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**The Performance of Nordic Socially Responsible
Equity Funds in the Long-Run and During Market
Crises**

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ABSTRACT:

Over the past decade, socially responsible investing (SRI) has grown rapidly due to increasing awareness of global challenges such as climate change and poverty. Institutional and individual investors have begun to incorporate sustainability values into investment decisions leading to broader supply and higher demand for SRI funds. SRI funds are financial instruments which are based on environmental, social and governance (ESG) factors and are considered long-term investments.

The purpose of this thesis is to investigate whether Nordic SRI equity funds outperform conventional funds during market crises and in the long-run. This thesis contributes to the literature by aiming to fill the gap between the mixed findings of prior research as well as expanding the scope by including the most recent pandemic, COVID-19, among other market crises. Moreover, the focus is on the Nordics since the region is considered front-runners in sustainability and is therefore a unique research target.

The theoretical framework discusses Modern Portfolio Theory, Efficient Market Hypothesis, Prospect Theory as well as Shareholder and Stakeholder Orientations. Examining sustainability through these traditional theories, it is noted that socially responsible investing is not entirely based on similar assumptions as presented by the traditional theories. Moreover, as emphasized in the literature review, the findings of the prior literature are mixed on whether SRI funds generate abnormal returns during crises and in the long-run.

This thesis is conducted by analyzing two equally weighted portfolios matched by the number of funds, size, age and total expense ratio variables. One portfolio consists of SRI funds and the other of conventional ones. The abnormal returns of the portfolios are measured by CAPM, Fama-French three-factor and Carhart four-factor models. Three different crises i.e., the dot-com bubble, the financial crisis and the COVID-19 pandemic, are investigated separately to find out whether the portfolios follow similar patterns during different crisis periods. Further, to examine the long-term performance of the funds, a period of over twenty years is covered.

The findings of the Fama-French and Carhart model regression tests are highlighted due to the higher explanatory power compared to CAPM. The results of the factor models support the evidence that conventional equity funds outperform SRI equity funds in the long-run. However, the differences in the returns are relatively small. In addition, the results of the factor models suggest that SRI funds provided downside protection during the dot-com bubble and COVID-19 pandemic while conventional funds outperformed during the financial crisis. Although alphas during crises are not statistically significant, the results provide guidance and a basis for further research. To conclude, the results indicate that SRI investors should not expect significantly different returns than investors who invest in conventional funds during market crises or in the long-run.

KEYWORDS: SRI, Funds, Sustainable Investing, Market Crises, Nordics

VAASAN YLIOPISTO**Laskentatoimen ja rahoituksen akateeminen yksikkö**

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TIIVISTELMÄ:

Viimeisen vuosikymmenen aikana sosiaalisesti vastuullinen sijoittaminen (SRI) on kasvanut nopeasti, koska tietoisuus globaaleista haasteista, kuten ilmastonmuutoksesta ja köyhyydestä, on lisääntynyt. Institutionaaliset ja yksittäiset sijoittajat ovat alkaneet korostaa sijoituspäätöksissään eettisiä arvoja, mikä on lisännyt SRI-rahastojen tarjontaa ja kysyntää entisestään. SRI-rahastot ovat rahoitusinstrumentteja, jotka huomioivat ympäristöön, yhteiskuntaan ja hallintoon (ESG) liittyviä tekijöitä. Lisäksi kyseisiä rahastoja pidetään pitkäaikaisina sijoituskohteina.

Tämän tutkimuksen tarkoituksena on selvittää, tuottavatko Pohjoismaiset SRI-osakerahastot perinteisiä rahastoja paremmin markkinakriisien aikana ja pitkällä aikavälillä. Aikaisempien tutkimusten tulokset ovat ristiriitaisia ja täten tämä tutkimus täydentää kirjallisuutta uusilla löydöksillä. Markkinakriisien otosta on laajennettu sisällyttämällä uusin pandemia, COVID-19, muiden markkinakriisien joukkoon. Lisäksi tutkimuksen painopiste on Pohjoismaissa, koska kyseisiä maita pidetään vastuullisuuden edelläkävijöinä ja siten uniikkina tutkimuskohteena.

Teoreettinen viitekehys käsittelee modernia portfolioteoriaa, tehokkaiden markkinoiden hypoteesia, prospektiteoriaa ja osakkeenomistajien sekä sidosryhmien suuntauksia. Tarkasteltaessa vastuullisuutta näiden perinteisten teorioiden kautta voidaan todeta, että sosiaalisesti vastuullinen sijoittaminen ei perustu täysin samanlaisiin oletuksiin kuin yllä mainitut teoriat. Lisäksi, kuten kirjallisuuskatsauksessa korostetaan, aikaisempien tutkimuksien löydökset ovat ristiriitaisia liittyen SRI-rahastojen suorituskykyyn kriisien aikana ja pitkällä aikavälillä.

Tutkimus on tehty analysoimalla kahta tasapainotettua portfoliota, jotka ovat samankaltaisia rahastojen määrän, koon, iän ja kokonaiskulujen suhteen. Toinen portfolio koostuu SRI-rahastoista ja toinen perinteisistä rahastoista. Salkkujen epänormaalin tuoton mittaamiseen käytetään CAPM-mallia, Faman ja Frenchin kolmen faktorin mallia sekä Carhartin neljän faktorin mallia. Portfolioiden liikkeitä tarkastellaan kolmen eri kriisin aikana, mitkä ovat IT-kupla, finanssikriisi ja COVID-19-pandemia. Pitkän aikavälin kehitystä puolestaan analysoidaan käyttämällä yli 20 vuoden ajanjaksoa.

Tutkimuksessa korostetaan faktorimallien tuloksia, joiden selitysvoima on parempi kuin CAPM-mallin. Faktorimallien löydökset tukevat sitä, että perinteiset rahastot tuottavat pitkällä aikavälillä SRI-rahastoja paremmin. Erot SRI ja perinteisten osakerahastojen tuotoissa ovat tosin suhteellisen pieniä. Lisäksi faktorimallien löydökset viittaavat, että SRI-osakerahastot tarjosivat suojaa kurssilaskuilta IT-kuplan ja COVID-19-pandemian aikana, kun taas perinteiset rahastot menestyivät paremmin finanssikriisin aikana. Vaikka ylituotot kriisien aikana eivät ole tilastollisesti merkitseviä, tulokset antavat osviittaa ja luovat pohjaa jatkotutkimuksille. Yhteenvetona voidaan todeta, että SRI-sijoittajien ei tulisi odottaa merkittävästi erilaista tuottoa verrattuna perinteisiin rahastoihin sijoitaviin markkinakriisien aikana eikä pitkällä aikavälillä.

AVAINSANAT: SRI, rahastot, vastuullinen sijoittaminen, markkinakriisit, Pohjoismaat

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Abbreviations

AUM – Assets Under Management

BIC – Best-in-Class

BIU – Best-in-Universe

CAGR – Compound Annual Growth Rate

CAPM – Capital Asset Pricing Model

CDOS – Collateralized Debt Obligations

CSR – Corporate Social Responsibility

EMH – Efficient Market Hypothesis

ESG – Environmental, Social and Governance

EU – European Union

GSIA – Global Sustainable Investment Alliance

HML – High minus Low

NBS – Norms-Based-Screening

SDG – Sustainable Development Goals

SMB – Small Minus Big

SRI – Socially Responsible Investing

TNA – Total Net Assets

TER – Total Expense Ratio

UN – United Nations

UNFCCC – United Nations Framework Convention on Climate Change

UN PRI – United Nations Principles for Responsible Investment

UMD – Up Minus Down

STOXX600 – Stoxx Europe 600 Index

WHO – World Health Organization

1 Introduction

The role of sustainability in companies' business operations and customer behavior has grown significantly in recent decades. Global challenges such as climate change, demographic aging and poverty need solutions. In response, individuals and nations have begun to address these global challenges (e.g., GSIA, 2018). New innovations, operating models and collaborations with various stakeholders have been reflected in investment products and investor activity. This has increased the growth of sustainable responsible investment. Sustainability has shifted the financial market into a transformation phase offering new opportunities for investors to consider environmental, social and governance (ESG) interests. As Dawkins (2018) defines, socially responsible investing (SRI) refers to taking ESG issues into account in investment activities.

There are three major pillars behind the global framework of socially responsible investment: the six principles for responsible investment, Sustainable Development Goals (the Agenda 30) and the Paris Agreement. The growth of SRI has been supported by the six principles of responsible investment published in 2006 by PRI (PRI, n.d.a). Sustainable Development Goals (SDG) is another major guideline provided by United Nations (United Nations, n.d.). The United Nations (n.d.) defines Sustainable Development Goals (SDG) as a framework to identify and concretize sustainable development concerns and solutions. SDG index is based on equally weighted 17 sustainable development goals. To be more specific, the Agenda 2030 include 17 headline targets and 169 sub-targets. Investors are considered to play a significant role in meeting the targets (United Nations, n.d.). The Paris Agreement, in turn, is an international agreement that aims to keep the rise of the global average temperature below two degrees (UNFCCC, 2021).

This thesis focuses on Nordics since these countries are front-runners in ESG and have superior ratings of performance in terms of sustainability. For example, in the Sustainable Development Report (2021), Finland, Sweden, and Denmark have been ranked as the top three based on the sustainable development goals (SDG) index. Moreover, RobecoSAM (2021) listed Sweden, Finland, Norway and Denmark among the top based

on the ESG rankings of 150 countries. The reasons why Nordics outperform in the ESG field are discussed in Chapter 1.2. However, one explanation for the outstanding rankings is that sustainability has been deeply embedded in the financial systems of the Nordic countries (Rahi et al., 2021).

