corresponding recession period is 10 months longer from December 2007 to June 2009 defined by the NBER. Further, Lins et al. (2017) state that during the recovery period there is no difference between the returns of high and low ESG rated firms.

### 3.3. Evidence of wealth dependent preferences



This thesis is based on the idea of Bansal, Wu & Yaron (2018). In their working paper titled “Is Socially Responsible Investing A Luxury Good?” Bansal et al. (2018) examine the possible time variability of SRI based abnormal returns. Their paper targets to clarify how the contradiction in the field of SRI can be explained as all three hypotheses regarding the performance have their own proponents and also the relation between CSR and CFP still remains obscure. To address the issue Bansal et al. (2018) have various different approaches to test the hypothesis regarding the time-varying SRI alpha. The paper employs the firm-level ESG data from MSCI ESG STATS including eight major categories of corporate social responsibility: community (impact on the community), diversity (practices on racial and gender diversity), employment (employee satisfaction), environment (environmental impact), governance (investor relations and managerial responsibility), human right (practices affecting on human rights), product (quality, and impact on society and environment) and sin (sin concerns). Within every category, several sub-criteria exist and each of them can be defined as a strength or concern. The initial ESG data includes S&P 500 companies from 1991 to 2000, Russel 1000 companies from 2001 to 2002, and Russel 3000 companies from 2003 to 2013, forming the entire examining period from January 1991 to December 2013. (Bansal et al. 2018.)

Based on the ESG strengths and concerns Bansal et al. (2018) are finally able to compute overall social responsibility score and individual SR category scores for each firm. These ratings are utilized to compile 10 equal-weighted deciles for each score and for the overall score. Decile 10 represents the top portfolio with the best SR-rated companies and decile 1 the bottom portfolio with the least responsible ones. Furthermore, Bansal et al. (2018) compile long-short portfolios from each decile set, by subtracting the top decile from the bottom decile. The performance evaluation is conducted by using 36-month rolling regression. The paper provides portfolio alphas based on Carhart’s (1997) factor model and the results of the general evaluation show that “good” firms have marginally higher alphas than “bad” firms, approximately 0.15 % per month. The categories of environment, governance, and product mainly drive the result as these are the only statistically significant categories, with the monthly alpha ranging from 0.32 % to 0.44 %. However, the alpha displays high time variability even if the distribution of SR scores has remained relatively consistent throughout the sample period. For example, during the recent recession between 2007 and 2009 Bansal et al. (2018) reports, in contrast for example to the research of Lins et al. (2017), a significant negative relationship between the returns and SR scores. (Bansal et al. 2018.)

Further, the paper of Bansal et al. (2018) investigates the main hypothesis of wealth dependent preference shifts of investors toward SRI. Particularly, Bansal et al. (2018) argue that investors view SRI as a luxury good and investing in responsible stock is a discretionary decision affected by the level of aggregate wealth. The reasoning is that during periods when the aggregate wealth is at high level investors can afford to be SRI-conscious. In other words, investors can afford to temporarily deviate from the efficient frontier by investing in high SR-rated stocks. Bansal et al (2018) reason that investor actions may drive the demand of SRI resulting in higher abnormal returns. When the aggregate wealth declines investors are forced to ignore their discretionary SR desires to meet their fundamental needs. Basically, investors adjust their portfolios back to the efficient frontier driving the SRI returns down. To implement the analysis Bansal et al. (2018) create two indicators for “economically good times” using cyclical-adjusted real P/E ratios and one-year real GDP growth projections. In addition, the NBER recession periods are employed. Finally, the hypothesis regarding luxury-good-like behavior is tested by comparing the returns of SRI to the consumption of luxury goods and to the sales growth of luxury retailers. (Bansal et al. 2018.)

The results of Bansal et al. (2018) indicate that the four-factor alpha of the top-bottom portfolio is pronounced during “good times” and not significant during “regular” or “bad times”, during the recession the alpha might even be significantly negative. In summary, responsible stocks earn significantly higher alphas during “good times” relative to irresponsible stocks, beyond “good times” the difference becomes mainly insignificant. Furthermore, the time-varying alpha spread of the top-minus-bottom portfolio displays a high correlation, correlation coefficient 0.528, with the per capita consumption of jewelry and watches. The spread is also correlating with real luxury sales by a coefficient of 0.329. Findings above suggest wealth dependent preferences of investors toward SRI when the growth of consumption is high then SRI is a reckoned investment option.

To provide more comprehensive evidence Bansal et al. (2018) form an event study to detect market reactions on CSR related announcements during different economic times. Interestingly, when Bansal et al. (2018) study the intra-day effect of 5 327 positive CSR-related announcements, findings show that on average announcements do not create significant market reactions. However during good economic times, these announcements yield an abnormal return of 0.09 % on average and during bad times abnormal return is even negative, approximately 0.06 %. Additionally, similar results are detected with a longer event window. Finally, after several robustness checks, the authors conclude that investors’ preference shifts based on the aggregate wealth may drive the demand for SRI

investments and thus create the luxury-good-like behavior of socially responsible investing. Basically, consumers can afford luxuries and investors can afford to be socially responsible during boom markets. (Bansal et al. 2018.)

The findings of Bansal et al. (2018) have several implications. First, it highlights the importance of investor preferences secondly when evaluating the relation between CSR and CFP the cash flow-based aspects might not be as important as previous research mostly suggest. Thirdly, it provides important insight for the fund managers and to designers of SRI products as the economic forecasting ability appears to be the key to the well-performing SRI. Finally, based on the evidence of the paper SR investors do not have to pay a so-called ethical penalty for being responsible. Apparently, they only must realize that the returns might vary over time and if they want to outperform the market at least the level of responsibility should be adjusted over time. (Bansal et al. 2018.)

Although the empirical evidence towards the wealth dependent preference structure of SRI is a novel opening, the idea that the level of wealth influences on investment choices is rather a primitive notion. Additionally, the SRI motive oriented previous literature notices the level of wealth as one of the possible drivers behind the responsible investing. Some investors are willing to invest in a responsible way albeit they are told that SRI induce underperformance (Sparkes 1998; Lewis & Mackenzie 1999) and for example, Tippet & Leung (2001) suppose that ethical investors might be wealthier and therefore able to bear additional costs. Moreover, similar behavior applies to corporate finance as implemented CSR activities might depend on the past earnings and the financial constraints of a company. Hong, Kubik & Scheinkman (2012) conclude that firms are more likely to do good when they do well and the hypothesis of “doing well by doing good” is doubtful. In their paper Hong et al. (2012) show that in general financially constrained firms are doing less CSR. Further, their study reveals that when financial constraints fade away, for example during the booming market, previously constrained companies are increasing the amount of CSR actions. Consequently, corporate goodness may vary over time with the level of financial constraints in a similar manner as the demand of SRI may vary depending on the aggregate wealth. (Hong et al. 2012.)

Considering the evidence of previous performance-based research and the hypotheses of earlier motivation-based literature this thesis admits that the reasoning behind the idea of Bansal et al. (2018) is recognizable, current and worthy to explore more closely. Even though some findings, for example, the seminal findings of Lins et al. (2017) are contrary to the hypothesis.

## 4. THEORETICAL BACKGROUND

In this chapter of the thesis the Efficient Market Hypothesis, the Modern Portfolio Theory and the most common stock valuation methods within the field of socially responsible investing are briefly presented. These concepts are substantive before any further orientation to the methods of the thesis.

### 4.1. Efficient Market Hypothesis

Fama (1970) presents the Efficient Market Hypothesis (EMH) stating that a market is efficient when it always fully reflects all available information. The hypothesis states that it is not possible to gain excess returns since stock prices always reflect all market information accurately at any point in time. Only new and relevant information can cause changes in stock prices and the reaction of the price change will be immediate and fully correct. There appears neither over- or underreactions nor delayed reactions in efficient markets. After the reaction, new price always contains all possible and relevant information. (Fama 1970.)

Further, the Efficient Market Hypothesis suggests that the market efficiency can be divided into three categories each representing a certain level of efficiency. First, the weak-form efficiency means that information subset is only historical, and prices contain all available information for example from past price changes, returns, and trading volumes. In the weak-form of efficient markets, it is impossible to forecast future prices from historical return data. Therefore, it is not possible to find any patterns to gain excess returns and technical analysis is made useless by weak-form market efficiency. (Fama 1970; Bodie, Kane & Marcus 2018.)

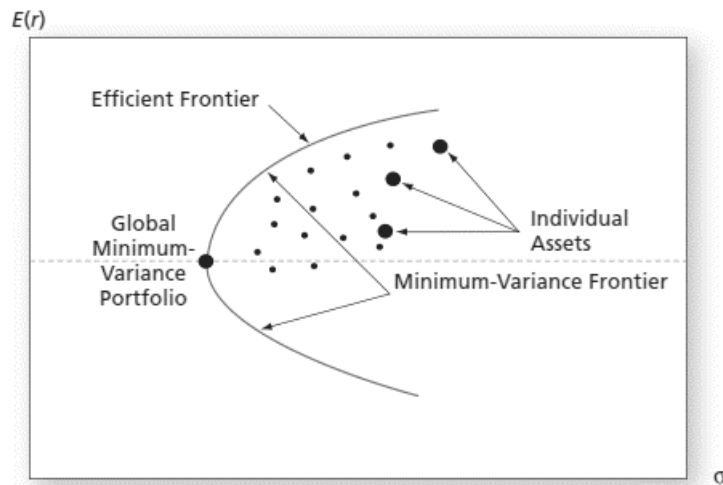
Second, the semi-strong efficiency measures whether prices reflect entirely historical information and the information that is obviously available for the public. Public information includes for example annual and quarterly earnings announcements and stock splits. When all this public information is reflected in prices there is no possibility to gain excess returns on the market. Third, the strong form of market efficiency is the level where prices reflect all available information. The strong form includes weak and semi-strong efficiency but also all other information that is under monopolistic access. Therefore, in strong form market efficiency means that stock prices react immediately and

correctly for example also incorporates' inside information. In strong efficient markets, it is impossible to gain profits even with inside information. (Fama 1970; Bodie et al. 2018.)

Regarding SRI the efficient markets would mean that any abnormal returns cannot be yielded based on ESG screening methods as stock prices should always reflect also the valuable CSR related information. Thereby, if the efficient market hypothesis is correct SR investors are investing in responsible stocks to meet their personal values or to gain other non-profit benefits. Still, for example the strongly efficient markets are highly doubtful concept and normally inside information is not fully reflected by the market prices. Hence, CSR information might provide benefits, for example, to risk management purposes, as some proponents of the outperformance hypothesis suggest that ESG screening protects the investor against the "scandal risk" (Hamilton et al. 1993; Statman & Glushkov 2009). At the same time, investors should use common sense to realize that on average equity markets are fairly efficient and if the outperformance of SRI would be continuous there would be market participants to exploit it. As for example Borgers et al. (2013) state that investors' learning effect might explain the disappearance of SRI returns in their sample.

#### 4.2. Modern Portfolio Theory

One of the most fundamental theories of modern finance is the portfolio theory by Markowitz (1952). In principle, Markowitz (1952) finds that the minimum variance frontier of risky assets exists, and an investor should be interested only in investing in the upper half of the minimum variance frontier known as the efficient frontier. The efficient frontier consists only of portfolios offering the highest expected return at a certain level of risk. In other words, investors should minimize the standard deviation of the portfolio while pursuing a certain level of expected returns. Hence, rational market participants desire only investments in an optimal portfolio from the efficient frontier. Figure 3 below shows that diversification is the only possibility when forming an efficient portfolio as individual assets offer lower risk-adjusted returns relative to the efficient portfolios. To construct an efficient and optimal portfolio investor should have access to the whole investment universe. Any constraints during portfolio construction will deteriorate the process. (Bodie et al. 2018; Markowitz 1952.)



**Figure 3.** The minimum variance frontier and the efficient frontier of risky assets (Bodie et al. 2018).

Consequently, any restrictions influence directly to the portfolio and cause deviation from the efficient frontier. Therefore, ESG screens cannot be implemented without additional costs as the optimal portfolio is harmed over the screening process. Induced costs can be justifiable only because of the underlying cause (Bodie et al. 2018). In practice, a socially responsible strategy limit managers' allocation possibilities and thus should lead to additional costs such as increased risk or lower performance. The “doing good but not well” hypothesis should be the only possibility if we believe the modern portfolio theory. (Rudd 1981.)

#### 4.3. Asset pricing and Carhart's Four Factor Model

The Capital Asset Pricing Model (CAPM) developed in the mid-1960s by William Sharpe, John Lintner, and Jack Treynor is maybe the most prominent asset pricing model in the field of finance. While the CAPM suggests that in competitive markets systematic risk directly explains the returns of an asset, nowadays it is widely considered as not the perfect model and alternative elaborated models have been established (Bodie et al. 2018). First, Fama & French (1996) reform the model by adding factors for size (SMB) and value (HML) since the CAPM is not able to price these traits of stocks' correctly, the model is called Fama-French three-factor model. With these additional factors, Fama &

French (1996) suggest that all abnormal returns can be explained with the formula that is displayed below.

$$(1.) \quad R_i - R_f = \alpha_i + b_i(R_M - R_f) + s_iSMB + n_iHML + \varepsilon_i$$

*R<sub>i</sub>* = return on stock/portfolio *i*

*R<sub>f</sub>* = risk free interest rate

*a<sub>i</sub>* = intercept of stock/portfolio *i*

*b<sub>i</sub>* = factor beta for market factor

*R<sub>M</sub>* = return on a broad market portfolio

*s<sub>i</sub>* = factor beta for size factor

*SMB* = Small Minus Big

*h<sub>i</sub>* = factor beta for value factor

*HML* = High Minus Low

*ε<sub>i</sub>* = influence of other factors affecting on stock *i*

Even though the Fama-French three-factor model is an advanced alternative compared to the CAPM it still lacks the capability to explain certain anomalous returns, for example the returns based on the momentum effect (Fama & French 1996; Bodie et al. 2018). While trying to explain momentum profits Carhart (1997) suggests that momentum is an important common factor of stock returns and constructs a factor model including a momentum factor. Carhart's four-factor model presents an additional factor to the Fama-French three-factor model that captures a one-year momentum anomaly. The additional one-year momentum factor (WML) shows the difference between a portfolio of firms with the highest last twelve-month returns without the returns of formation month and firms with the lowest last twelve-month returns without the returns of formation month. Hence, in Carhart's model, the momentum factor shows difference between so-called winners and losers portfolios. The model is presented below. (Carhart 1997.)

$$(2.) \quad R_i - R_f = \alpha_i + b_i(R_M - R_f) + s_iSMB + n_iHML + h_iWML + \varepsilon_i$$

*h<sub>i</sub>* = factor beta for one-year momentum factor

*WML* = Winners Minus Losers

Carhart (1997) suggests that his model captures much more accurately momentum returns compared for example to the CAPM or the Fama-French three-factor model, hence providing more accurate pricing for assets. Carhart's four-factor model is widely

accredited among academic research and still, a practical model to use as the amount of the factors is not overwhelming. As the previous literature in the field of SRI reveals it is also one of the most used models regarding the performance driven research of SRI. Because of the mentioned position of Carhart's four-factor model also this thesis utilizes it for the empirical evaluation.



## 5. DATA AND METHODS

This section presents the data and the methods used for the empirical analysis of the thesis. First subchapter presents the source of the data in general. The second part describes the details of the data and in the final subchapter the empirical methods of this thesis are addressed.

### 5.1. Databases

Nowadays as socially responsible investing is gaining more attention among investors and academicians, also the amount of reckoned data providers is increasing. In the SRI driven academic literature, the most used database is the MSCI ESG STATS and other worthy data providers include for example Thomson Reuters ASSET4, KLD Research & Analytics, Bloomberg, CSRHUB and Sustainalytics. For example, the closely related paper by Bansal et al. (2018) utilizes the MSCI ESG STATS data. This thesis employs the ESG rating data gathered from the Thomson Reuters ASSET4 database and thus offers an additional contribution relative to the paper of Bansal et al. (2018).

The Thomson Reuters ASSET4 database monitors over 280 ESG key performance indicators based on four different measure categories for thousands of the world's leading companies. These evaluated ESG categories include commonly used environmental, social and corporate governance aspects but also additionally ASSET4 evaluates firms' economic features regarding responsibility. Environmental aspect includes consideration based on resource reduction, product innovation, and emission reduction. Social segment assesses responsibilities for example based on employment quality, health, and safety, human rights and community. On the other hand, governance attends to problems regarding for example board structure, compensation policy, and shareholder rights. Further, economical aspects consider responsibility for example based on client loyalty, performance, and shareholder loyalty. Based on these four aspects of responsibility ASSET4 offers the equally weighted rating for the firms under evaluation, below the thesis refers to the equally weighted ratings as "EW scores". These four aspects and the EW scores offered by Thomson Reuters ASSET4 database are referred below as "ASSET4 ESG scores". Table 1 below shows the number of measures, weighting, and categories behind the ASSET4 ESG scores. The EW scores are calculated based on the total count of 282 categories and the weights displayed in the table. A score is a number between 0 and 100 demonstrating how the company performs compared to the entire ASSET4 universe regarding a certain measuring aspect. Nowadays the Thomson Reuters ASSET4 is updated

and the database is called Refinitive ESG Scores. This thesis uses the ASSET4 ESG scores of S&P 500 firms and the utilized data-period covers the years from 2002 to 2017. (Refinitive 2019.)

**Table 1.** Thomson Reuters ASSET4 categories, amount of measures and weights (Refinitive 2019).

<b>Categories and subcategories</b>	<b>Measures</b>	<b>Weight</b>
<b>Environment</b>	<b>70</b>	<b>25 %</b>
Resource reduction	17	8.33 %
Emission reduction	28	8.33 %
Product innovation	25	8.33 %
<b>Social</b>	<b>88</b>	<b>25 %</b>
Employment quality	17	3.57 %
Health and safety	9	3.57 %
Training and development	10	3.57 %
Diversity and opportunities	10	3.57 %
Human rights	8	3.57 %
Community	15	3.57 %
Product responsibility	19	3.57 %
<b>Governance</b>	<b>68</b>	<b>25 %</b>
Board structure	17	5 %
Compensation policy	13	5 %
Board functions	15	5 %
Shareholder rights	11	5 %
Vision and strategy	12	5 %
<b>Economic</b>	<b>56</b>	<b>25 %</b>
Client loyalty	18	8.33 %
Performance	16	8.33 %
Shareholder loyalty	22	8.33 %
<b>Total count (as a base for EW score)</b>	<b>282</b>	<b>100 %</b>

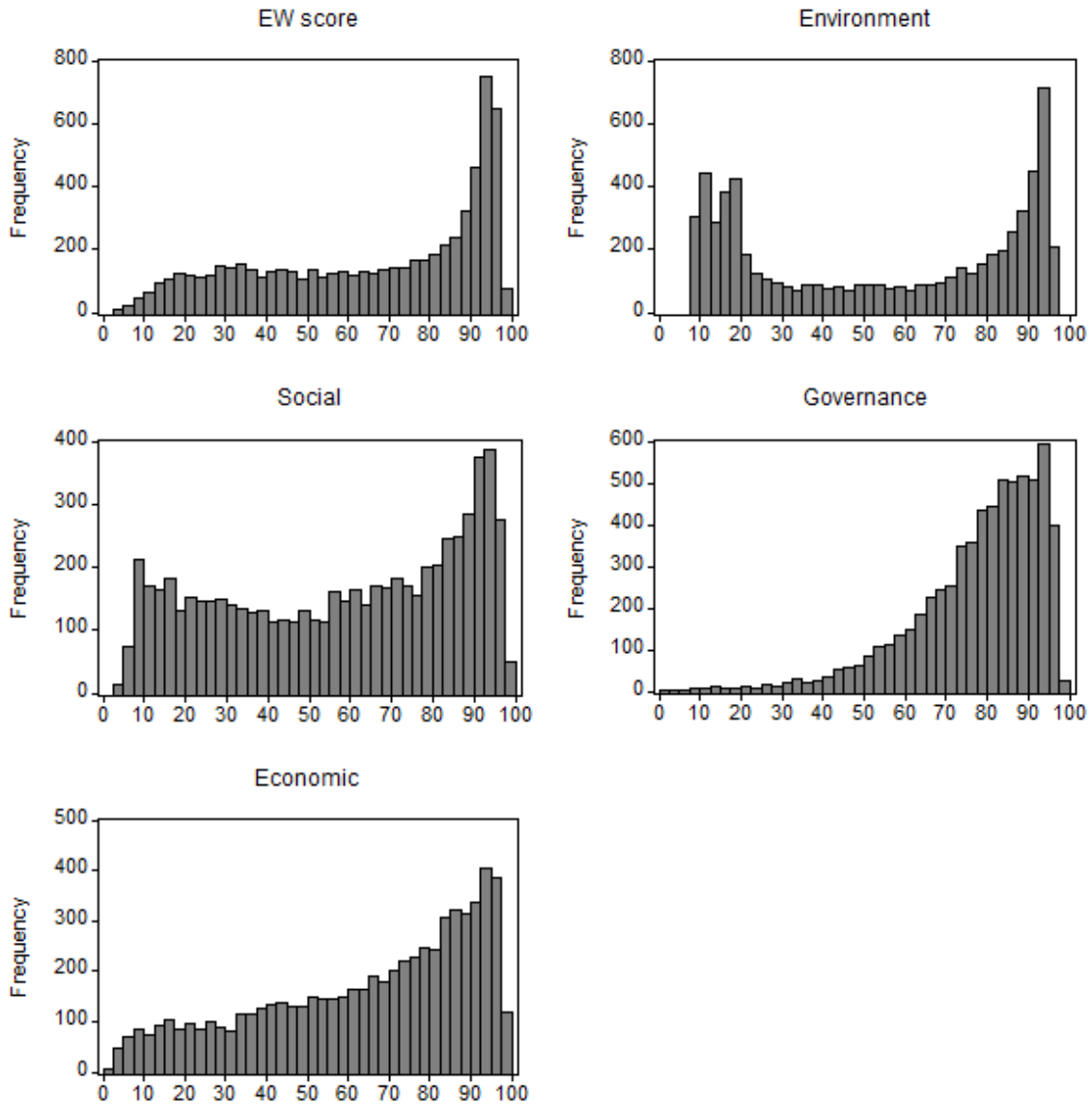
Additionally, the return data of the S&P 500 firms are utilized to evaluate the performance of SRI portfolios based on ASSET4 ESG scores. The return data is gathered from Thomson Reuters Datastream. To estimate the risk-adjusted returns of the SRI portfolios the factor data regarding market, size, value and momentum factors is employed from the Kenneth French's website. Additionally, the thesis utilizes the business cycle data from the National Bureau of Economic Research (NBER) to detect if SRI returns fluctuate over

time with the business cycle. The latest recession period from December 2007 to June 2009 is exploited. Finally, to detect the luxury-good-like behavior of SRI the thesis employs the data of U.S. personal consumption expenditures regarding jewelry and watches. Luxury consumption data is from the database of the Bureau of Economic Analysis (BEA), U.S. Department of Commerce.

### 5.1.1. ESG data description

The main data of the thesis includes two samples gathered from the Thomson Reuters database. First, the data from Thomson Reuters ASSET4 consists of the ASSET4 ESG scores for 500 companies that were listed in the S&P 500 index in 2019. The data period includes year-end observations for a 16-year period from 2002 to 2017. The ASSET4 sample results in 6505 scores for each category and the yearly coverage for these categories varies from 233 firm-specific observations in 2002 to 498 observations in 2016. The total amount ends up with over 32,000 observations including equally weighted scores and scores for each of the four individual categories. The period in question is limited as the ASSET4 ESG data is not available for the years before 2002. Secondly, the corresponding end-of-the-month total return index values for the S&P 500 companies are gathered from the Thomson Reuters Datastream for the period of 2003-2018. Based on the gathered end-of-the-month values the final return sample includes over 88,000 observations during the 192-month period.