According to the Global Sustainable Investment Alliance (2018) reviews that the sustainable assets under management have grown from \$22,890 to \$30,683 billion between 2016 and 2018 meaning a 34% growth in two years. The percentages of global sustainable investing assets in Europe, the United States, Japan, Canada, Australia and New Zealand are illustrated in the report (2018) as follows: 46%, 39%, 7%, 6% and 2%, respectively. In the light of this report (2018), it can be stated that Europe plays a significant role in managing sustainable investment assets. Moreover, based on PwC's (2020) article, rising demand for ESG products is causing the asset and wealth management industry to move towards a new paradigm. It is predicted that by 2025, more than 50% of all European mutual fund assets under management will be ESG fund assets. Thus, during 2019–2025, the compound annual growth rate (CAGR) would be 28.8% (PwC, 2020).

Moreover, Global Sustainable Investment Alliance (2018) presents that during 2016–2018, in Europe, sustainable and responsible investment assets increased by 11 percentage points. On the other hand, in Europe, sustainable and responsible investment funds' market share fell from 53% to 49% from 2016 to 2018. This decrease is considered to be a consequence of the increasing number of European strict standards and definitions. As stated earlier, despite the decline Europe controls 46% of the world's responsible investment assets (GSIA, 2018).

In addition to SRI, another theme addressed in this thesis is market crises. Reinhart and Rogoff (2009) go through the financial crises of the last 800 years. The main message is that crises are recurring and have a lot in common (Reinhart & Rogoff, 2009). Moreover, it has been researched that recession tends to happen every eight years and crises every 25 years (Pascal, 2019). Thus, it is reasonable to consider financial instruments in one's

portfolio, such as SRI funds, that can provide downside protection during crises (Nofsinger & Varma, 2014).

The focus of this thesis is on the dot-com bubble, the financial crisis and the COVID-19 pandemic. The dot-com bubble, also recognized as the internet bubble, burst in 2000 as IT companies' growth and return expectations grew exponentially and stock prices faded away from their fundamentals (Krane, 2002). The global financial crisis, in turn, can be considered to have begun with the bankruptcy of Lehman Brothers on 15 September 2008 which led to the collapse of the entire global financial system (Baba & Packer, 2009). The underlying reason for the global financial crisis was collateralized debt obligations (CDOs) which were backed by subprime mortgages (Beaudry & Lahiri, 2014).

The most recent and ongoing crisis covered in this thesis is an exogenous shock, the COVID-19 pandemic. It has caused not only an extensive economic crisis but also extreme human suffering and major health issues. Although some argue that companies which have more corporate social responsibility activities have been less exposed to the COVID-19 pandemic (e.g., Ding et al., 2020), it can be stated that companies did not have the necessary capabilities and resources to respond to the rapidly spread coronavirus in general (Albuquerque et al., 2020). In the OECD (2020) report, various consequences of the COVID-19 pandemic are mentioned such as challenges in the global supply chain and increased risk aversion in financial markets causing the US 10-year interest rate to fall extremely low. However, fiscal policy and the COVID-19 recovery packages have boosted the market significantly allocating capital to sustainable products (Congressional Research Service, 2021).

1.1 Purpose of this study and the hypotheses

The purpose of this study is to compare the performance of Nordic SRI and conventional equity funds during market crises and in the long-term using capital asset pricing model (CAPM), Fama-French three-factor and Carhart's asset pricing models. The three

different pricing models are used to test for robustness. The method follows the research by Nofsinger and Varma (2014) and is described in more detail in Chapter 5.1.1. Briefly, 100 Nordic SRI equity funds have been matched with 100 conventional equity funds by fund age, size and total expense ratio. Then two equally weighted portfolios are constructed, one including the SRI funds and another portfolio consisting of the conventional ones. The price data of the portfolios are used to run the regression models. Moreover, the MSCI ESG Fund Ratings has been used to determine whether the fund is classified as an SRI or conventional fund.

Besides long-term effects, this study focuses on the performance of the SRI and conventional funds during the dot-com bubble, the financial crisis and the COVID-19 pandemic. Varma and Nofsinger (2014) define a crisis as a significant stock market decline and therefore, in this thesis, the crisis periods are identified as at least a 30% drop in the stock market. Following Stoxx Europe 600 index performance, the dot-com bubble, the financial crisis and the COVID-19 pandemic occurred in 1.3.2000–31.10.2002, 1.10.2007–31.3.2009 and 16.2.2020–22.3.2020, respectively. However, it is vital to understand that even though the stock market recovered rapidly from the COVID-19 pandemic, the pandemic did not end. One of the main reasons why the stock market recovered and continued to rise quickly is the significant reallocation of resources. In other words, as written in Congressional Research Service's (2021) report, interest rates were lowered by federal banks and access to lending opportunities was facilitated to help insolvent businesses. Although the stock market reached all-time highs (Altig et al., 2020), the COVID-19 pandemic continued to spread and new variants emerged (Krause et al., 2021; WHO, 2022).

Previous literature has found evidence with US data that SRI funds are less risky during uncertain market movements and can yield excess returns (e.g., Nofsinger & Varma, 2014; Lins et al., 2017). Using the Nordic data instead of the US, this thesis seeks to determine whether Nordic SRI equity funds perform better than conventional ones during market crises. It is important to study the Nordic area alone since the US has been behind

Nordic in companies' sustainability acts. Furthermore, ESG factors are often discussed together with risk management (e.g., Gyönyörová et al., 2021; Albuquerque et al., 2019) and improved returns during crises (e.g., Gangi and Trotta, 2015). Therefore, the first hypothesis is:

H1: Nordic SRI equity funds outperform conventional ones during market crises.

Since SRI is considered a strategy for long-term investors, the purpose of the second hypothesis is to find out whether Nordic SRI equity funds generate better returns than corresponding conventional ones in the long-run. The assumption is supported by several studies (e.g., Albuquerque et al., 2019; Auer, 2016; Morgan Stanley, 2015; Statman, 2006). Moreover, since SRI and corporate social responsibility (CSR) are essentially related to each other and in the early stages of history, the terms were used for the same purposes (Sparkes & Cowton, 2004), it is also worth to investigate the impact of CSR in the long-term. For example, Sparkes and Cowton (2004) discuss how SRI and corporate social responsibility (CSR) interact and how CSR nor SRI issues cannot be ignored anymore.

Prior studies have found a positive correlation between company's market value and efforts put into Corporate Social Responsibility (Hill et al., 2007; Shank et al., 2005). Hill et al. (2007) use a 10-stock Asian portfolio and a 12-stock European portfolio while Shank et al.'s (2005) data consider the United States. The data period in Hill et al. (2007) is from 1995 to 2005 meanwhile Shank et al. (2005) use the data period 1993–2003. Although in the light of these studies, there is a positive relationship between market value and CSR, there is still a lot of disagreement in the literature on whether SRI will generate better returns in the long-run or not.

As discussed in Chapter 2.4 in more detail, negative associations concerning CSR go back to Friedman's (1970) profit-orientated thinking. Similarly, Vance (1975) argues CSR as a reason for conflict between stakeholders. Also, Aupperle et al. (1985) state that CSR is

connected with wasting a company's resources. However, as time has passed and continuous change has reshaped the markets, researchers have found a positive relationship between SRI and long-term performance (e.g., Auer, 2016). Thus, in the light of increased SRI awareness, developed tools and databases to investigate sustainability, the second hypothesis is:

H2: Nordic SRI equity funds outperform conventional ones in the long-run.

1.2 Motivation and intended contribution

This chapter discusses the three motivating factors of this thesis. First, there is a rapid increase in the knowledge and implementations of SRI (Eurosif, 2018) which needs further investigation. Second, the current market crisis period, the COVID-19 pandemic, inspires to study the link between SRI and market crisis. Although studies have explored the relationship between the performance of SRI funds and crisis periods (e.g., Nofsinger & Varma, 2014), the Nordic area has not been well covered and neither has the most recent crisis, the COVID-19 pandemic. The third motivating factor is the Nordic countries' superior performance based on ESG ratings (e.g., RobecoSAM, 2021) and its impact on performance during crises and in the long-run. Combining previous research and carrying out the empirical analysis, the intended contribution is to find out do Nordic SRI equity funds outperform conventional funds during market crises and in the long-run. Thus, this thesis aims to shed light on this topic from which there are currently conflicting results, as discussed in Chapter 4.

Denmark, Finland, Norway, and Sweden have been selected to represent the Nordics in this thesis. Iceland is excluded since there are not many public companies. Chosen Nordic countries are particularly interesting research targets because they are globally exceptional in terms of sustainability and because Nordics stand out from the others with their regional sustainable policies (e.g., Sovacool, 2017). For example, Nordic countries have succeeded remarkably well according to the Human Development Index and the

Environmental Performance Index (EPI, n.d.; Roser, 2014). Moreover, these four Nordic countries have been at the top of ESG rankings over the years (RobecoSAM, 2021). In other words, Denmark, Finland, Norway and Sweden are considered pioneers in SRI and therefore a specific and unique market to research.

Furthermore, the Nordic model of CSR is extensively discussed, and the stakeholder-oriented view is highlighted. These factors are considered the reasons for the overwhelming performance of the Nordic countries regarding sustainability (Carson et al., 2015; Poulsen et al., 2010; Thomsen & Conyon, 2012). Carson et al. (2015, p. 19) describe the basis of the Nordic model as follows: “a consensual political culture, a strong social-democratic welfare state, and well-functioning partnerships between business, government and labor organizations”. Moreover, Liang and Renneboog (2017) state that companies from Nordic countries are under civil law and therefore ranked higher than firms from common law countries. In addition, according to research by Eurosif (2018), institutional investors' role is emphasized in Nordic countries. Bengtsson (2008) drives the same perspective arguing that the role of institutions makes Nordic countries similar to each other.