Figure 4 below shows the frequency distributions regarding the ASSET4 ESG scores during the sample period. The Y-axis demonstrates the frequency of observations in each of the percentiles and the X-axis showcases the percentiles from 0 to 100. The figure demonstrates that especially scores regarding the environmental aspect varies interestingly between percentiles, as both low (10<sup>th</sup>) and high (90<sup>th</sup>) percentile scores are much more frequent than scores in between. The pattern might indicate that companies either have a strong orientation towards environmental issues or lack the aspiration almost completely. The similar but weaker pattern occurs with social scores. In contrast in governance and economic categories, most companies are able to score in high percentiles. Especially high scores are reached in the governance category as only a few companies fall to percentiles below the 50<sup>th</sup>.



**Figure 4.** Frequency distributions of ASSET4 ESG categories.

The figure illustrates frequency distributions of all ASSET4 ESG scores including “EW score”, “Environment”, “Social”, “Governance” and “Economic” categories. The “EW score” represents the descriptive statistics of Equally Weighted scores. A firm-specific year-end score may vary from 0 to 100 in each category. X-axis demonstrates the score percentiles and Y-axis the frequency.

The difference between these distribution patterns may arise for example from the fact that importance of environmental and social categories is fairly new concern for many companies while governance and economic aspects have been vital for a long time. The novel importance of environmental and social aspects might lead to the observed frequency patterns where several companies have issues to perform well in these categories. Furthermore, as the sample consists of S&P 500 firms without industry specification,

differences between industries might explain the patterns of environmental and social scores. On the contrary in more traditional categories it is easier to achieve high scores as these fields have already been consequential for decades in all industries. Based on above mentioned four aspects the EW score distribution display a spike with the highest percentiles while the lowest percentile scores are rare and approximately from 15<sup>th</sup> percentile to 80<sup>th</sup> percentile the frequency of scores is comparatively stable.

Descriptive statistics in Table 2 are offered to underline the findings of the frequency distributions in Figure 4. The table presents descriptive statistics of all 6505 observation in each category and clarifies the similarities between environmental and social aspects as well as governance and economical categories. Particularly, the mean of governance scores is notable higher being approximately 77 than the mean in environment and social categories approximately 54 and 58, respectively. Further, the standard deviation of governance scores is considerably lower being approximately 16 than the standard deviation of environment and social aspects which are approximately 33 and 29, respectively. Similar but moderate differences can be seen when comparing economic category with the environmental and social aspects.

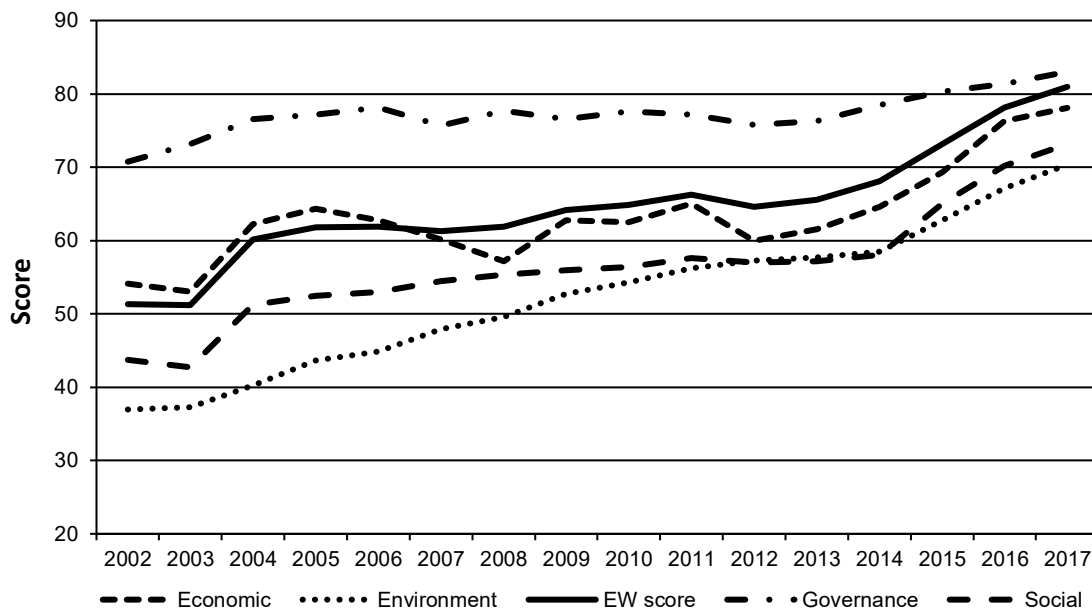
**Table 2.** Descriptive statistics of ASSET4 ESG score distributions.

Descriptive statistics in the table are calculated from the whole sample period of 2002-2017. The total amount of firm-specific year-end scores is 32,525. The table represents the score distribution of ASSET4 ESG scores including “EW score”, “Environment”, “Social”, “Governance” and “Economic” categories. The “EW score” represents the descriptive statistics of Equally Weighted scores. The table displays the mean, median, minimum (“Min.”) and maximum (“Max.”) values, and the standard deviation (“Std. Dev.”). “N.” represents the number of observations.

	<b>Mean</b>	<b>Median</b>	<b>Min.</b>	<b>Max.</b>	<b>Std. Dev.</b>	<b>N.</b>
<b>Environment</b>	54.28	58.16	8.16	97.43	32.65	6505
<b>Social</b>	57.90	62.44	3.56	99.35	28.75	6505
<b>Governance</b>	77.70	81.32	1.54	98.23	15.71	6505
<b>Economic</b>	64.35	70.90	1.74	98.91	26.38	6505
<b>EW score</b>	66.13	74.46	2.99	98.71	27.35	6505

Because Figure 4 and Table 2 report the scores based on the whole sample period, Figure 5 below is presented to illustrate the development of the scores during the years in question. The year-specific scores displayed in the figure are the average annual ratings of ASSET4 ESG categories. As it can be seen from Figure 5 an increasing trend is distinct from all of the categories and also the mean EW score is increasing firmly from 2002 to

2017. Nevertheless, there are differences between categories, for example social and environmental scores have increased the most. Here the explanation may again relate to the growing awareness of ESG matters. Especially environmental and social aspects are seemingly gaining more attention in an accelerating pace and catching up the level of governance scores. Overall S&P 500 companies are obviously enhancing their efforts towards ESG matters.



**Figure 5.** Annual mean values of ASSET4 ESG scores.

## 5.2. Methodology

The empirical part of the thesis studies the performance of socially responsible investing and especially the possible time variability of SRI based returns. The SRI strategy used in this thesis is a positive screening strategy as the main performance evaluation is made by studying the returns of long-short portfolios by buying the most responsible companies and selling the least responsible companies. Below the portfolio construction is explained in depth.

First, the thesis sorts S&P 500 firms into ten deciles based on their equally weighted responsibility scores. Additionally, the sorting is also performed based on the individual categories of environmental, social, governance, and economic ratings. The sorting is

performed by comparing the year-end score values in each of the five categories separately. The intention is to find the top and bottom 10 % of companies for every year from 2002 to 2017 in every category. As a result, the thesis utilizes these five top and bottom groups to form portfolios based on the ratings. To be more precise, as the scores variate from 0 to 100 in each category, the top portfolios include firms with the highest responsibility ratings and the bottom portfolios are formed from the companies with the lowest scores. The final top and bottom groups of each category include approximately 10 % of the best and worst-performing companies. The year-specific amount of companies can vary slightly between the top and bottom groups as if there is more than one equal value at the 10 % borderline every one of these evenly rated companies are included in the group. For example, because of the issue of numerous borderline values in the bottom group, the bottom decile of the environmental category in 2006 includes 43 companies while the top decile contains only 36 companies. The descriptive statistics of the top and bottom groups are displayed in Table 3 below.

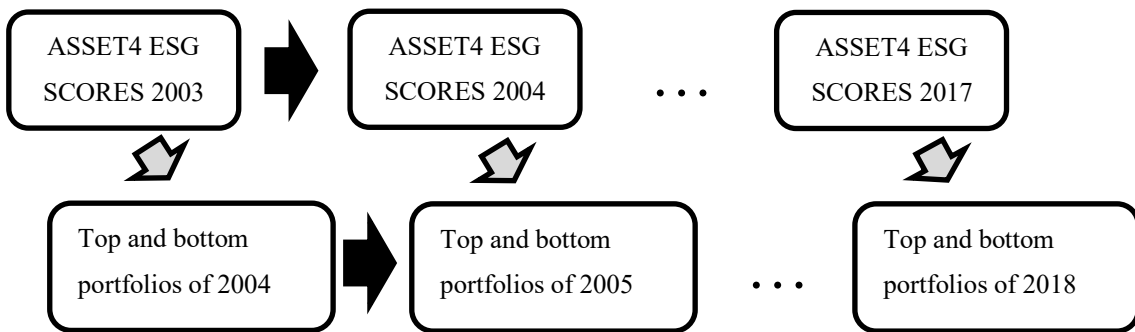
**Table 3.** Descriptive statistics of top and bottom groups for the whole sample period.

Descriptive statistics in the table are calculated from the whole sample period of 2002-2017. The table represents the descriptive statistics of ASSET4 ESG scores based on top and bottom groups including "EW score", "Environment", "Social", "Governance" and "Economic" categories. The "EW score" represents the Equally Weighted score. The table displays the mean, median, minimum ("Min.") and maximum ("Max.") values, and the standard deviation ("Std. Dev."). "N." represents the number of observations.

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev</b>	<b>Min.</b>	<b>Max.</b>	<b>N.</b>
<b>Environment Top</b>	94.47	94.36	1.25	89.56	97.43	653
<b>Environment Bottom</b>	12.10	10.29	3.02	8.16	18.57	726
<b>Social top</b>	94.94	94.97	1.76	88.72	99.35	657
<b>Social bottom</b>	12.39	10.75	6.20	3.56	37.60	658
<b>Governance top</b>	95.27	95.35	1.38	90.79	98.23	655
<b>Governance bottom</b>	44.11	47.85	13.10	1.54	64.46	657
<b>Economic top</b>	96.02	96.02	1.43	91.90	98.91	655
<b>Economic bottom</b>	15.73	13.59	9.86	1.74	49.03	658
<b>EW score top</b>	96.14	96.01	0.94	93.60	98.71	656
<b>EW score bottom</b>	18.83	17.70	8.90	2.99	54.36	657

As the table above indicates the differences between top and bottom portfolios are substantial and hence this partition offers a suitable base for the portfolio construction of the thesis. As table 3 shows the bottom portfolio of the environmental category is the most prone to the borderline issue but the feature of the data does not affect the final results significantly as the final portfolio equally weights the companies of each group. Portfolios

are shaped based on these top and bottom groups of each year. The idea is to form top and bottom portfolios at the beginning of each year based on the scores from the previous year. After the one year holding period of portfolios are reallocated again at the beginning of the next year when the new ASSET4 ESG data is available. Accordingly, the top and bottom portfolios of year  $t$  are formed based on the ASSET4 ESG scores from the year  $t-1$ . The holding period is from the beginning of January of year  $t$  to the end of December of the year. As a result, 10 portfolios for each year covering the period from 2003 to 2018 are received. The portfolios are equally weighted and offer the average return of the company group. The approach of equal weighting is appropriate as all companies are S&P 500 companies. Portfolio formation is illustrated in the figure below.



**Figure 6.** Portfolio forming process.

As an example, the top EW portfolio of 2008 includes the best 10 % of companies based on the EW score of 2007, the holding period of the portfolio is from the beginning of January 2008 to the end of December 2008. At the beginning of January 2009, the portfolio is reallocated based on the EW scores received from the year 2008. After formatting the top and bottom portfolios the top-minus-bottom portfolios of each category are constructed. The top-minus-bottom portfolios are plain long-short portfolios buying the top group and selling the bottom group of companies from a certain category. The returns of these long-short portfolios are calculated by reducing the average excess return of the companies in the bottom group from the average excess return of the companies in the top group. As a result, the final amount of ASSET4 ESG portfolios used for the return evaluation of SRI in this thesis is 15 including top, bottom and top-minus-bottom portfolios of environment, social, governance, economic and equally weighted categories. The return evaluation is conducted by using monthly total return index stock data and the transaction costs are not taken into account.



Below Table 4 presents summary statistics regarding the excess returns of 15 formed portfolios. The provided excess returns are calculated from the monthly returns of the whole sample period of 2003 to 2018 by using the 1-month T-bill rate gathered from the website of Kenneth French (2019).