1.3 Limitations of the study

The limitations of studies which concern SRI issues cannot be discussed without mentioning the regulation and accurate data sources. Although steps have been taken to harmonize sustainability reporting, a complete consensus has not yet been reached on SRI terms and performance measures. Therefore, even though funds are marketed as socially responsible, there is a potential for greenwashing. Furthermore, Halbritter and Dorfleitner (2015) stress the importance of responsibility-related ranking resources. These authors (2015) explain that different ways of defining and measuring corporate responsibility are reasons for inconsistent results. Thus, different ESG rating providers reflect subjectivity if the measures are not harmonized to meet the regulation. In other words, there are challenges in comparing socially responsible funds without proper and widely used regulations, standards and measures.

Moreover, defining a market crisis as a massive decline by a certain index, as done in the prior studies (e.g., Nofsinger & Varma, 2014) sets its own challenges. For example, as a result of defining a market crisis as at least a 30% decline led the COVID-19 pandemic to be determined as a relatively short period of time. Although an attempt has been made to take this into account by using daily price data to capture a larger number of data points, the short period of time can reduce statistical significance.

Another limitation concerns the challenge of separating the effects of SRI attributes and the fund manager's abilities. For example, Kempf and Osthoff (2007) highlight that studies which compare the financial performance of SRI mutual funds and conventional ones are problematic since it is challenging to distinguish the SRI attribute and the superior skills of the SRI fund's managers. Also, Glode (2011) argues that during market crises, actively managed funds have outperformed passive funds which might be a consequence of the superior abilities of active managers.

1.4 Structure of the study

This thesis begins with the introduction chapter which explains the purpose of the study and the hypotheses. Also, the motivation, intended contribution and limitations of the study as well as the structure are covered. The second chapter describes modern portfolio theory, efficient market hypothesis and prospect theory. Also, shareholders' and stakeholders' orientations are discussed. Previously mentioned theories built the theoretical framework for this thesis. Chapter three presents a general information about SRI and chapter four, the literature review, goes through prior studies. Chapter five presents the data and methodology and then moves on to the empirical part. The empirical analysis begins with a discussion of the descriptive statistics and cumulative returns. The results of the CAPM, Fama-French three-factor and Carhart four-factor model are also presented. The final chapter summarizes the key results of this thesis and gives suggestions for future research.

2 Theoretical framework

This chapter examines the theoretical background including Modern Portfolio Theory, Efficient Market Hypothesis and Prospect Theory as well as Shareholder and Stakeholder Orientations. Sustainability is compared to these traditional theories and the contradictions are highlighted. It is noted that the underlying assumptions of SRI differ from traditional theories and therefore sustainability-based investing strategies do not completely meet with above mentioned theories.

2.1 Modern portfolio theory

Markowitz's (1952) portfolio theory serves as an approach for rational long-term wealth growth and emphasizes investment diversification. Portfolio theory maps the best combinations of return and risk for different investment portfolios. However, implementing the theory into practice is challenging because of investors' irrational behavior. The irrationality of investors can take several forms such as herd behavior and overconfidence (Banerjee, 1992; Tversky & Kahneman, 1996).

Although portfolio theory was introduced decades ago, the challenges of building an optimal portfolio are still relevant today. For example, modern portfolio theory has been a framework for portfolio managers to assemble an optimal portfolio (Fabozzi et al., 2002). Portfolio theory (1952) assumes investors act rationally based on fundamental factors while SRI emphasizes individual values and beliefs (Bollen, 2007). Therefore, these strands can be seen as opposed to each other.

Beal et al. (2005) examine ethical investment and why investors do not invest based on Markowitz's (1952) mean-variance optimization theory. Beal et al. (2005) suggest that financial returns, non-wealth returns as well as social change could be reasons behind ethical investments. Moreover, Hickman et al. (1999) present evidence that socially responsible funds may reduce a portfolio's risk and therefore be beneficial to the investor.

However, Kurtz (2005) states that the SRI strategy restricts the investment targets and lowers the diversification possibilities and thus, SRI investor settles for lower risk and return. Also, Geczy et al. (2021) argue that responsible investment portfolios should generate lower risk-adjusted returns because responsible investment portfolios are built from a smaller number of firms than traditional ones. In line with Kurtz (2005) and Geczy et al. (2021), Berry and Junkus (2012) state that responsible investment portfolios do not reach the framework of an efficient market.

Moreover, based on Markowitz's (1952) article "Portfolio Selection", the expected return on a sustainable investment portfolio shifts further away from the efficient frontier because there are fewer opportunities for portfolio diversification. In other words, according to Markowitz (1952), less diversified portfolios which are not in the efficient frontier should not provide higher expected returns. To sum up, Markowitz's (1952) portfolio theory contradicts with the idea of sustainability in several ways. For example, the portfolio theory (1952) assumes investors to be rational and form a diversified portfolio while SRI investors emphasize beliefs (Bollen, 2007) and may restrict unethical investment targets (Kurtz, 2005).

2.2 Efficient market hypothesis

Based on Fama's (1970) research, the Efficient Market Hypothesis assumes that the prices of securities reflect all available information and therefore, no security is overvalued or undervalued. Market efficiency is divided into three areas: weak, semi-strong and strong. The first form refers to a circumstance where the prices of securities immediately and completely reflect all information from the past historical prices. Semi-strong market efficiency suggests that the prices of the securities correspond exactly to the publicly available information. In this case, investors with inside information have an advantage. In addition, strong market efficiency means that the prices of securities include both public and non-public information (Fama, 1970).

The efficient market theory by Fama (1970) received criticism from other researchers (e.g., Grossman & Stiglitz, 1980). In response to the criticism, Fama (1991) published a new article updating the theory and reformulating definitions. In this article, Fama (1991) proposed semi-strong and strong market efficiencies as “event studies” and “test for private information”. However, the updated article has not replaced the established terms of Fama’s (1970) study.

The efficient market hypothesis (EMH) link to SRI is following. According to EMH, one cannot achieve abnormal returns based on available information since all the information is instantly reflected in the prices. Thus, based on EMH, socially responsible investing should not generate abnormal returns because the market has already noticed the information. Also, Renneboog et al. (2007) address that through ESG-based investment strategy it is challenging to receive abnormal returns since the prices reflect all the information. Moreover, the same authors (2007) find that investors pay for ESG screens and therefore non-SRI funds perform better than SRI funds that are similar in other characteristics.

2.3 Prospect theory

Kahneman’s and Tversky’s (1979) Prospect Theory states that losses are perceived to be relatively larger than an equal profit. Thus, the investor does not weigh the observed probabilities linearly. Avoiding defeat is one of the findings of the Prospect Theory. The findings of Kahneman and Tversky (1979) support the idea that investors are willing to pay a higher price for SRI funds, assuming that investors receive downside protection in times of uncertainty. As discussed in Chapter 4.4, several studies have concluded that SRI funds limit the magnitude of the losses during crises (e.g., Gangi & Trotta, 2015; Nofsinger & Varma, 2014). Thus, prospect theory and downside protection may explain to some degree the continuous growth of SRI.

Moreover, Moskowitz (2000) examines actively managed mutual funds' performance during recessions and finds actively managed funds outperform passive ones. This finding is relevant in this thesis because relatively often SRI funds are actively managed. Combining the above information, it can be assumed that especially actively managed SRI funds perform better than conventional ones during crises and in the light of Prospect Theory (1979), investors are ready to pay a higher price to survive better during recessions.

2.4 Shareholder and stakeholder orientations

Friedman's (1970) Shareholder Theory, also recognized as profit-oriented thinking, assumes that the primary goal of firms is to maximize the wealth of shareholders. Therefore, if sustainable investing does not lead to the maximum profit, SRI is inconsistent with Friedman's theory. Moreover, Preston and O'Bannon (1997) as well as Be'nabou and Tirole (2010) discuss the possibility of overinvesting in sustainability based on the manager's own preferences. Shareholder Theory (1970) assumes that the managerial opportunism hypothesis leads to resources being wasted and creating a competitive disadvantage. Thus, based on the Shareholder Theory, sustainability negatively affects a firm value.

Despite the conflict between sustainability and the profit-orientated view, the awareness of the concept of responsibility and sustainability has grown. Carroll (1999) states that the beginning of corporate social responsibility dates back to the 1950s but has gained greater awareness since the 1970s. After that, the trend was shifted to empirical research and new themes, such as stakeholder theory, began to emerge. Carroll (1999) extensively discusses how the definitions of CSR have evolved and mixed from the era of the 1950s. There are several variations of the term; Friedman (1970) defines CSR as a phenomenon while Dahlsrud (2008) argues that the problem is not how CSR is conceptually defined but how it is socially constructed.

Besides Friedman's (1970) Shareholder Theory, another significant theory that has influenced sustainability, is Freeman's (1984) Stakeholder Theory. Freeman's (1984) Stakeholder Theory argues that a company must act in such a way that it meets the requirements set by shareholders and other stakeholders. According to Ruf et al. (2001) the following five stakeholders typically occur: shareholders, employees, customers, suppliers, and the surrounding community. The importance of the environment is emphasized today as well. According to the Stakeholder Theory (Freeman, 1984), the interests of stakeholders should be considered beyond the minimum requirement. Ruf et al. (2001) support the idea arguing that Stakeholder Theory should also reach moral and philanthropic levels besides economic and legal components.

Hussain et al. (2018) highlight that meeting the needs of stakeholders can be considered as a competitive advantage and a strategic investment if resources are difficult to replicate. This is in line with Porter's (1991) theory, which presents that voluntary acts can provide a competitive advantage over others in the market. Thus, it can be interpreted that companies that have voluntarily incorporated responsibility into the strategy have been able to gain a competitive advantage. Michelon and Parbonetti (2010) also emphasize stakeholder engagement executed through sustainable development and good governance.

According to Jamali (2007) CSR defines the responsibilities of a company and Stakeholder Theory determines who is involved in the organization's activities. Thus, the concepts are linked together. According to Stakeholder Theory, stakeholders are essential to a company and must be well managed by management (Jamali, 2007). Besides Stakeholder theory, Hussain et al. (2018) also cite agent theory as an explanatory factor between corporate performance and social responsibility. Moreover, Ferrell et al. (2016) and Dhaliwal et al. (2011) have found that companies with a high CSR have less agency conflict.

3 Socially responsible investing

This chapter reviews and discusses socially responsible investing in general. The chapter begins with introducing the relevant regulation and discusses the definition of SRI. The focus is then shifted to the history of SRI. Today's themes regarding SRI are also examined and five SRI strategies are presented.

3.1 Regulation

Regulation in financial markets is continuously changing, and financial institutions must harmonize their reporting in accordance with the Sustainable Finance Disclosure Regulation (SFDR, 2019). To be more specific, the purpose of this regulation (2019) is to harmonize the rules for financial market participants and increase transparency regarding sustainable finance. As presented in SFDR (2019), financial products are divided into three categories based on the ESG features: articles 6, 8 and 9 funds (Figure 1). Article 6 includes funds with no ESG features. Moreover, article 8 includes products in which certain sustainability criteria are applied. The 9 article refers to funds which set sustainable investment objectives (SFDR, 2019). As awareness increases, the number of investors investing in sustainable investments is also expected to increase even more (GSIA, 2018).

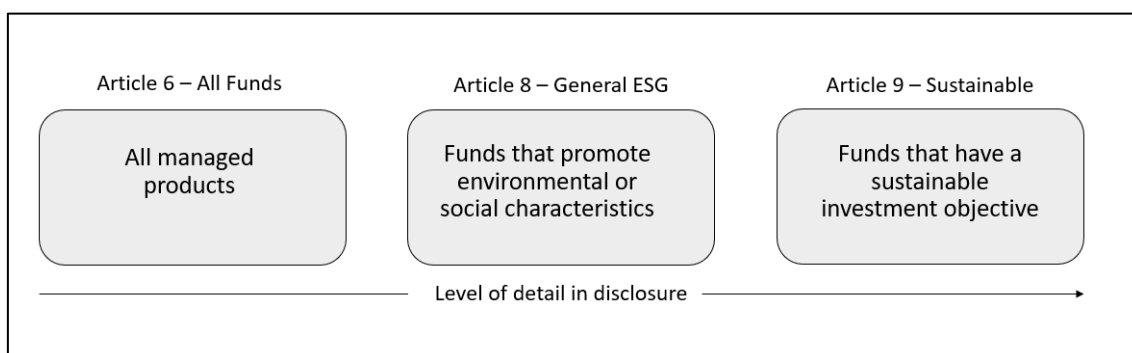


Figure 1. The SFDR regulation (adapted from Morningstar, 2021).

Another current theme related to SRI is EU Taxonomy. EU Taxonomy is the European Union's classification system for sustainable investments (European Commission, n.d.). EU Taxonomy aims to make it easier for investors to invest in green products. Thus, EU Taxonomy focuses on environmental factors. In practice, this means that certain institutions must report separately how their investments are environmentally sustainable and outline if investments are not sustainable. To be classified as sustainable according to EU taxonomy, economic activity must measurably contribute to environmental objectives, not cause significant harm to other objectives listed in the regulation and meet minimum requirements, such as the OECD Guidelines for Multinational Enterprises and the UN guidelines on the company and human rights. In general, the focus is shifting; responsible investing is becoming a new norm rather than an exception (European Commission, n.d.).

Furthermore, Alessandrini and Jondeau (2020) address the increasing regulation. Alessandrini and Jondeau (2020) discuss the Article 173 of TEE (Energy and Environmental Transition Law) in France and states the possibility of similar regulation concerning institutional investors in the EU in the near future. To be more specific, the Article 173 of TEE refers to institutional investors' need to publicly report their SRI issues. The implementation of these actions will require a lot of changes and have a significant impact on investment styles. For example, it is assumed that the popularity of passive investing will increase (Alessandrini & Jondeau, 2020). Therefore, the changes regarding SRI are shaping the asset management industry as mentioned in the introduction.

3.2 Definition of SRI

It is vital to define SRI because as sustainability and responsibility become more widespread, the risk of greenwashing increases. Especially in recent years, the allocation of capital to sustainable companies has grown and companies avoid being branded as irresponsible (e.g., GSIA, 2018). However, noticing the differences between sustainable and

greenwashing companies require familiarization with ESG standards, regulation, and reports.

SRI refers to an investment method in which the companies include ESG factors into the strategy (e.g., Dawkins, 2018). ESG stands for environmental, social and governance. As PRI (2018) defines and Figure 2 presents, an environmental (E) aspect includes, for example, climate change, renewable energy, and waste management meanwhile the social perspective (S) takes into account issues such as working conditions, health, safety, employee relations and diversity. Lastly, the letter G refers to governance issues such as executive pay, briber, corruption, board diversity and structure. It is necessary to remember that it is not possible to write out a complete list of the content of the ESG dimensions. However, Figure 2 provides direction on themes around the topic (PRI, 2018).

Environment (E)	Social (S)	Governance (G)
Air	Child, slave and bonded labour	Board Structure, size and diversity
Climate change	Consumer protection	Bribery
Energy efficiency	Diversity	Business ethics
Greenhouse gas	Freedom of association	Conflict of Interest
Ocean acidification	Health and access to medicine	Corruption
Renewable energy	Human rights	Executive pay
Waste management	Labour standards	Risk management
Water or resource depletion	Workplace health and safety	Shareholder rights

Figure 2. The ESG dimensions (adapted from PRI, 2018).

Consistent with PRI (2018), Eurosif (2018) interprets socially responsible investing (SRI) as a long-term investment strategy that emphasizes environmental, social and governance factors. The methodology consists of fundamental analysis but also integrates ESG factors throughout the investment process. The aim is to achieve long-term returns while doing good through corporate decision-making (Eurosif, 2018).

Often SRI is defined as considering personal and social values when making investment decisions (Statman, 2006; Schueth, 2003; Shank et al., 2005). EY (2020) states that investors who value sustainability invest in companies, organizations and funds which

measure social or environmental impact besides financial returns. Those impacts consist of, for example, helping the communities to prevent climate change (EY, 2020). However, resources used for sustainability issues and highlighted in marketing campaigns should be shared proportionally with the rest of the business to describe the relative magnitude of these actions. In other words, companies often use absolute figures, and the figure can be very marginal compared to, for example, the total amount of capital expenditure and therefore mislead investors.

Furthermore, as mentioned in the introduction, the United Nations (UN) made a voluntary initiative in 2006 concerning the six Principles for Responsible Investing (Figure 3.) According to PRI (n.d.a), the purpose of the Principles is to provide a guideline for ESG issues to be implemented in practice. The Principles are set by investors to investors. Moreover, most of the signatories are by investment managers but also asset owners and service providers sign the Principles. Once the Principles are signed, the signed one promises to contribute to a sustainable financial system. Europe and North America are leading the way in the number of signatures but lately, there has also been a rapid increase in Asia. In 2021 the number of signatories was 3,826 and, as Figure 4 proves, the number of signatures is increasing (PRI, n.d.a.).

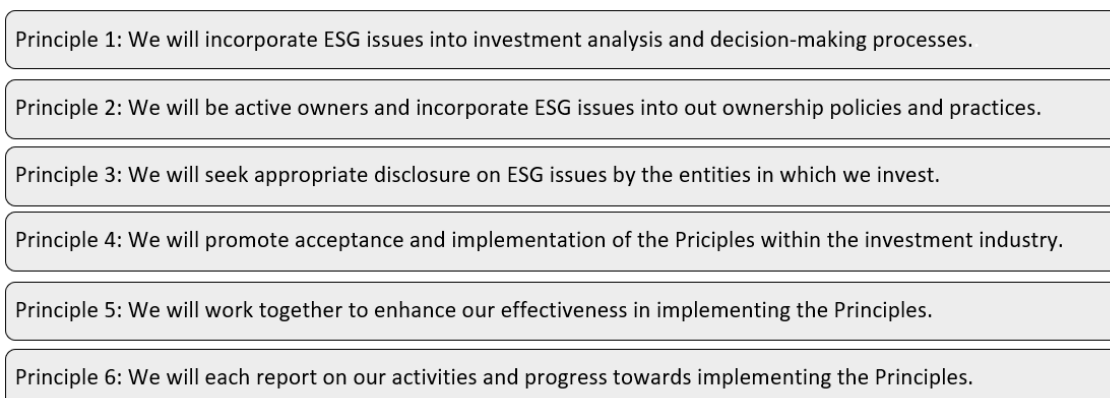
- 
- Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.
 - Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.
 - Principle 3: We will seek appropriate disclosure on ESG issues by the entities in 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.

Figure 3. The six Principles for Responsible Investment (adapted from PRI, n.d.a).