**Table 4.** Descriptive statistics of monthly excess returns.

The table displays descriptive statistics of the monthly excess returns of the 15 constructed ASSET4 ESG portfolios. The period covers the months from January 2003 to December 2018 including total of 192 monthly observations for each portfolio. Statistics for each of the five categories are provided and “EW” indicates the portfolio based on the equally weighted ESG score of ASSET4. “Top” (“Bot”) indicates that the portfolio includes the companies of top (bottom) group of a given category. “Top-Bot” refers to the top-minus-bottom portfolio of a given category. The table displays the mean, median, minimum (“Min.”) and maximum (“Max.”) values, and the standard deviation (“Std. Dev.”), skewness (“Skew.”) and kurtosis of each portfolio.

	Mean	Median	Min.	Max.	Std. Dev.	Skew.	Kurtosis
<b>Environment Top</b>	0.0092	0.0136	-0.1999	0.1700	0.045	-0.468	6.064
<b>Environment Bot</b>	0.0126	0.0156	-0.2020	0.2061	0.046	-0.649	7.078
<b>Environment Top-Bot</b>	-0.0033	-0.0039	-0.0686	0.0675	0.021	0.203	4.648
<b>Social Top</b>	0.0082	0.0112	-0.1988	0.1568	0.041	-0.739	7.252
<b>Social Bot</b>	0.0139	0.0175	-0.2366	0.2744	0.049	-0.250	9.875
<b>Social Top-bot</b>	-0.0057	-0.0065	-0.1177	0.0723	0.022	-0.566	6.931
<b>Governance Top</b>	0.0095	0.0120	-0.2171	0.1410	0.042	-1.061	7.678
<b>Governance Bot</b>	0.0140	0.0167	-0.2209	0.2588	0.049	-0.292	8.032
<b>Governance Top-Bot</b>	-0.0045	-0.0059	-0.1178	0.0423	0.021	-0.765	6.683
<b>Economic Top</b>	0.0086	0.0127	-0.1923	0.1331	0.041	-0.832	6.278
<b>Economic Bot</b>	0.0160	0.0170	-0.2024	0.2683	0.055	0.102	6.016
<b>Economic Top-Bot</b>	-0.0074	-0.0071	-0.1352	0.0705	0.027	-0.976	7.477
<b>EW Top</b>	0.0092	0.0117	-0.1675	0.1252	0.038	-0.623	5.470
<b>EW Bot</b>	0.0160	0.0203	-0.2349	0.2050	0.048	-0.708	7.134
<b>EW Top-Bot</b>	-0.0068	-0.0073	-0.0798	0.0673	0.023	-0.095	3.947

Interestingly the table displays results showing that the mean excess return of every top-minus-bottom portfolio is negative ranging from -0.74 % of the economic category to -0.33 % of the environmental category. The mean excess return of the equally weighted top-minus-bottom portfolio is approximately -0.68 %. Among bottom portfolios, the environmental portfolio has the lowest mean excess return of 1.26 %. Compared to the top portfolios it is still higher than the highest mean excess return of 0.95 % which belongs to the governance aspect. Additionally, Table 4 reports that the standard deviations of

bottom portfolios are systematically higher than the standard deviations of top portfolios. Furthermore, minimum and maximum returns of the bottom portfolios are more radical than the corresponding returns of the top portfolios. Peculiarly, maximum values for the top portfolios are varying between 12.52 % and 17.00 % while the maximum excess returns of the bottom portfolios range from 20.50 % to 27.44 %. Both of the lowest maximum observations are yielded by the EW portfolio. In conclusion, the summary statistics of the table suggest that the SRI performs poorly during the sample period and may indicate that the first hypothesis of the thesis cannot be confirmed.

Following the portfolio construction, the alphas of each portfolio are calculated by employing Carhart's (1997) four-factor model in a similar manner as Bansal et al. (2018). The final model for the alpha estimation is fitted in the OLS regression equation below:

$$(3.) \quad r_{c,d,t} - R_f = \alpha_{c,d} + \beta_{c,d}^{(R_M - R_f)}(R_M - R_f) + \beta_{c,d}^{SMB} SMB + \beta_{c,d}^{HML} HML + \beta_{c,d}^{WML} WML + \varepsilon_{c,d,t}$$

where  $r_{c,d,t}$  is the decile portfolio (top, bottom or top-minus-bottom) of responsibility category  $c$  during the month  $t$  and  $R_f$  is the 1-month T-Bill return used as a risk-free interest rate. Additionally,  $R_M - R_f$ ,  $SMB$ ,  $HML$ , and  $WML$  are the corresponding four factors of Carhart's four-factor model gathered from the data library of Kenneth French (2019).

Estimated alphas are investigated in more detail. In particular, the alpha of the equally weighted top-minus-bottom portfolio is examined in various ways. First, the overall time variability of the EW portfolio alpha is under consideration to detect the possible wealth dependent preference shifts of SR investors. As Bansal et al. (2018) the 36-month rolling regression is utilized to detect the overall time variability and the evaluation is implemented by describing the variability of 36-month rolling alpha. Secondly, the time variability and the wealth dependence of SRI are examined by dividing the sample into three periods by utilizing the recession period from December 2007 to June 2009 reported by the National Bureau of Economic Research (NBER 2020). The three different periods under the evaluation are the pre-recession period from January 2003 to November 2007, the NBER recession period and the post-recession period from July 2009 to the end of December 2018. The main regression equation of the thesis is then estimated separately for each subperiod to detect if SRI returns reflect wealth dependence preference shifts and if the variability is observable between the periods. Finally, the luxury-good-like behavior of SRI is investigated by comparing the rolling alpha of the EW portfolio with the

36-month rolling average of U.S. PCE of jewelry and watches obtained from the database of Bureau of Economic Analysis, U.S. Department of Commerce.

## 6. EMPIRICAL RESULTS

In this chapter, the empirical results of the thesis are provided and analyzed. The estimated alphas are the key interest of the thesis and in this chapter, the thesis attempts to offer evidence on behalf or against the hypotheses of the thesis. First, subchapter 6.1 displays the regression results considering the whole sample period from 2003 to 2018 and seeks to clarify the overall performance of the SRI based ASSET4 ESG portfolios. The ultimate objective is to solve if the significant outperformance of SRI exists. Subchapter 6.2 aims to examine the second hypothesis and investigates the time variability of the alpha. In addition, the alpha is analyzed during different economical time periods to detect if the magnitude of the alpha is dependent on prevailing market conditions and if the wealth dependence is observable. Finally, subchapter 6.3 focuses on the possible luxury-good-like behavior of the equally weighted ASSET4 ESG portfolio and tries to analyze if SRI is a luxury good of investors.

### 6.1. The alpha in general

This chapter targets to clarify the overall performance of SRI during the whole sample period. For that purpose, the thesis employs the modified Carhart's four-factor model introduced in section 5 above. The methodology to estimate the alphas of each ASSET4 ESG portfolios is similar with the paper of Bansal et al. (2018). Table 5 below offers regressed alphas for top, bottom and top-minus-bottom portfolios of each of the five categories. Furthermore, the estimated betas of market, size, value and momentum factors are offered for each portfolio. Overall, 15 portfolios are evaluated for all of which the four-factor alphas can be viewed from the table. In addition, the factor betas of each portfolio are displayed by the table. The key interest is on the performance of the equally weighted top-minus-bottom (EW Top-Bot) portfolio since it indicates the returns of wide SRI based portfolio during the sample period. The performance of the EW Top-Bot portfolio provides the most solid evidence to detect if the first hypothesis of the thesis can or cannot be rejected.

**Table 5.** Portfolio alphas and betas for different categories.

The table displays the OLS regression results estimated by the equation 3 for the whole sample period from January 2003 to December 2018 including total of 192 monthly observations for each portfolio. The table presents the four-factor alphas and the factor loadings for the top, bottom and top-minus-bottom portfolios of each category. "Top" ("Bot") indicate the portfolios including the best (worst) 10 % of companies in a certain category. "Top-Bot" signify the long-short portfolio buying the best and selling the worst companies. " $R_M - R_f$ ", "SMB", "HML" and "WML" are the corresponding four factors of Carhart's four factor model. Notations \*, \*\* and \*\*\* represent the statistical significance at the 10 %, 5 % and 1 % level, respectively. P-values are in parentheses below the estimated results and " $R^2$ " represents the goodness of fit.

	Alpha	$R_M - R_f$	SMB	HML	WML	$R^2$
<b>Environment Top</b>	0.0016* (0.051)	1.0600*** (0.000)	-0.0883** (0.019)	0.0347 (0.336)	-0.0100*** (0.000)	0.94
<b>Environment Bot</b>	0.0054*** (0.000)	0.9550*** (0.000)	0.1045*** (0.000)	0.2375* (0.052)	-0.1495*** (0.000)	0.89
<b>Environment Top-Bot</b>	-0.0038*** (0.009)	0.1050** (0.011)	-0.1928*** (0.004)	-0.2028*** (0.002)	0.0496 (0.177)	0.12
<b>Social Top</b>	0.0013 (0.127)	0.9676*** (0.000)	-0.1127*** (0.005)	-0.1049*** (0.006)	-0.1134*** (0.000)	0.92
<b>Social Bot</b>	0.0062*** (0.000)	0.9993*** (0.000)	0.2256*** (0.000)	-0.0231 (0.698)	-0.2140*** (0.000)	0.86
<b>Social Top-bot</b>	-0.0049*** (0.001)	-0.0316 (0.446)	-0.3383*** (0.000)	-0.0818 (0.209)	0.1006*** (0.008)	0.23
<b>Governance Top</b>	0.0023** (0.014)	0.9898*** (0.000)	-0.0297 (0.487)	-0.0280 (0.497)	-0.0857*** (0.000)	0.91
<b>Governance Bot</b>	0.0059*** (0.000)	1.0598*** (0.000)	0.2229*** (0.000)	-0.0538 (0.301)	-0.1549*** (0.000)	0.90
<b>Governance Top-Bot</b>	-0.0036** (0.012)	-0.0700* (0.082)	-0.2525*** (0.000)	0.0258 (0.681)	0.0692* (0.055)	0.16
<b>Economic Top</b>	0.0015* (0.057)	0.9569*** (0.000)	0.0318 (0.382)	-0.0025 (0.944)	-0.0568*** (0.005)	0.93
<b>Economic Bot</b>	0.0073*** (0.000)	1.1101*** (0.000)	0.3232*** (0.000)	0.0986 (0.1369)	-0.1895*** (0.000)	0.87
<b>Economic Top-Bot</b>	-0.0058*** (0.001)	-0.1531*** (0.001)	-0.2914*** (0.000)	-0.1011 (0.172)	0.1328*** (0.002)	0.29
<b>EW Top</b>	0.0025*** (0.002)	0.9288*** (0.000)	-0.0829** (0.021)	-0.0960*** (0.006)	-0.0740*** (0.000)	0.93
<b>EW Bot</b>	0.0080*** (0.000)	1.0181*** (0.000)	0.3158*** (0.000)	-0.0793 (0.155)	-0.1266*** (0.000)	0.88
<b>EW Top-Bot</b>	-0.0055*** (0.000)	-0.0893** (0.028)	-0.3987*** (0.000)	-0.0167 (0.793)	0.0526 (0.149)	0.27

Considering the results of Table 5 the most intriguing fact is that all equally weighted portfolios produce statistically significant alphas. The EW Top portfolio yields significantly positive alpha of 0.25 % per month, which is not surprising as also many previous papers, including Bansal et al. (2018), have reported positive alphas for the top portfolio. The major finding of the table is that the EW Bot portfolio also yields a significantly positive alpha of 0.80 % per month which is more than three times the amount of the alpha of the EW Top portfolio. Thereby the estimated alpha of the EW Top-Bot portfolio is -0.55% per month which means that the annual alpha is approximately -6.4 % and the coefficient is statistically significant at the 1 % level. In other words, the evidence suggests that overall the worst ASSET4 ESG rated companies of the S&P 500 index significantly outperform the most responsible companies. Based on the factor loadings, the market ( $R_M - R_f$ ) and size (SMB) factors are important explanatory variables behind the expected returns of the EW Top-Bot portfolio. Additionally, the findings indicate that the difference between the equally weighted top and bottom portfolio is that the bottom portfolio is significantly tilted toward small companies. Summarized, it may indicate that small companies with low overall ASSET4 ESG scores tend to outperform big companies with high scores.

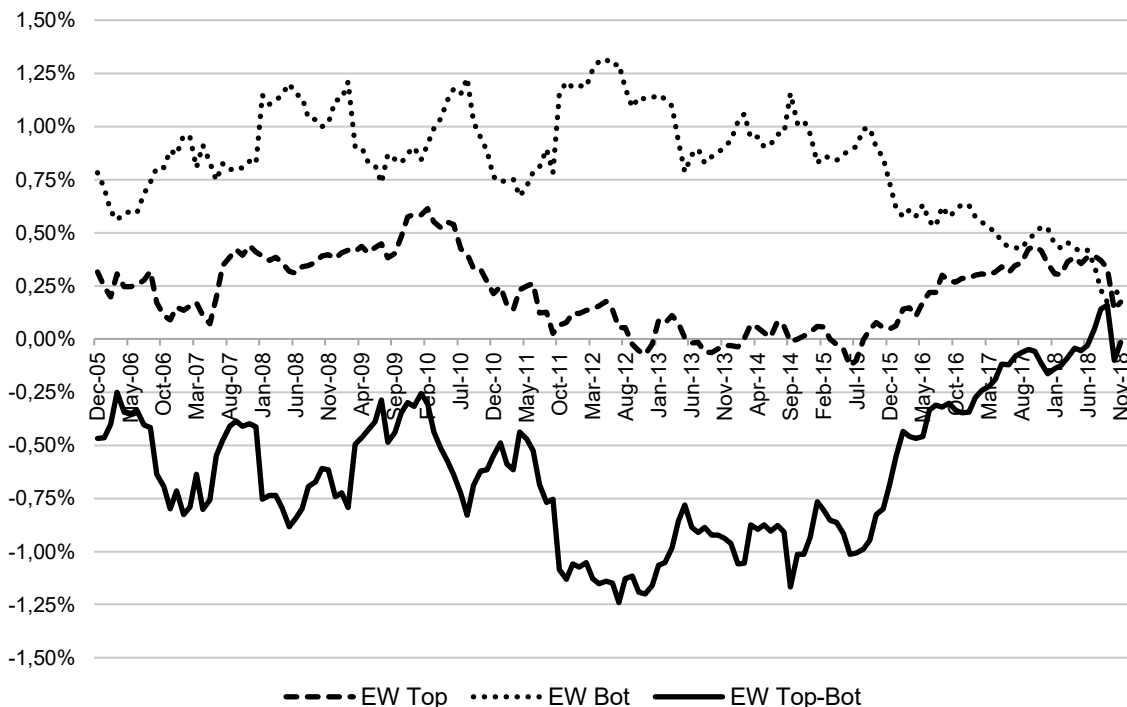
Further, Table 5 shows that a similar pattern exists within every individual ASSET4 ESG category. All top-minus-bottom portfolios display statistically significant but negative results when the whole sample period from January 2003 to December 2018 is evaluated. The alpha is varying from -0.58 % to -0.36 % per month, the lowest alpha is received by the economic top-minus-bottom portfolio and the highest with the governance Top-Bot portfolio. The negative alphas of individual Top-Bot portfolios are driven by the highly positive alphas of the bottom portfolios, which are all statistically significant at the 1 % level. Similarly, with the equally weighted portfolio, the four-factor betas indicate that individual bottom portfolios are consistently tilted toward small companies. Additionally, the momentum (WML) factor displays negative and significant loading with all top and bottom portfolios. Instead, the value (HML) factor is only significant with the environmental bottom portfolio suggesting that the portfolio holds small growth stocks. Also, the market factor is significant with all top and bottom portfolios as expected.

In conclusion, the findings of Table 5 strongly indicate that the first hypothesis: “SRI portfolio generates significant positive alpha”, can be rejected. The constructed SRI based long-short portfolios are constantly yielding statistically significant but negative alphas. The evidence suggests that the positive and significant alpha cannot be achieved by an equally weighted SRI portfolio or investing based on the ratings of a certain responsibility

dimension. These findings support the “doing good but not well” hypothesis and are consistent with the idea that investors may have to pay a price for being responsible. The evidence is also against the findings of Bansal et al. (2018) as their paper suggests that certain SRI based portfolios generate significant positive returns. Next, the thesis evaluates the time variability of the alphas. The more profound analysis is relevant and offers interesting contributions as in general, the derived alphas are negative and significant.

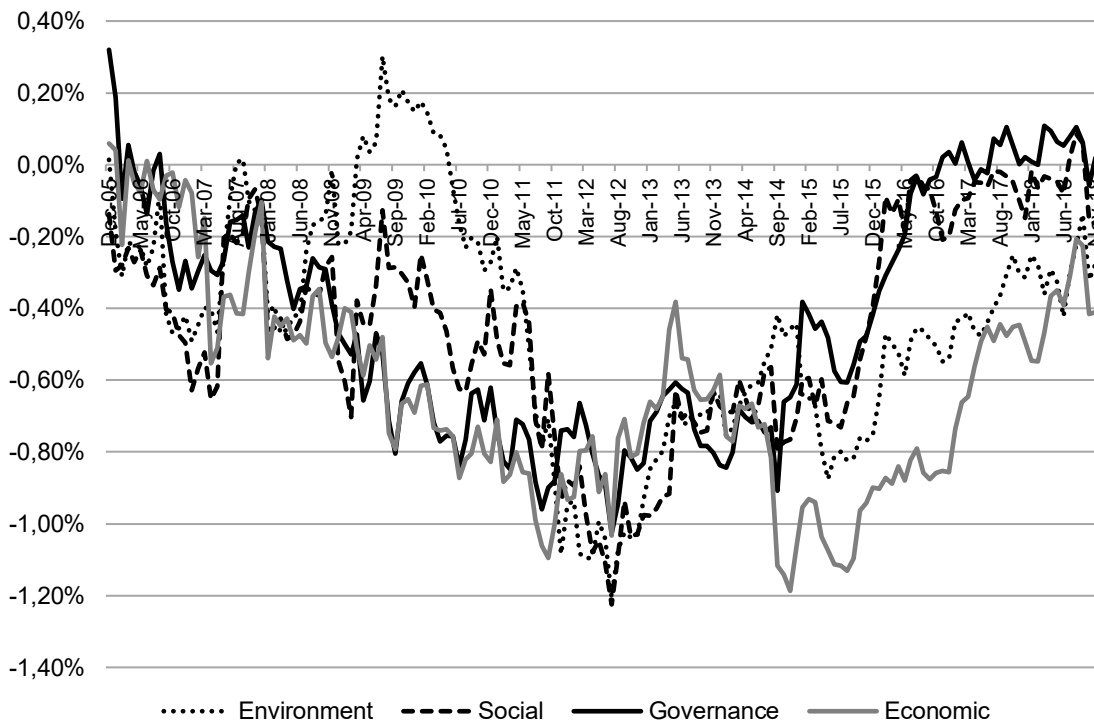
## 6.2. The time variability of the alpha

To detect the possible time variability of the alpha and to approach the second hypothesis of the thesis, the equally weighted portfolio alphas are regressed by the 36-month rolling regression. The regression is implemented similarly with Bansal et al. (2018). The rolling regression alpha is regressed from the portfolio returns using the period between month  $t$  and month  $t-36$ . Hence the time window of the rolling regression is 36 months and the step size is one month. The derived alphas of the 36-month rolling regression for equally weighted top, bottom, and top-minus-bottom portfolios are displayed below in Figure 7.



**Figure 7.** 36-month rolling alphas of equally weighted top, bottom and top-minus-bottom portfolios.

Considering the line graphs of Figure 7 by visual evaluation it is evident that the alphas are not steady nor consistent over time. Instead, the alphas are varying considerably over time. Specifically, the figure displays that first approximately during the period of December 2005 to September 2011 the regressed alpha of EW Top-Bot portfolio exhibit more turbulent variation. Additionally, from October 2011 to July 2015 the EW Top seems to offer the lowest alphas leading to the poor performance of the EW Top-Bot portfolio. At the end of the period, approximately after July 2015, the EW top portfolio is improving while the EW bottom portfolio, on the other hand, is declining. Naturally, during that period EW Top-Bot is also improving. To highlight the time variability of SRI based portfolios also the top-minus-bottom portfolios of individual ASSET4 ESG categories are presented in Figure 8 below. The alphas presented in the figure are regressed similarly by the 36-month rolling regression.



**Figure 8.** Rolling alphas of individual ASSET4 ESG Top-Bot portfolios.

Analyzing Figure 8 it can be stated that none of the individual ESG portfolios display steady path over the sample period but instead, all portfolio alphas are experiencing



turbulent variation during the years in question. The time variability is even more pronounced with environmentally and socially friendly portfolios than with more traditional ESG aspects focusing on governance and economic issues. Thereby, based on the visual evaluation of Figures 7 and 8 the second hypothesis: “The alpha of SRI portfolio is time-varying”, cannot be rejected. To proceed and at the same time to evaluate the third hypothesis the sample period from January 2003 to December 2018 is divided into three different subperiods. The periods are the NBER recession period from December 2007 to June 2009 used as a proxy for economically bad times, and the periods before and after the recession, in other words, the good economic times. The different periods are examined by regressing the alphas of ASSET4 ESG top-minus-bottom portfolios to detect if the performance of SRI can be explained by the wealth dependence preferences of investors. The evaluation of different periods offers evidence to clarify if the second and third hypothesis of the thesis can be rejected. Table 6 below shows the four-factor alphas of top-minus-bottom portfolios during these different periods. The alphas are regressed by the simple OLS regression.

**Table 6.** Portfolio alphas during different time periods.

The table displays the OLS regression results estimated by the equation 3 for three different time periods. Panel A presents the results for the period before the NBER recession from January 2003 to November 2007, Panel B during the NBER recession period from December 2007 to June 2009 and Panel C after the NBER recession from July 2009 to December 2018. The coefficients reported are the four-factor alphas and factor loadings of top-minus-bottom (Top-Bot) portfolios of different ASSET4 ESG categories. Each top-minus-bottom portfolio is constructed by buying the best and selling the worst 10 % of companies of a certain category. “ $R_M - R_f$ ”, “SMB”, “HML” and “WML” are the corresponding four factors of Carhart’s four factor model. Notations \*, \*\* and \*\*\* represent the statistical significance at the 10 %, 5 % and 1 % level, respectively. P-values are in parentheses below the estimated results, “ $R^2$ ” represents the goodness of fit and “N.” represents the number of monthly observations.