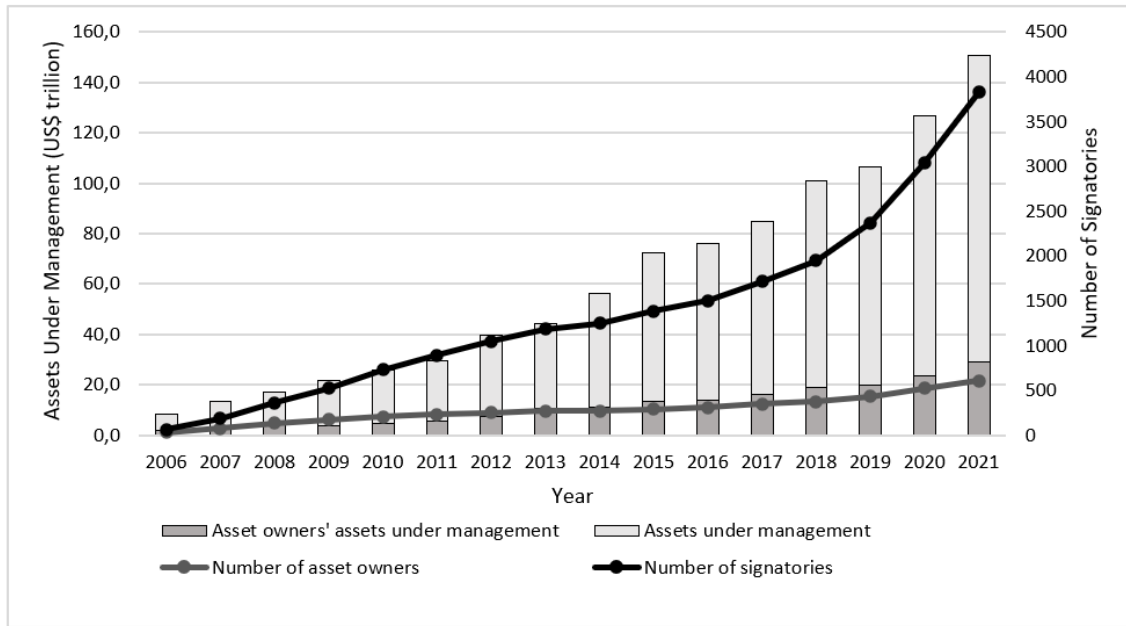


Figure 4. The PRI growth (adapted from PRI, n.d.a).

3.3 History of SRI

The idea of investing in products that include social perspective and meet with investor's beliefs and values dates back decades. Sparkes (2003) states that the founders of SRI were the Religious Society of Friends (Quakers) in 1758. The founder, John Wesley, presented social investing principles which included themes from refusal to participate in the slave trade to emphasizing good working conditions and avoiding specific industries (Sparkes, 2003).

Moreover, Carroll (1999) presents the evolution of Corporate Social Responsibility and addresses that the beginning settles around the 1950s - the decade which started the modern era of CSR. In the 1950s social responsibility (SR) was the term used instead of CSR since the issue did not concern companies yet. Thus, SR was not linked to companies but to businessmen, who had to act according to policies that were in line with the goals and values prevailing in the EU (Carroll, 1999). The first major milestone in modern literature on sustainability is considered to be Howard R. Bowen's (1953) *Social Responsibilities of the Businessman*.

Bowen (1953) argue that the social responsibilities of businessmen will become a commonly used term. The intention was that businessmen make decisions and policies based on the values and norms of society. The definition does not mean that these members of society should not criticize values. However, businessmen must act in ways that are favorable to society and do not put their own values ahead of those of society (Bowen, 1953).

Sauer (1997) notes that during the beginning 1970s, when the Vietnam War took place, socially responsible investors excluded companies that were involved in the war. Socially responsible investors then turned their attention to South African business excluding firms associated with war during the late 1970s and 1980s (Sauer, 1997). Also in 1980s socially responsible investors shifted the focus on apartheid policies in Africa excluding companies who supported racial segregation and discrimination (PRI, n.d.b).

Moreover, twelve milestones are pointed out in PRI's timetable (PRI, n.d.b.) and most of them are described in below. In 1971 Pax World Fund was launched being the first US socially responsible mutual fund and 18 years later Valdez Principles were introduced due to the massive Exxon Valdez oil spill. Valdez Principles were renamed as CERES Principles which include ten guidelines concerning corporations' actions related to environment. Furthermore, Domini 400 Social index is considered as one of the very first SR indexes and that was followed by a settle of Dow Jones Sustainability Indices in 1999.

In 2006, the first 51 signatories of PRI marked place and in 2019 there were more than 2500 PRI signatories. In 2015 Sustainable Development Goals were launched by United Nations. That was followed by the initiative, Climate Action 100+, launched in 2017. Climate Action 100+ is a front-runner changing the policies related to the greenhouse gas emitters of the largest companies in a climate-friendly direction (PRI, n.d.b.). More about the milestones are in Figure 5.

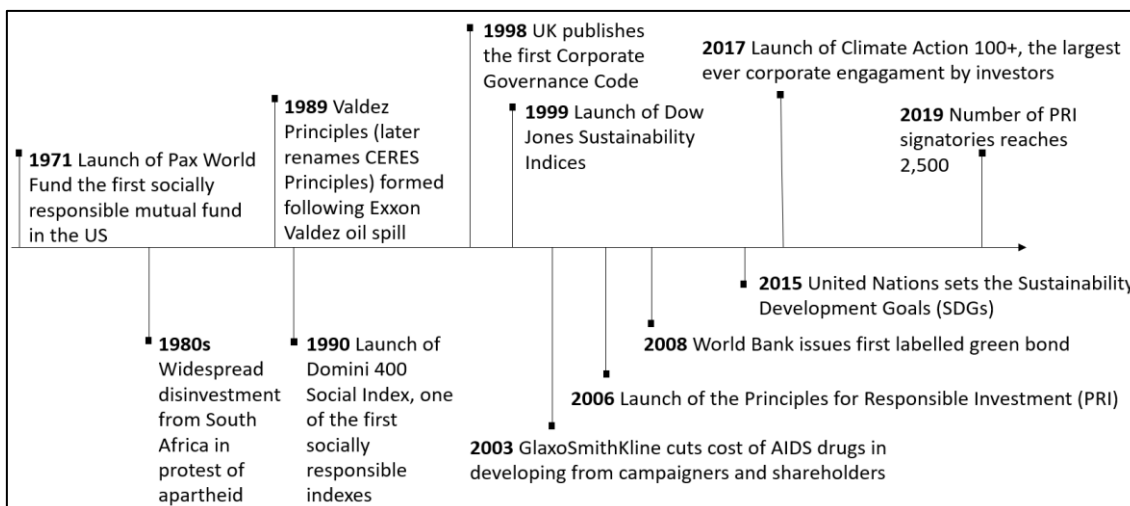


Figure 5. The milestones of responsible investment (adapted from PRI, n.d.b.).

According to Sparkes and Cowton (2004), responsible investing has evolved into an investment strategy that has been incorporated by large investment institutions such as pension funds and insurance companies. Thus, the change has shifted from small specialty funds to large investment institutions and retail investors. Moreover, PRI (2015) reports that the dialogue between institutional investors, the management of the companies and portfolio managers enables the development of operations in a more responsible direction and the elimination of non-sustainable practices (PRI, 2015). In addition, the reason why institutional investors' role in SRI is significant, could be a result of institutional investors' links to society as well as the interest in holistic and social thinking in their DNA.

Furthermore, Sparkes and Cowton (2004) emphasize the role of corporate executives on SRI issues. According to Ali and Camp (2017) increasing number of managers believe that a commitment to sustainability secures the position of their company. This massive movement of many companies voluntarily adopting the ongoing sustainability trend has resulted in reluctant corporate executives being forced to implement sustainable practices to stay in the market. Moreover, Ali and Camp (2017) summarize sustainability being a strategic imperative meaning major changes from a company's culture to technology solutions.

Ali and Camp (2017) also discuss the executives' attitude and its positive link to sustainability. The authors (2017) highlight the importance of executives' commitment to responsible practices rather than pursuing their own short-term interests. Therefore, the first step behind the sustainability actions is the executives of the companies and their willingness to change. However, the entire organization should be committed to responsible changes in order to apply sustainability on different levels of the company (Ali & Camp, 2017). Similarly, EY (2020) emphasizes four key practices which allow sustainable changes to be applied to the entire organization. These practices include topics from the company's values to sustainable education.

3.4 SRI today and in the future

It is necessary to go through the ongoing bubble speculation, the conflict between economic growth and sustainability as well as millennials' role in leading the sustainability agenda when going through the SRI theme today. These topics are discussed in the following paragraphs.

Kindleberger (1978) defines a bubble to be a sharp increase in asset price causing the price to increase further because of the increased interest and expectation for future profit. The new buyers of the assets are typically speculators who want to benefit from the trade, not the asset itself. Furthermore, Siegel (2003) states that a bubble is fed by investors who aim to sell the asset at a higher price to other investors. In general, bubbles tend to happen when assets are not based on the fundamentals and when the bubble crashes, it can have significant consequences such as companies going bankrupt, people being laid off and states losing tax revenues.

Kempf and Ostoff (2007) find out that following a sustainable investment strategy based on public information generates superior returns. The authors (2007) discuss the opportunity of the temporary misprices of responsible funds in the market. It is also stated in

the research, that the abnormal returns can be due to the additional ESG risk factor (Kempf & Ostoff, 2007). In the light of the Kempf and Ostoff (2007) research, investors have put pressure on companies to take sustainability into account in their business models which have awakened bubble speculation. In other words, investors have set tough goals, but there are not massively investment targets that meet all the criteria. Thus, if a suitable target is found, the demand can increase significantly, even if the growth is not based on the fundamentals of the company.

The potential conflict between economic growth and responsible investment is also a source of debate (e.g., Wiedmann et al., 2020). Increasing production of economic services and goods negatively affects climate, nature and human health. Without economic growth, for example, climate change could be halted momentarily, but in the long-run, the innovations brought by technology are seen as a solution besides a commitment to common responsible goals. Eliminating economic growth would generate many other challenges such as unemployment and inequality (Thurow, 1977). Thus, it is important to consider all the aspects when making decisions. For example, if countries were aiming for zero growth, what would happen to developing countries?