<b>Panel A: Before the NBER recession</b>							
	<b>Alpha</b>	<b><math>R_M - R_f</math></b>	<b>SMB</b>	<b>HML</b>	<b>WML</b>	<b><math>R^2</math></b>	<b>N.</b>
<b>Environment</b>	0.0018 (0.484)	-0.2006* (0.077)	-0.0645 (0.623)	-0.3980** (0.012)	0.0130 (0.879)	0.20	59
<b>Social</b>	-0.0008 (0.749)	-0.2222** (0.040)	-0.2448* (0.053)	-0.1889 (0.198)	0.0432 (0.594)	0.28	59
<b>Governance</b>	0.0013 (0.599)	-0.2211** (0.049)	-0.2135 (0.104)	-0.0931 (0.539)	-0.1326 (0.120)	0.25	59
<b>Economic</b>	0.0002 (0.950)	-0.5884*** (0.000)	-0.1267 (0.383)	-0.1979 (0.245)	0.1229 (0.195)	0.48	59
<b>Equally weighted</b>	-0.0033 (0.220)	-0.2948** (0.012)	-0.3579*** (0.010)	-0.1099 (0.484)	-0.0966 (0.271)	0.38	59

<b>Panel B: During the NBER recession</b>							
	<b>Alpha</b>	<b>R<sub>M</sub> - R<sub>f</sub></b>	<b>SMB</b>	<b>HML</b>	<b>WML</b>	<b>R<sup>2</sup></b>	<b>N.</b>
<b>Environment</b>	0.0007 (0.928)	0.1960 (0.164)	-0.1940 (0.569)	-0.5262*** (0.009)	0.1131 (0.222)	0.54	19
<b>Social</b>	0.0032 (0.760)	0.1921 (0.285)	-0.8916** (0.058)	-0.1412 (0.541)	0.2422** (0.053)	0.51	19
<b>Governance</b>	-0.0045 (0.522)	0.0887 (0.457)	-0.1831 (0.537)	-0.0433 (0.779)	0.2337*** (0.009)	0.54	19
<b>Economic</b>	-0.0017 (0.849)	0.1515 (0.320)	-0.4569 (0.233)	-0.2803 (0.166)	0.2833** (0.012)	0.63	19
<b>Equally weighted</b>	0.0009 (0.915)	-0.0162 (0.915)	-0.7026* (0.078)	0.0276 (0.889)	0.1606 (0.125)	0.49	19
<b>Panel C: After the NBER recession</b>							
	<b>Alpha</b>	<b>R<sub>M</sub> - R<sub>f</sub></b>	<b>SMB</b>	<b>HML</b>	<b>WML</b>	<b>R<sup>2</sup></b>	<b>N.</b>
<b>Environment</b>	-0.0065*** (0.000)	0.2003*** (0.000)	-0.2342*** (0.001)	-0.0385 (0.593)	-0.0562 (0.299)	0.20	114
<b>Social</b>	-0.0055*** (0.001)	-0.0296 (0.511)	-0.2607*** (0.000)	-0.0895 (0.227)	-0.0752 (0.176)	0.17	114
<b>Governance</b>	-0.0039** (0.027)	-0.0846* (0.085)	-0.2081*** (0.007)	0.0484 (0.546)	-0.0477 (0.428)	0.13	114
<b>Economic</b>	-0.0059*** (0.004)	-0.1531*** (0.007)	-0.2386*** (0.007)	-0.0895 (0.334)	-0.0349 (0.615)	0.20	114
<b>Equally weighted</b>	-0.0062*** (0.000)	-0.0311 (0.506)	-0.3353*** (0.000)	-0.0324 (0.673)	-0.0488 (0.397)	0.21	114

First, the results of the period before the recession, which are offered in Panel A of Table 6. Most importantly the panel displays that all ASSET4 ESG alphas appear insignificant during the period. Considering the portfolios of individual categories, the alphas are inconsistent, and the p-values are certainly high to make any solid conclusions. Continuing the analysis, the equally weighted Top-Bot portfolio displays a negative alpha of -0.33 % per month, but the result is also insignificant. The market and size factors are driving the performance of the EW portfolio and the market factor is the most significant driver behind other long-short portfolios. Additionally, the performance of the environmental Top-Bot portfolio is significantly driven by the value factor and the size factor of the social portfolio is significant at the 10 % level. Overall, the conclusion is that during the time period before the recession the equally weighted SRI alpha is negative, but statistically significant returns are not displayed.

Similar results regarding the alphas are found by examining the recession period in Panel B. None of the regressed alphas are significant. In contrast to the earlier period, the market factor appears insignificant with all of the portfolios and the loading of momentum factor is significant with social, governance and economic categories. The size factor is only mildly significant considering the EW portfolio and significant at the 5 % level with the social aspect. The HML beta of the environmental portfolio remains highly significant and negative. The alpha of the equally weighted portfolio is positive, but the p-value is very high to make any further interpretations. Again, noteworthy conclusions cannot be made, and the evidence supports the “no effect” hypothesis during the recession period. In other words, the thesis cannot find any additional benefits that can be obtained via high-quality CSR actions during the recession. Consequently, the thesis suggests that SRI does not over- or underperform during the recession.

Finally, the results during the post-recession era, presented in Panel C, show statistically significant results regarding the alpha. In fact, the top-minus-bottom portfolio of the governance category is the only one to yield significant alpha at the 5 % level while the other portfolios yield statistically significant alphas at the 1 % level. All alphas are negative varying from -0.65 % to -0.39 %. The results of Panel C indicate that the post-recession era drives also the results of the whole sample period presented in subchapter 6.1. The equally weighted Top-Bot portfolio gains an alpha of -0.62 % per month and the expected return of the portfolio is largely driven by the highly significant size factor. Other factor loadings regarding the equally weighted portfolio are insignificant. Generally, during the post-recession period, the market and size factors are the main drivers behind the performance of individual ASSET4 ESG portfolios, the value and momentum factors appear constantly insignificant. Based on the findings, investors are paying additional costs by employing SRI during the economically good period after the recession.

Concluded, the results of Table 6 offer evidence to endorse the second hypothesis as the performance of the portfolios are indeed varying over time. First, the performance is insignificant but after the NBER recession period, all of the portfolios are generating significantly negative returns. Based on the results of Figures 7 and 8, and the results of Table 6 the hypothesis: “The alpha of SRI portfolio is time-varying” cannot be rejected. On the other hand, based on the evidence provided in Table 6 the H3: “The SRI alpha is significantly positive only during good economic periods” may be rejected. There is no evidence to support the third hypothesis and in fact, empirical findings of the thesis mostly indicate the opposite results suggesting that the alphas of SRI based portfolios are negative during good times. More precisely one may indicate that SRI is a poor strategy during

good economic times as the post-recession era yields highly significant and negative returns while also the pre-recession period generates insignificant but still a negative alpha. The evidence is in line with the findings of Bansal et al. (2018) regarding the overall time variability, but the nature of the variability differs radically as Bansal et al. (2018) state that SRI performs significantly better during good times. This thesis cannot find any evidence suggesting a similar pattern where the alpha is higher during good economic times and lower during bad times.

The insignificant alpha of the first two periods may indicate that the market participants learned to price the information of ESG aspects correctly. The first two periods cover approximately the same era during which Borgers et al (2013) and Bebchuk et al (2013) implemented their studies. Consequently, the learning hypothesis of Borgers et al. (2013) and Bebchuk et al (2013) is supported by the results of Panel A and B. Interpreting the negative and significant alpha of the post-recession period is more complex and partly beyond the scope of this thesis. One explanation could be that the recent financial crisis significantly changed the overall responsibility environment. If this is the case, then the high standards of ESG may be harder and more costly to achieve during the period after the recession when the role of regulation and trust has been pronounced by the crisis.

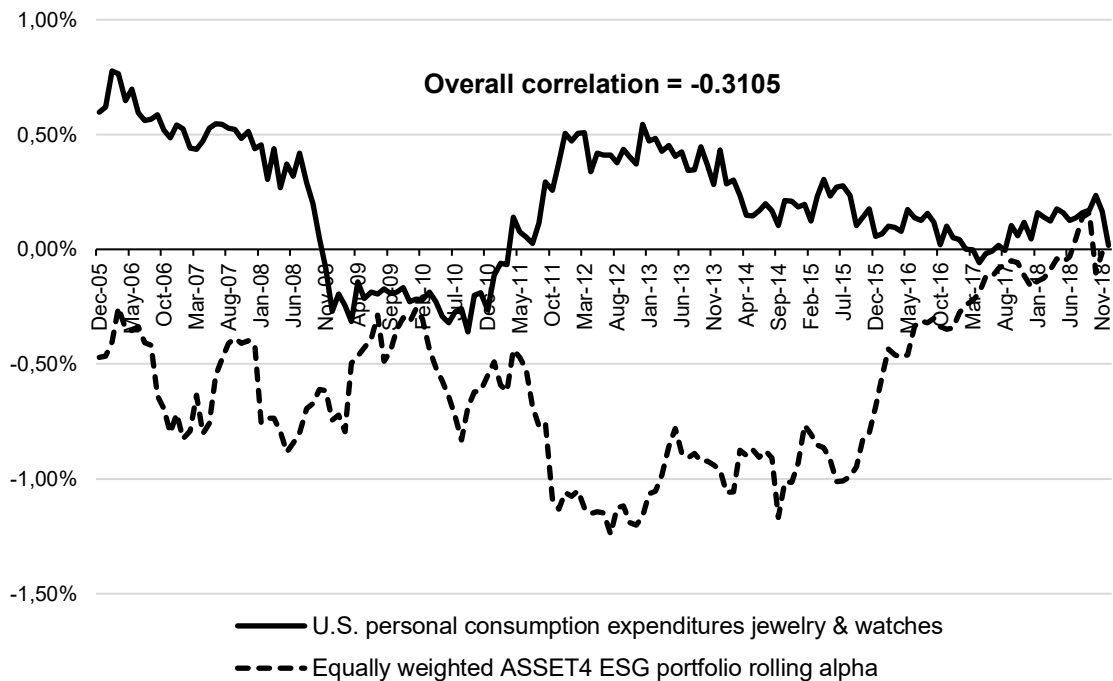
Considering also the insignificant but negative alpha during the pre-recession period another possible explanation could be plausible. It may be that the least responsible companies are paying a significant price during the recession and hence a rebound occurs when the market environment slowly reverts to the normal state after the crisis. If the least responsible firms are suffering stronger during the recession, then the recovery after may be pronounced. Even further one explanation could be that during the recession or crisis the benefit of being responsible is prominent but after the bad time advantages fade away. These explanations might be possible especially if the findings of the hedging effect of SRI by Lins et al. (2017) and Leite & Cortez (2015) are correct. The results of the thesis regarding the performance are mainly consistent with the evidence of Leite & Cortez (2015) as authors state that during crisis SR investors achieve the same level of returns and during non-crisis periods, they may have to pay a price for being responsible.

Next, the thesis examines the relation between luxury goods consumption and SRI. Based on the findings of Table 6 it can be indicated that also the fourth hypothesis relating the luxury-good-like behavior of SRI cannot be confirmed. It is reasonable to assume that because if SRI and luxury goods consumption are highly correlated then SRI should

produce positive returns during good economic times and significantly negative results during the recession. The empirical comparison is offered in the subchapter below.

### 6.3. The SRI and luxury goods

To evaluate the luxury-good-like behavior the thesis utilizes the personal consumption expenditures on jewelry and watches of the United States obtained from the Bureau of Economic Analysis (BEA). The co-movement analysis is employed similarly as in the paper of Bansal et al. (2018) in which authors use the growth rate of PCE on jewelry and watches to detect if a notable correlation exists between the luxury goods consumption and the alpha of long-short SRI portfolio. In this subchapter, the thesis evaluates if the 36-month rolling alpha of equally weighted ASSET4 ESG portfolio correlates with the growth of U.S. PCE on jewelry and watches. Figure 9 below shows the line graphs of the 36-month rolling regressed alpha of the equally weighted top-minus-bottom portfolio and the 36-month rolling average growth rate of U.S. PCE on jewelry and watches. The period in the figure begins in December 2005 and lasts until November 2018, as 36-month rolling values are displayed and the original sample is from January 2003 to December 2018.



**Figure 9.** Correlation between the rolling alpha of EW Top-Bot portfolio and rolling average growth of U.S. PCE on jewelry and watches.

Exploring the results of Figure 9 it is obvious that the correlation is not high between the two presented variables, and that the 36-month rolling alpha of the EW portfolio is not progressing synchronized with the growth of luxury goods consumption. In fact, the figure suggests somewhat opposite relation and the correlation appears to be extremely low and even significantly negative during certain periods. The overall correlation during the whole sample period is approximately -0.31 as reported by the figure. A closer look at the figure shows that near November 2008 during the financial crisis the growth of luxury goods consumption drops distinctly, a similar drop is not present with the rolling alpha. Instead, during the period from November 2008 to the beginning of 2010, the alpha displays an increasing trend, even though it remains negative all the time. Additionally, for example from the beginning of the year 2011 from where the trend of PCE on jewelry and watches is significantly increasing the alpha of the EW ASSET4 ESG portfolio is decreasing instead. Especially the correlation is negative during the year 2011 when the U.S. PCE on jewelry and watches seemingly recovers after the recession, while the rolling alpha of the EW portfolio decreases radically. During the later period from 2013 to 2017 overall trends appear to be negative as alpha is increasing and luxury goods consumption is moderately decreasing. In general, there is no evidence suggesting that a significant positive correlation exists between the two data series.

As can be observed from Figure 9 the correlation clearly variates during the whole sample period. To clarify if economic conditions have an impact on the correlation the thesis reports pre-recession, recession and post-recession correlation in Table 7 below. In addition, the thesis considers that the most important times regarding the fourth hypothesis of the thesis are the periods of dramatic decrease of U.S. PCE on jewelry and watches from June 2008 to December 2011 and the recovery period of luxury goods consumption from August 2010 to December 2011. Both periods are distinct by studying Figure 9 and the correlation during these periods appears to be negative by visual evaluation. This thesis states that positive correlation should exist during these periods to support the fourth hypothesis regarding the luxury-good-like behavior of SRI. Therefore, Table 7 below reports also the correlation of both key periods mentioned above.