Moreover, PRI (2017) discusses the millennials' role since a new era of investors is going to conquer the sector and thus, the values of these millennials are even more emphasized. According to EY (2020) report, advisors are more educated to meet millennials' values, and therefore advisors have the capabilities to answer the sustainability-related questions. The same article (2020) emphasizes the importance of identifying the changing needs of customers to serve existing customers as well as possible and to gain new customers. In other words, to stay in the financial sector, investment options shall be based on sustainable values to serve millennial investors. Millennials are also a significant age group because of their large size and inherited wealth. In addition, communication is faster than ever through millennials' superior digital skills which puts pressure on companies (EY, 2020). Solutions are needed for global trends such as the challenges

posed by growing populations and the growing demand for safe food and clean water (WHO, 2019; WHO, 2020).

Due to the mentioned changes, the role of investors in allocating capital in a responsible direction is significant and multidimensional. Hill et al. (2007) and Shank et al. (2005) argue that sustainability has a positive effect on the market value of the company. Companies with a high market value obtain debt financing easier (Wasiuzzaman & Nurdin, 2018). As the market value increases, it is more probable that some of the sustainable companies will raise additional capital for projects in line with sustainability. Thus, the company benefits from a high share price and can take its own sustainable agenda forward.

3.5 SRI strategies

There are numerous SRI strategies, and this thesis presents the five most common ones which are Best-in-Class, Sustainability Themed, Norms-based Screening, Engagement and Voting and Exclusions (Figure 6). Institutional investors have led the way in pushing the strategies forward but also more and more retail investors have adopted socially responsible investment strategies into their portfolios (Eurosif, 2018).

According to Eurosif (2018) the aim is to achieve long-term returns through SRI. The following benefits support the SRI strategy: responsibility to the client, risk management, looking for a stable long-term return, the generational transfer of wealth, financial opportunity, contribution to local community development, addressing climate change and other environmental issues. However, sustainable investing involves several concerns: lack of products and profit, lack of qualified expertise and regulation, risk concern, mistrust and concerns about greenwashing (Eurosif, 2018).

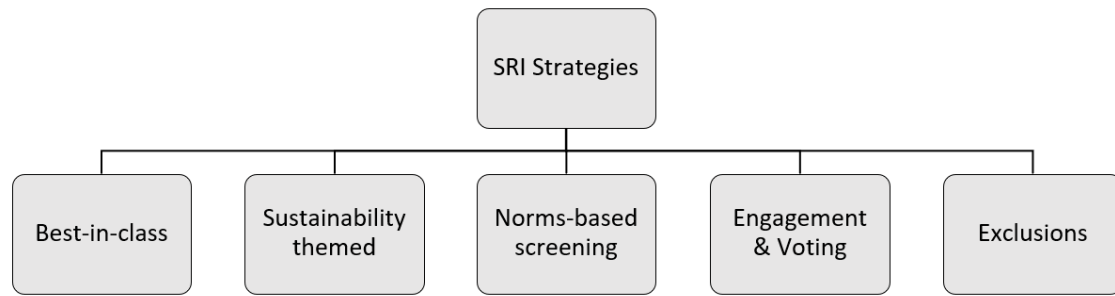


Figure 6. The SRI strategies (adapted from Eurosif, 2018).

3.5.1 Best-in-Class

According to Eurosif (2018), the best-in-class (BIC) is a strategy in which companies from all the industries that have received the best ESG analysis are selected for the investment portfolio. In the strategy, investors can choose the criteria by which companies are scored and the scores are ranked within the industry. The best-in-class strategy aims to find companies that meet certain requirements in both ESG matters and financial analysis. Eurosif (2018) also mentions Best-in-Universe (BiU) and Best-effort strategies. However, the advantages of the best-in-class (BIC) strategy are sector comparisons and industry-specificity. Moreover, the strategy has gained great popularity reaching more than €585 billion in 2018 indicating a 20% CAGR compared to 2010 (Eurosif, 2018).

Renneboog et al. (2008b) state that positive screening is commonly used together with the best-in-class strategy. Kempf and Osthoff (2007) argue that by using the best-in-class or positive screening strategy, an investor can maximize the returns. Moreover, Kempf and Osthoff (2007) find out that even after considering transaction costs, abnormal returns remain significant. Furthermore, the research (2007) emphasizes the positive correlation between the amount of socially responsible screens used and the abnormal returns. Kempf and Osthoff (2007) state that if an investor takes a long position in high SRI-rated stocks and sells short low SRI rates stocks, one can get an alpha up to 8.7% on a yearly basis. This maximum alpha requires a best-in-class strategy combined with many screens and top-level SRI-rated stocks (Kempf & Osthoff, 2007).

3.5.2 Sustainability-themed

Another strategy which has gained popularity among investors is the sustainability-themed strategy, also known as thematic investment. According to MSCI (2021) the basic idea of thematic investment is based on the assumption that there are global and identifiable increasing trends. Through thematic investment, the investor seeks to identify these specific social, economic, technological, environmental and demographic themes and to benefit from their global impact. Often, these themes have a long-term impact, and the investor needs to be patient with return expectations (MSCI, 2021).

Based on Eurosif (2018), over the past eight years, the compound annual growth rate of this strategy has been 25%. The sustainability-themed strategy has strengthened its position and one of the reasons is the increased climate change debate. Especially water-related climate challenges are emphasized such as floods and water scarcity. For example, the European Investment Bank lending policies note the importance of water resources management and adaptation to climate change and present more favorable terms in loans (Eurosif, 2018).

3.5.3 Norms-based screening

According to Eurosif (2018) norms-based screening (NBS) refers to a strategy which is based on norms and emphasizes international standards related to sustainability. These standards include topics such as environmental protection, human rights, labor standards and anti-corruption principles. Eurosif (2018) lists the following as international initiatives and guidelines for norms-based screening: the OECD Guidelines for Multinational Enterprises, the ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, the UN Global Compact and the Guiding Principles on Business and Human Rights. Moreover, norms-based screening is often used with an

engagement and exclusion strategy. The popularity of this screening strategy decreased by 38% during 2016–2018 and this is considered to be since investors are looking for more sophisticated sustainable strategies (Eurosif, 2018).

3.5.4 Engagement and voting

Engagement and voting was the second most popular strategy in 2017 and the compound annual growth rate over the last eight years reached 14% (Eurosif, 2018). This strategy has an essential connection to fiduciary duty. Engagement and voting strategy allows investors to influence a company's decision-making towards responsible goals, suggesting ways and expressing their opinions regarding ESG matters. Engagement highlights owners' and producers' ownership rights and active management (Eurosif, 2018). GSIA (2018) states that corporate engagement and shareholder action were in the top three strategies in 2016 measured with assets and dollars.

Dimson et al. (2015) investigate U.S public companies' engagements link to abnormal returns in the period of 1999–2009 finding that positive abnormal returns can be achieved with successful engagements. Engagements regarding corporate governance and climate change resulted in the highest abnormal returns during the study period. Moreover, Dimson et al. (2015) mention that companies with successful engagement have a positive correlation with operating performance, profitability, efficiency, shareholding and governance. Dimson et al. (2015) also highlight institutional investors' role in engagements. On the other hand, Dhaliwal et al. (2011) discuss institutional investors being interested in companies with high CSR performance.

3.5.5 Exclusions

According to Eurosif (2018) exclusion is a strategy that was developed first. Initially, the strategy was designed to exclude industries such as those related to chemical processes. Later, the focus shifted to excluding so-called “sin stocks,” which typically include

companies that produce or sell weapons, alcohol, tobacco, animal testing, or pornography. Thus, the approach, as the name implies, systematically excludes companies, sectors, and countries from potential investing targets. Sauer (1997) describes that alcohol, gambling and tobacco products were avoided by socially responsible investors in the 20th century.

Based on Eurosif's (2018) report, exclusion alone is criticized as not being an actual SRI strategy. Thus, Eurosif (2018) emphasizes that this strategy should be accompanied by an engagement and voting strategy to truly achieve the responsibility impact. Although interest in exclusions has been declining, it is still the largest responsible investment strategy based on AuM within eight years of the publication of the Eurosif (2018) report. In addition, exclusions have been incorporated into many strategies and thus distinguishing it as a single strategy is challenging.

4 Literature review

In academic literature, many studies focus on the performance of socially responsible funds and compare those to conventional ones (e.g., Barnett & Salomon, 2006; Bauer et al., 2005; Bello, 2005; Geczy et al., 2021; Hamilton et al., 1993; Kreander et al., 2005; Sauer, 1997; Statman, 2000). Although the link between sustainability and financial returns is extensively studied, the results have remained mixed as Figure 7 summarizes. For that reason, this thesis goes through different outcomes in the sub-chapters. The sub-chapters below pay attention to the complex nature of SRI, and therefore the discussion is not limited to financial returns.

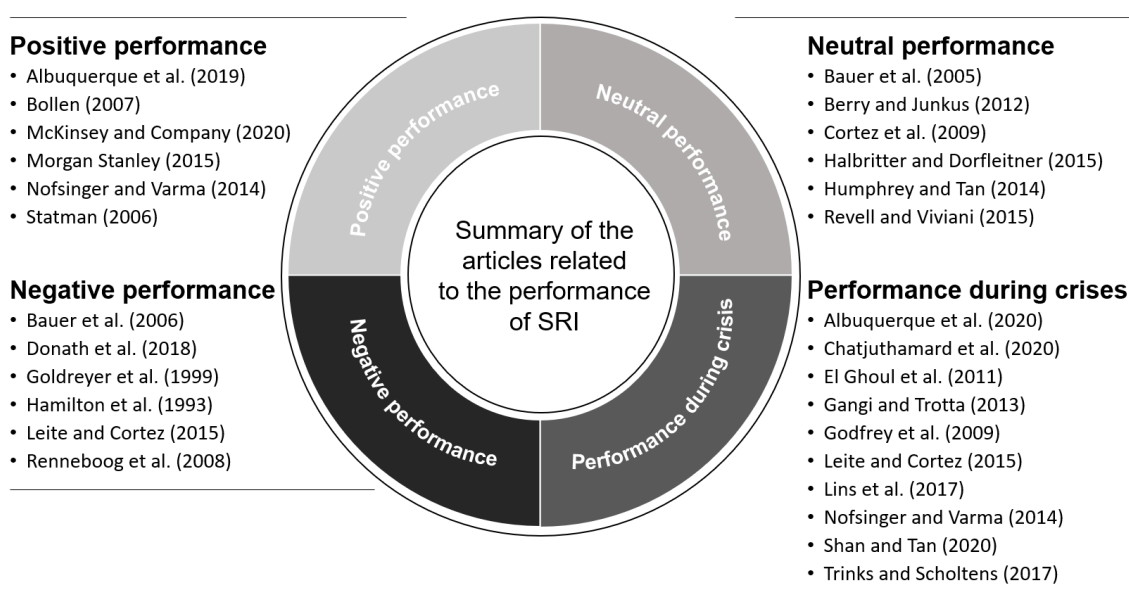


Figure 7. The summary of the articles related to the performance of SRI.

4.1 Positive performance of SRI

In the study by Morgan Stanley (2015) 10,228 open-end mutual funds and 2,874 managed ones during seven years are examined to understand the effect of sustainability. The results indicate that sustainable funds often outperform or at least meet the

performance of conventional investment products on an absolute and a risk-adjusted basis. It (2015) also reveals the different long-term annual returns of the KLD 400 Social Index and S&P 500. In 25 years, ESG-orientated MSCI KLD 400 index has outperformed S&P 500 index by 45 basis points (Morgan Stanley, 2015).

Nofsinger and Varma (2014) investigate whether SRI strategies pay off in a time of crisis. To be more precise, the study period is 2000–2011 and includes 240 US domestic equity SRI mutual funds. During the study period, two crises were observed based on the S&P 500 index: 4.2000–10.2002 and 10.2007–3.2009. The authors examine US domestic equity funds and find out that SRI funds reduce downside risk during market crises. Nofsinger and Varma (2014) state that SRI funds outperform conventional funds by 1.61%–1.70% annually during crises. On the other hand, the authors also find out that SRI funds perform in the range of 0.67%–0.95% worse than conventional funds during non-crises. Moreover, Nofsinger and Varma (2014) emphasize the role of ESG issues and shareholder advocacy rather than negative screenings. Three different models are run to calculate the risk-adjusted alphas (Nofsinger & Varma, 2014).

Moreover, sustainability is related to risk management, and the debate over ESG risks has grown. Grene (2008, p. 2) declares: “It's not a manifesto for saving the planet, it's a tool for better assessing risk”. The above citation has been quoted several times, such as in McKinsey & Company's (2020) global social responsibility survey. According to this survey (2020), 83% of business leaders and investment professionals consider social responsibility to be a factor in increasing the value of a company. The sample consists of 558 participants of which 439 are executives and 119 are investment professionals.

Based on the research of Albuquerque et al. (2019), sustainability and responsibility allow differing from competitors and therefore may lead to higher profit margins. Albuquerque and al. (2020) also emphasize the importance of customer and investor loyalty. Moreover, SRI is linked to intrinsic returns which helps to engage customers and create

long-term relationships as well as understand investing tendencies of the investors (Eurosif, 2018). However, Bollen (2007) argues that investors who emphasize personal and social values may not have optimal portfolios from the risk-reward point of view. Furthermore, Renneboog et al. (2008a) conclude that investors pay a higher price for ethics. In contrast with the arguments of Bollen (2007) and Renneboog et al. (2008a), Statman (2006) finds SR indexes generating higher returns than S&P500. Statman (2006) study the composition of four SR indexes comparing those to the traditional S&P500. Statman (2006) emphasizes that the correlations between the SR indexes and S&P500 index are high.

4.2 Neutral performance of SRI

An increasing number of studies argue that abnormal returns associated with socially responsible investing decrease over time (e.g., Halbritter & Dorfleitner, 2015; Revelli & Viviani, 2015). According to Revelli and Viviani (2015), taking sustainability into account does not bring significant costs but neither considerable benefits to shareholders. The results of Halbritter and Dorfleitner (2015) are consistent with Revelli and Viviani (2015). Based on a study by Halbritter and Dorfleitner (2015), differences in the returns of investment portfolios are not significant between companies that pay much or little attention to CSR. Moreover, Berry and Junkus (2012) find that the returns obtained using different screening techniques do not differ under normal market conditions.

Bauer et al. (2005) investigate the performance of 103 UK and US ethical mutual funds using a Carhart multi-factor model during the 1990–2001 time period. Risk-adjusted returns do not differ based on ethical and conventional funds. Bauer et al. (2005) investigate the risk-adjusted performance of the Canadian ethical mutual funds and conclude that differences between these and their peers are statistically insignificant.

Moreover, Cortez et al. (2009) explore socially responsible mutual funds using seven different European countries. Cortez et al. (2009) find that European socially responsible funds perform neutrally compared to conventional ones and SR benchmarks. Therefore, investors who are willing to invest in European funds do not have to pay extra for using social screens. Similarly, Humphrey and Tan (2014) conclude that after transaction costs and fees, no difference is found between the returns of screens and unscreened portfolios. Humphrey and Tan (2014) base their study on the prior findings that negative screening increase risk but reduce profit meanwhile positive screening reduces risk and increases profit.

Leite and Cortez (2015) get similar results studying French SRI funds which invest in Europe. The authors (2015) find that SRI funds perform at the same level as conventional peer ones during the crisis but underperform during the non-crisis periods. Especially, negative screening techniques lead to underperformance meanwhile funds that use only positive screens result similarly to conventional peers during all the market states. Moreover, Leite and Cortez (2015) observe that SRI funds do better during crises than during normal times. The authors (2015) focus on the performance, investment styles and abilities of managers from January 2001 to December 2012.

4.3 Negative performance of SRI

Many studies have found that SRI has a negative impact on returns based on the US evidence (e.g., Donath et al., 2018; Goldreyer et al., 1999; Hamilton et al., 1993). Donath et al. (2018) study the performance of US SRI and non-SRI funds using Markowitz and Sharpe models. The results reveal SRI funds underperforming non-SRI funds and highlight the long-term nature of SRI strategies. However, Donath et al. (2018) also mention the increasing trend of investors embracing SRI funds in their portfolios.

Goldreyer et al. (1999) find SRI funds underperform non-SRI funds in the time period of 1981–1997 in the United States. The amount of SRI and non-SRI equity funds is 29 and

20, respectively. The method used in the study is Jensen's alpha which measures the risk-adjusted performance (Goldreyer et al., 1999). Similarly, Hamilton et al. (1993) report that SRI funds established after 1985 underperform conventional funds based on their empirical evidence which is collected from the United States.

Moreover, prior literature argues that the portfolio companies of the SRI funds are more limited than conventional ones and therefore the performance may result to be worse (Leite & Cortez, 2014; Trinks & Scholtens, 2017). In other words, large companies that do not directly contribute to ESG issues or are considered as sin stocks are excluded from the SRI portfolios even though this would have an impact on the performance (Leite & Cortez, 2014). Also, Bauer et al. (2006) conclude that non-ethical funds perform better than conventional funds. Bauer et al. (2006) investigates Australian domestic funds and uses Carhart's four-factor model to study the period from 1992 to 2003.

Unlike many other studies, Renneboog et al. (2008a) investigate the differences in the returns between SRI and conventional funds globally. The amount of the funds is over 16,000 in total covering 17 countries during the time period of 1991–2003. The findings indicate that SRI funds perform worse than non-SRI ones in most of the countries. More specifically, in the US, UK and many European and Asia-Pacific countries, SRI funds' risk-adjusted returns are lower than domestic benchmarks. On the other hand, in France, Japan and Sweden the returns of SRI funds are not statistically different than conventional funds. The models used in the study by Renneboog et al. (2008a) are CAPM, the Carhart four-factor model and expanded FFC models. In addition, Renneboog et al. (2008) also state that corporate governance and social screens are linked negatively to risk-adjusted returns.

Likewise, Leite and Cortez (2015) state that SRI funds that use negative screens underperform non-SRI ones during non-crisis and crisis periods based on the evidence from France. With negative screens, the authors refer to "sin" stocks and faith-based screens. Leite and Cortez argue (2014) that the reasons behind the underperformance may be

due to excluding larger companies that usually perform well. In addition, as ESG interest grows, investors have been willing to lower return expectations in order to take into account non-financial attributes (Bollen, 2007).

4.4 Performance of SRI during crises

Especially during crises strong capital position and liquidity can be considered as key factors to create value for customers and to be able to make sustainable choices. According to Nofsinger and Varma (2014), during market shocks socially responsible mutual funds outperform traditional mutual funds and thus socially responsible mutual funds offer reduced downside risk during market shocks. However, the investor must pay for this benefit and therefore during non-market shocks, responsible funds perform worse (Nofsinger & Varma, 2014). Similarly, investigating European socially responsible funds during 2008 and 2011, Gangi and Trotta (2015) find that investments that have emphasized social and ethical factors overperform conventional funds during market turbulences.