**Table 7.** Correlations between the rolling alpha of EW Top-Bot portfolio and U.S. PCE on jewelry and watches during subperiods

<b>Period</b>	<b>Correlation coefficient</b>
<b>Before the NBER recession from December 2005 to November 2007</b>	0.6213
<b>During the NBER recession from December 2007 to June 2009</b>	-0.4347
<b>After the NBER recession from July 2009 to November 2018</b>	-0.5484
<b>From June 2008 to December 2008</b>	-0.4636
<b>From August 2010 to December 2011</b>	-0.5756

As the table displays the correlation is notably higher during the pre-recession period comparing to the overall negative correlation of the whole sample period reported in Figure 9. One may indicate that as the correlation is approximately 0.62 during the good time before the recession SRI can be viewed as a luxury good of investors during that period. However, when considering all other subperiods the correlation is significantly negative, and the possible luxury-good-like behavior of SRI cannot be detected. To be specific the correlations during the recession and post-recession periods are even lower than the overall correlation being approximately -0.43 and -0.55, respectively. Additionally, the correlations during both observed key periods are significantly negative and lower than the overall correlation by being approximately -0.46 during the dramatic decrease of U.S. PCE on jewelry and watches from June 2008 to December 2008 and -0.58 during the distinct recovery period from August 2010 to December 2011.

To conclude the relation between luxury goods consumption and SRI this thesis suggests that based on the evidence congruent relation does not exist. It is possible that before the recession and recent financial crisis the highly positive correlation indicates the luxury-good-like behavior of SRI during that period. Still, any solid conclusions cannot be made based on such a sort subperiod and overall the thesis states that as other periods display negative correlation it is more likely that a sort of negative correlation exists. Especially as also the correlation during detected key periods appear strongly negative this thesis states that the movement can be following somewhat reversing pattern meaning that when one goes up the other decreases and vice versa.

In summary, Bansal et al. (2018) find that the alpha of the SRI long-short portfolio is mildly positive in general but significantly time-varying. According to Bansal et al. (2018), the alpha is significantly positive during good economic times and on the other hand, the outperformance is not significant during bad times. Consequently, Bansal et al.

(2018) find that SRI is a wealth dependent investing strategy, which results in a high correlation between luxury goods consumption and SRI returns. Bansal et al. (2018) propose that SRI is wealth dependent as investors can afford to be responsible only during good times when the aggregate wealth is at a high level. Inspired by the paper of Bansal et al. (2018) the fourth hypothesis of this thesis is: “The SRI alpha correlates with luxury goods consumption”. Since, this thesis cannot find any robust evidence to support the findings of Bansal et al. (2018) regarding the luxury-good-like behavior and the evidence rather display reverse dependence, the fourth hypothesis of the thesis must be rejected.

Overall, the empirical part of the thesis shows that the first, third and fourth hypothesis can be rejected while the second hypothesis cannot be rejected. First, the evidence suggests that socially responsible portfolios based on ASSET4 ESG ratings, buying the most responsible companies and selling the least responsible ones, cannot achieve significantly positive alphas. Excess returns cannot be reached by utilizing neither the individual ESG aspects nor the equally weighted ratings. In contrast, when considering the whole sample from January 2003 to December 2018, all of the long-short portfolios are surprisingly yielding statistically significant and negative returns. Secondly, the findings derived by investigating the 36-month rolling regressions and three subperiods support the time variability hypothesis and the second hypothesis cannot be rejected. Thirdly, the results of the thesis do not display any wealth dependent behavior of the alpha but rather shows that SRI produce significantly negative returns during the latest good economic time period. Finally, the luxury-good-like behavior of SRI is not present when considering the explored sample period. Instead, the evidence suggests negative correlation indicating that SRI is not a luxury good of investors.



## 7. CONCLUSIONS

This chapter concludes the thesis by revisiting the purpose of the study and the hypothesis stated in the introduction. Further, the findings are discussed, and the limitations of the thesis are noted. Finally, the section considers the practical importance of the findings and provides suggestions for the following research on the field of socially responsible investing.

The thesis examines the performance of socially responsible investing (SRI) from a novel point of view inspired by the working paper of Bansal, Wu, and Yaron (2018). In general, previous literature finds mixed results regarding the performance of SRI. Plenty of papers support the “doing good while doing well” hypothesis while some evidence strongly confirms that “doing good but not well” and “no effect” hypothesis are also plausible options. Bansal et al. (2018) approach the issue with a new perspective by considering the time variability of the excess returns of SRI. The findings of Bansal et al. (2018) indicate that the SRI returns are significantly time-varying and the strategy yields significantly positive returns only during good economic times. Hence, the SRI follows the wealth dependent preferences of investors and the consumption of luxury goods correlates with the alpha of the SRI portfolio. In other words, Bansal et al. (2018) argue that investors view SRI as a luxury good and during good times when the overall wealth is at a high level, they can afford to be SRI-conscious.

To investigate the returns of SRI, the time variability of the returns and the possible luxury-good-like behavior the thesis determines four hypotheses:

H1: SRI portfolio generates significant positive alpha

H2: The alpha of SRI portfolio is time-varying

H3: The SRI alpha is significantly positive only during good economic periods

H4: The SRI alpha correlates with luxury goods consumption

Before any empirical analysis, the thesis discovers that the idea of Bansal et al. (2018) is reasonable and based on the previous literature some similarities between socially responsible investing and luxury goods consumption are found. For example, both SR investors and luxury consumers are often motivated by personal aspirations and the decision-

making process is not purely rational. In addition, based on the existing performance driven research the conclusions of Bansal et al. (2018) remain possible, even though the paper of Lins. et al. (2017) among others offers somewhat contrary evidence by supporting the hedging effect of SRI during the recent crisis. Overall, based on the previous research all of the formed hypotheses are considered as plausible.

Approaching the empirical investigation this thesis constructs 15 SRI portfolios based on Thomson Reuters ASSET4 ESG ratings of S&P 500 firms. ASSET4 provides annual firm-specific scores of environmental, social, governance and economic aspects, and the equally weighted score is based on the individual categories. The thesis employs a cut-off rate of 10 %, accordingly top (bottom) portfolio includes the most (the least) responsible companies. Also, the top-minus-bottom portfolios for each category are constructed. All portfolios are annually rebalanced, and the performance evaluation is executed by employing Carhart's (1997) four-factor model.

First, the thesis examines the performance of the portfolios during the whole sample period from January 2003 to December 2018 to detect if the formed SRI portfolios are yielding excess returns and especially if these excess returns are positive. The thesis finds that all of the top-minus-bottom portfolios yield statistically significant and negative alphas mainly driven by the significant excess returns of the bottom portfolios. None of the top or bottom portfolios yield negative alpha. Based on the pure performance evaluation regarding the whole sample period the thesis rejects the first hypothesis and suggests that SRI cannot generate positive alpha instead the alpha is significantly negative. Although the first hypothesis can be rejected the evidence still offers a good ground to proceed as the rest of the hypotheses remain conceivable.

The second hypothesis is tested by regressing the portfolio alphas by 36-month rolling regression similarly as Bansal et al. (2018) do in their research. The thesis finds that indeed SRI returns experience large time-varying patterns during the sample period and the second hypothesis cannot be rejected. In addition, the thesis divides the sample period by using the NBER recession period to examine three different time periods: pre-recession, recession and post-recession. The revealed evidence supports the conclusion that the second hypothesis cannot be rejected. Interestingly, the thesis finds that SRI is not producing statistically significant abnormal returns during the pre-recession and the NBER recession periods. Further, the SRI is significantly underperforming during the economically good post-recession period. As the alpha of the equally weighted top-minus-bottom portfolio is only significant during the post-recession being -0.62 % per month the thesis rejects

the third hypothesis. The alpha is not positive during good economic times. In fact, the evidence indicates quite the opposite relation, even though the SRI returns are not statistically significant before and during the crisis. Consequently, partially insignificant findings imply that SRI may perform better during bad economic times when compared to normal or good times. Considering the results, the thesis offers slight support to the findings of Lins et al. (2017), who declare the hedging effect of SRI during the recent financial crisis period. Mostly the evidence suggests that SR investors are able to match the performance of conventional investors during bad times while they may have to pay a price for being responsible during good times. Hence the evidence is mostly in line with the paper of Leite & Cortez (2015).

Also, the fourth hypothesis regarding the relation between SRI and luxury goods is rejected based on the derived results. The thesis compares the 36-month rolling alpha of the equally weighted top-minus-bottom portfolio to the 36-month rolling average growth rate of the U.S. PCE on jewelry and watches, and overall moderate negative correlation of -0.31 is found. The sample is also divided into five subperiods to detect if any positive relation exists. The positive correlation appears only during the period before the recession indicating that SRI may behave like a luxury good of investors during that period. However as other subperiods and the whole sample period indicate notable negative correlation and the pre-recession sample is relatively short the thesis cannot conclude any significant positive co-movement between the two variables. Overall, similar wealth dependent preference shifts or correlation with the paper of Bansal et al. (2018) cannot be detected and the findings are mainly in contrast to the earlier evidence of Bansal et al. (2018).

In summary, considering the paper of Bansal et al. (2018) the thesis finds evidence to support the time variability hypothesis, even though the pattern is not similar, and the SRI returns are not following corresponding wealth dependent preferences. Instead, the thesis display evidence suggesting that SRI is yielding negative abnormal returns during the whole sample period and that these negative returns are mainly driven by the weak performance during the economically good post-recession period. During pre-recession and recession periods derived alpha is not statistically significant. Accordingly, the thesis provides weak evidence to support the learning hypothesis of Borgers et al. (2013) and Bebchuk et al. (2013) as it seems that abnormal returns do not exist before and during the recession. A turn occurs after the recession as SRI starts to yield statistically negative returns. During the post-recession period the high negative performance might be driven by various reasons, one potential source can be the sluggish rebound of the least

responsible companies. It can be that if the least responsible companies are punished during a crisis, they are gaining abnormal returns after the recession when the overall trust and economic activities slowly revert towards the normal level. Another possibility could be that the benefit of being responsible is pronounced only in the unstable market environment during and straight after the recent financial crisis. Further, when the market stability is revived, and overall conditions are normalized the additional trust towards highly responsible companies disappears resulting in highly negative SRI returns during the post-recession period. These alternatives may be possible especially if the hedging effect of SRI demonstrated for example by Lins et al. (2017) and Leite & Cortez (2015) is robust. Finding and confirming the exact source of the significantly negative post-recession returns is still beyond the scope of this thesis and remains open for future research.

While the results of the thesis partially display high statistical significance and are mostly in contrast to the findings of Bansal et al. (2018) several limitations exist. First, the portfolio construction is made based on the data from Thomson Reuters ASSET4 consisting of the 500 companies that were listed in the S&P 500 index in 2019. Ideally, the investment universe should not be that limited but due to data availability, the decision to use these 500 firms is made. Secondly, the thesis does not take portfolio re-allocation costs for example transaction fees into account. Thirdly, the thesis blindly utilizes the ASSET4 ESG scores and the validity of the scores is not examined carefully before the portfolio construction. Additionally, the industry weighting of ASSET4 ESG portfolios is not evaluated in the thesis. Albeit the limitations lower the value of the findings at the same time these issues provide a premise for future examination.

For future research, the same sample period could be examined in various ways. This thesis does not consider for example the best in class method that could offer additional value for the conclusions. Furthermore, the portfolio formation could be performed by considering the ratings of various ESG data providers to offer a better foundation for portfolio construction. Also, a wider set of companies could be used for example the companies of Russel 3000 index. When considering the wealth dependent preferences and luxury-good-like behavior of SRI there are various possibilities. One option could be to investigate the time variability with the longer sample period by including more than one NBER recession period into the sample. Another opening could be to examine additional economic indicators to separate good and bad economic times. In addition, the relation between luxury goods and SRI could be re-examined by utilizing the co-movement and causality test such as the Granger causality test. As a final suggestion, one intriguing

opportunity offered by the thesis is to further investigate the reasons behind the pronounced negative performance of SRI during the post-recession era.

Concluded the thesis finds that the SRI returns are time-varying, before and during the latest recession SRI does not provide abnormal returns but after the recession, the returns are significantly negative. Any reasonable wealth dependence cannot be confirmed and the positive correlation between the SRI and luxury goods is not found. From a practical point of view if the negative performance of SRI after the recession is due to a possible rebound of the least responsible stocks then practitioners should avoid SR investing after the recession. On the other hand, if the pronounced importance of social responsibility arises during bad economic periods then investors may want to tilt their portfolios towards SRI during these times. Confirming the reason for negative post-recession returns remains open for future research. Considering the whole sample period socially responsible investing underperforms indicating that practitioners should be aware that being responsible might be costly.

**LIST OF REFERENCES**

- Auer, B. R., & F. Schuhmacher (2016). Do socially (ir) responsible investments pay? New evidence from international ESG data. *Quarterly Review of Economics and Finance* 59, 51-62.
- Bansal, R., D. A. Wu, & A. Yaron (2018). Is socially responsible investing a luxury good? [online]. Available from World Wide Web: <URL: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3259209](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3259209)>.
- Barnea, A., & A. Rubin (2010). Corporate social responsibility as a conflict between shareholders. *Journal of Business Ethics* 97:1, 71-86.
- Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review* 32:3, 794-816.
- Bauer, R., K. Koedijk, & R. Otten (2005). International evidence on ethical mutual fund performance and investment style. *Journal of Banking and Finance* 29:7, 1751–1767.
- Bebchuk, L. A., A. Cohen, & C. C. Wang (2013). Learning and the disappearing association between governance and returns. *Journal of Financial Economics* 108:2, 323-348.
- Bils, M., & P. J. Klenow (1998). Using consumer theory to test competing business cycles models. *Journal of Political Economy* 106:2, 233-261.
- Bodie, Z., A. Kane, & A. Marcus (2014). *Investments*. 10th Global ed. New York: McGraw Hill Education.
- Borgers, A., J. Derwall, K. Koedijk, & J. Ter Horst (2013). Stakeholder relations and stock returns: On errors in investors' expectations and learning. *Journal of Empirical Finance* 22, 159-175.

- Bouslah, K., L. Kryzanowski, & B. M'Zali (2018). Social performance and firm risk: impact of the financial crisis. *Journal of Business Ethics* 149:3, 643-669.
- Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of Finance* 52:1, 57-82.
- Chan, P. T., & T. Walter (2014). Investment performance of “environmentally-friendly” firms and their initial public offers and seasoned equity offers. *Journal of Banking and Finance* 44, 177-188.
- Derwall, J., N. Guenster, R. Bauer, and K. Koedijk (2005). The eco-efficiency premium puzzle. *Financial Analysts Journal* 61:2, 51–63.
- Diltz, D. J. (1995). The private cost of socially responsible investing. *Applied Financial Economics* 5:2, 69-77.
- Donaldson, T., & L. E. Preston (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review* 20:1, 65-91.
- Dorflleitner, G., & S. Utz (2012). Safety first portfolio choice based on financial and sustainability returns. *European Journal of Operational Research* 221:1, 155-164.
- Dubois, B., & P. Duquesne (1993). The market for luxury goods: Income versus culture. *European Journal of Marketing* 27:1, 35-44.
- Eccles, R. G., I. Ioannou, & G. Serafeim (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science* 60:11, 2835-2857.
- Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics* 101:3, 621-640.
- European Commission (2019). *Corporate Social Responsibility & Responsible Business Conduct* [online]. [cited 3.11.2019]. Available from World Wide Web: <URL: [https://ec.europa.eu/growth/industry/corporate-social-responsibility\\_en](https://ec.europa.eu/growth/industry/corporate-social-responsibility_en)>.

- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance* 25:2, 383-417.
- Fama, E. F., & K. R. French (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33:1, 3-56.
- Fama, E. F., & K. R. French (1996). Multifactor explanations of asset pricing anomalies. *Journal of Finance* 51:1, 55-84.
- Freeman, R. E. (1984). *Strategic planning: a stakeholder approach*. Boston, Mass: Pitman.
- French K. R. (2019). *Data library* [online]. [cited 29.12.2019]. Available from World Wide Web: <URL: [https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)>.
- Friedman M. (1970). A Friedman doctrine: The social responsibility of business is to increase its profits. *New York Times Magazine* 13, 32-33.
- Geczy, C., R. F. Stambaugh, & D. Levin (2005). Investing in socially responsible mutual funds. Available from World Wide Web: <URL: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=416380](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=416380)>.
- Godfrey, P. C., C. B. Merrill, & J. M. Hansen (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal* 30:4, 425-445.
- GSIA (2019). *Alliance members* [online]. [cited 23.3.2019]. Available from World Wide Web: <URL: <http://www.gsi-alliance.org/alliance-members/>>.
- Hamilton, S., H. Jo, & M. Statman (1993). Doing well while doing good? The investment performance of socially responsible mutual funds. *Financial Analysts Journal* 49:6, 62-66.
- Heine, K. (2012). The concept of luxury brands. *Luxury Brand Management* 1, 2193-1208.



- Hong, H., & M. Kacperczyk (2009). The price of sin: The effects of social norms on markets. *Journal of Financial Economics* 93:1, 15-36.
- Ikeda, S. (2006). Luxury and wealth. *International Economic Review* 47:2, 495-526.
- Kahn, R. N., C. Lekander, & T. Leimkuhler (1997). Just say no? The investment implications of tobacco divestiture. *Journal of Investing* 6:4, 62-70.
- Kempf, A., & Osthoff, P. (2007). The effect of socially responsible investing on portfolio performance. *European Financial Management* 13:5, 908-922.
- Kim, Y., H. Li, & S. Li (2014). Corporate social responsibility and stock price crash risk. *Journal of Banking and Finance* 43, 1–13.
- Ko, E., J. P. Costello, & C. R. Taylor (2017). What is a luxury brand? A new definition and review of the literature. *Journal of Business Research* 99, 405-413.
- Kreander, N., R.H. Gray, D.M. Power, & C.D. Sinclair (2005). Evaluating the performance of ethical and non-ethical funds: a matched pair analysis. *Journal of Business Finance and Accounting* 32:7-8, 1465–1493.
- Leite, P., & M. C. Cortez (2015). Performance of European socially responsible funds during market crises: Evidence from France. *International Review of Financial Analysis* 40: 132-141.
- Lewis, A., & C. Mackenzie (1999). Morals and markets: the case of ethical investing. *Business Ethics Quarterly* 9:3, 439-452.
- Lewis, A., & C. Mackenzie (2000). Morals, money, ethical investing and economic psychology. *Human relations* 53:2, 179-191.
- Lins, K. V., H. Servaes, & A. Tamayo (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *Journal of Finance* 72:4, 1785-1824.

- Luther, R.G., J. Matatko, & D.C. Corner (1992). The investment performance of UK “Ethical” unit trusts. *Accounting, Auditing and Accountability Journal* 5:4, 57–70.
- Mallin, C.A., B. Saadouni, & R.J. Briston (1995). The financial performance of ethical investment funds. *Journal of Business Finance and Accounting* 22:4, 483–496.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance* 7:1, 77-91.
- Mitton, T. (2002). A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics* 64:2, 215-241.
- Moskowitz, M. R. (1972). Choosing socially responsible stocks. *Business and Society Review* 1:1, 71–75.
- MSCI (2019) *ESG ratings* [online]. [cited 1.11.2019]. Available from World Wide Web: <URL: <https://www.msci.com/esg-ratings>>.
- Mueller, S. A. (1991). The opportunity cost of discipleship: Ethical mutual funds and their returns. *Sociological Analysis* 52:1, 111-124.
- Nakai, M., K. Yamaguchi, & K. Takeuchi (2016). Can SRI funds better resist global financial crisis? Evidence from Japan. *International Review of Financial Analysis* 48, 12-20.
- NBER (2020) *US Business Cycle Expansions and Contradictions* [online]. [cited 5.1.2020]. Available from World Wide Web: <URL: <https://www.nber.org/cycles.html>>.
- Nofsinger, J., & A. Varma (2014). Socially responsible funds and market crises. *Journal of Banking and Finance* 48, 180-193.
- Pasewark, W. R., & M. E. Riley (2010). It’s a matter of principle: The role of personal values in investment decisions. *Journal of Business Ethics* 93:2, 237-253.
- Porter, M. E., & M. R. Kramer (2006). The link between competitive advantage and corporate social responsibility. *Harvard Business Review* 84:12, 78-92.

PRI (2019). *About the PRI* [online]. [cited 29.12.2019]. Available from World Wide Web: <URL: <https://www.unpri.org/pri/about-the-pri>>.

Refinitive (2019). *Environmental, Social and Governance (ESG) Scores from Refinitiv* [online]. [cited 28.1.2020]. Available from World Wide Web: <URL: [https://www.refinitiv.com/content/dam/marketing/en\\_us/documents/methodology/esg-scores-methodology.pdf](https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf)>.

Renneboog, L., J. Ter Horst, & C. Zhang (2008a). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking and Finance* 32:9, 1723-1742.

Renneboog, L., J. Ter Horst, & C. Zhang (2008b). The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. *Journal of Corporate Finance* 14:3, 302-322.

Renneboog, L., J. Ter Horst, & C. Zhang (2011). Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds. *Journal of Financial Intermediation* 20:4, 562-588.

Revelli, C., & J. L. Viviani (2015). Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review* 24:2, 158-185.

Reyneke, M., A. Sorokáčová, & L. Pitt (2012). Managing brands in times of economic downturn: How do luxury brands fare? *Journal of Brand Management* 19:6, 457-466.

Rudd, A. (1981). Social responsibility and portfolio performance. *California Management Review* 23:4, 55-61.

Sandberg, J., C. Juravle, T. M. Hedesström, & I. Hamilton (2009). The heterogeneity of socially responsible investment. *Journal of Business Ethics* 87:4, 519.

- Sauer, D. A. (1997). The impact of social-responsibility screens on investment performance: Evidence from the Domini 400 Social Index and Domini Equity Mutual Fund. *Review of Financial Economics* 6:2, 137-149.
- Schröder, M. (2004). The performance of socially responsible investments: investment funds and indices. *Financial Markets and Portfolio Management* 18:2 122–142.
- Schueth, S. (2003). Socially responsible investing in the United States. *Journal of Business Ethics* 43:3, 189-194.
- Sparkes, R. (1998). Through a glass darkly: Some thoughts on the ethics of investment. *Epworth Review* 25:3, 13-27.
- Statman, M. (2000). Socially responsible mutual funds (corrected). *Financial Analysts Journal* 56:3, 30-39.
- Statman, M., & D. Glushkov (2009). The wages of social responsibility. *Financial Analysts Journal* 65:4, 33-46.
- Syed, A. M. (2017). Socially responsible: Are they profitable? *Research in International Business and Finance* 42, 1504-1515.
- Tippet, J. (2001). Performance of Australia's ethical funds. *Australian Economic Review* 34:2, 170-178.
- Trinks, P. J., & B. Scholtens (2017). The opportunity cost of negative screening in socially responsible investing. *Journal of Business Ethics* 140:2, 193-208.
- Tynan, C., S. McKechnie, & C. Chhuon (2010). Co-creating value for luxury brands. *Journal of Business Research* 63:11, 1156-1163.
- USSIF (2018). *Report on US Sustainable, Responsible and Impact Investing Trends 2018* [online]. [cited 30.3.2019]. Available from World Wide Web: <URL: <https://www.ussif.org/files/Trends/Trends%202018%20executive%20summary%20FINAL.pdf>>.

USSIF (2019). *Sustainable Investing Basics* [online]. [cited 25.3.2019]. Available from World Wide Web: <URL: <https://www.ussif.org/sribasics>>.

Vance, S. C. (1975). Are socially responsible corporations good investment risks. *Management Review* 64:8, 19-24.

Von Wallis, M., & C. Klein (2015). Ethical requirement and financial interest: a literature review on socially responsible investing. *Business Research* 8:1, 61-98.

Waddock, S. A., & S. B. Graves (1997). The corporate social performance–financial performance link. *Strategic Management Journal* 18, 303–319.