In contrast, Trinks and Scholtens (2017) argue that responsible investments do not offer downside protection during crises. In the study by Trinks and Scholtens (2017), responsible investment refers to the negatively screened S&P500 portfolio and the authors observed risk-adjusted returns. Chatjuthamard et al. (2020) argue that having controversial companies, such as alcohol and tobacco businesses, in the portfolios help to cope and stable the returns of the portfolio during crises.

Godfrey et al. (2009) explain the success of responsible firms in an uncertain market environment with moral capital that increases trust and protects the firm. Furthermore, Shan and Tang (2020) emphasize the importance of employee morale in times of crisis. The authors (2020) find out that firms with better employee satisfaction in non-crisis times also perform better during crises. Lins et al. (2017) get similar results. According to their study (2017), during the financial crisis, high CSR firms outperform traditional

ones. Lins et al. (2017) specify that profitability, growth, and sales per employee have been higher in times of market shocks in socially responsible firms.

El Ghoul et al. (2011), on the other hand, discuss the trust brought by corporate social responsibility and the lower risk associated with it. In general, lower risk is associated with obtaining cheaper capital and therefore it can be argued that socially responsible companies raise competitive capital during market crises. Albuquerque et al. (2020) point out that the motives of responsible investors are based on non-economic factors and have a longer investment horizon, and thus, in times of market shocks, responsible investors are less likely to sell their investments.

Although previous studies indicate the results of this thesis, it is necessary to keep in mind that since the focus is on the Nordics, which is exceptional in many respects, the findings may vary from those obtained from other countries. For example, according to Jochem (2011), Nordics were able to recover their economies relatively quickly from the financial crisis that originally began in the United States. The Nordic countries' ability to cope with the financial crisis was based on their specific arrangement of crisis management. Similarly to the study by Allen and Gale (1999), Jochem (2011) explain that during crises Nordic countries maintain confidence in the banking systems and have succeeded in employment and labor market policies.

5 Data and methodology

This chapter presents the data and methodology of this thesis. The first subchapters introduce the data including information about the data description and databases. After these, the focus is shifted to the methodology. This thesis follows the prior literature (e.g., Varma & Nofsinger, 2014) studying the performance of the funds through three asset pricing models to compare the excess returns. The models are CAPM, the Fama-French three-factor model and the Carhart four-factor model. The purpose of the models is to find out if Nordic SRI equity funds outperform conventional ones during crises and in the long-run.

5.1 Data

The aim of the data description subchapter is to present the data preparations and discuss where it has been collected. Moreover, the subchapter after that presents portfolio characteristics and how crisis periods are defined. Finally, the MSCI ESG Fund Ratings is introduced in more detail.

5.1.1 Data description

The original sample consists of daily price data of 397 Nordic equity funds from the period of 31.12.1999–31.3.2021. Instead of monthly data, the daily data is used to include more data observations to carry out the regression analysis and to verify the reliability of the results. The price data is obtained from Thomson Reuters Eikon's Datastream database as well as the price data of the benchmark Stoxx Europe 600.

The collected Nordic equity funds are categorized into SRI and conventional funds manually using the MSCI ESG Fund Ratings. Funds that are ranked AAA or AA demonstrate SRI funds. Out of 397 Nordic equity funds, the number of funds that are ranked AAA or AA and therefore classified as SRI funds, is 100. To find the best conventional match for

each SRI fund, this thesis follows prior studies (e.g., Bauer et al., 2005; Kreander et al., 2005; Mallin et al., 1995; Statman, 2000) matching SRI funds with the conventional ones by age and total net assets (TNA). As the funds are collected from Nordic, the currencies range between euro, Swedish krone (SEK), Norwegian krone (NOK) and Danish krone (DKK). Different currencies have been converted to euros to make comparisons possible. Moreover, since fees may have an effect on the returns of the fund, the matching also takes into account the total expense ratio (TER). Total net assets and total expense ratio variables, for each fund are collected from Thomson Reuters Datastream. To conclude, the most similar conventional fund has been matched manually for each SRI fund using age, total net assets and total expense ratio variables. Portfolio characteristics are described in Chapter 5.1.2.

After 100 SRI funds and 100 conventional funds are identified from the data, two equally weighted portfolios are formed. Descriptive statistics of the portfolio's and benchmark's daily returns are discussed in Chapter 6.1. This is followed by a discussion and demonstration of the daily cumulative returns during study periods. Before asset pricing models are run, the risk factors and risk-free rates are obtained from Kenneth R. French's Data Library. By using time-series data of benchmark, SRI and conventional portfolio as well as risk factors and risk-free rates, the CAPM, Fama-French three-factor and Carhart's four-factor regressions are run. Moreover, following Nofsinger and Varma (2014), the difference portfolio is formed to help to outline the difference between the portfolios. In the portfolio characteristics table as well as regression tables, this is presented as (1)–(2).

5.1.2 Portfolio characteristics and defining market crises

The portfolio characteristics are presented in Table 1 and are in line with the research of Bauer et al. (2005) who studied the performance of SRI and non-SRI funds in Germany, the United Kingdom, and the United States. To be specific, Bauer et al. (2005) argued that SRI funds tend to be smaller in size and have a higher expense ratio than

conventional funds. Similarly, Geczy et al. (2021) find SRI funds to be smaller and have a higher expense ratio.

Table 1. Portfolio characteristics.

Characteristics	Number of funds	Mean total net assets (TNA) € in millions	Mean total expense ratio (TER) %	Mean fund age in years
SRI portfolio (1)	100	229,27	1,02	21
Conventional portfolio (2)	100	302,63	1,01	17
Difference portfolio (1–2)		73,36	-0,01	4

Following Stoxx Europe 600 index performance and the criteria that crisis period is defined as at least a 30% drop in the stock market, the dot-com bubble, the financial crisis, and the COVID-19 pandemic occurred in 28.3.2000–12.03.2003 (-59,59%), 17.7.2007–9.3.2009 (-59,56%) and 17.2.2020–18.3.2020 (-35,26%) respectively. The market declines during these periods are shown in grey in Figure 8. Furthermore, this thesis investigates the long time period, which is defined as 31.12.1999–31.3.2021, to find out if Nordic SRI equity funds outperform in the long-run compared to conventional ones.



Figure 8. The Stoxx Europe 600 Index and crises (adapted from Yahoo Finance, 2021).

5.1.3 MSCI ESG Fund Ratings

There are several alternative ways to obtain data on sustainability categorizations of funds. For instance, Morningstar offers sustainability rankings but only for US-based equity funds. As MSCI is a global leader in ESG research, this thesis collects the data from the MSCI ESG Fund Ratings. This database is widely acknowledged, whereas for example yourSRI is not as recognized. Finally, one could retrieve data directly from fund prospectuses. However, this requires a vast amount of manual work and does not necessarily exceed the quality of MSCI ESG Fund Ratings due to missing disclosures.

The MSCI ESG Fund Ratings provide information on the ESG characteristics of funds and ETFs. The MSCI ESG Fund Ratings help investors become more aware of ESG risks, especially as the number of ESG funds is growing. Also, a larger number of fund managers have adopted ESG matters as part of their investment practices (MSCI, 2021).

To receive an MSCI ESG Fund rating, the fund must comply with the following three requirements (MSCI, 2021). First, at least 65% of the gross weight of the fund has to consist of covered securities. Second, the date of the fund holdings has to be less than a year. Third, there have to be at least ten different securities in the fund. MSCI rates funds from AAA to CCC, AAA being the “leader” ESG rating. In this thesis, AAA and AA funds are considered SRI funds. The letters in the Fund ESG Ratings are based on the Fund ESG Quality Score, which is ranked from 0 to 10, with 0 being the lowest possible fund score (Figure 9). The Fund ESG Quality Score is obtained by multiplying the Fund Weighted Average ESG Score by adjustment percent. The Fund Weighted Average ESG Score is calculated based on the different securities normalized weights and ESG scores. Adjustment percent is, on the other hand, calculated using ESG trends: fund ESG trend positive (%), fund ESG laggards (%), fund ESG Trend Negative (%). The ESG Quality Score is based on peer group rankings, meaning that if a fund's ESG quality Score is 10, the fund has the highest percentile ranking in the peer group (MSCI, 2021).

Fund ESG Quality Score	Fund ESG Rating
8.6–10.0	AAA
7.1–8.6	AA
5.7–7.1	A
4.3–5.7	BBB
2.9–4.3	BB
1.4–2.9	B
0.0–1.4	CCC

Figure 9. The fund ESG quality score (adapted from MSCI, 2021).

5.2 Methodology

Following Nofsinger and Varma's (2014) research, this subchapter focuses on the three asset pricing models. The models are the CAPM, Fama-French three-factor and Carhart's four-factor model which are discussed in more detail in Chapters 5.2.1, 5.2.2 and 5.2.3. In this thesis, the three asset pricing models are used to explain SRI and conventional portfolio's excess returns in the long-run and during selected crises.

5.2.1 The capital asset pricing model

The capital asset pricing model (CAPM) is the methodology that was used as the researchers began to investigate the performance of SRI portfolios (Hamilton et al., 1993; Luther et al., 1992; Sauer, 1997). Sharpe (1964), Lintner (1965) and Mossin (1966) are considered to be the contributors of the capital asset pricing model which is a traditional modern-day financial theory that predicts a risk-return ratio. They researched the pricing model for securities and developed each other's ideas over ten years. Markowitz's (1952) portfolio theory helped the above-mentioned authors to achieve a breakthrough in the capital asset pricing model that provides a solution to explain the price level of securities. Whenever CAPM holds, assets should settle on the security market line (SML) when the market is in equilibrium. Underpriced shares are above SML and overpriced below it. In the model, beta measures the systematic risk which cannot be decentralized (Lintner, 1965; Mossin, 1966; Sharpe, 1964). Many simplifications underlie the theory, but the

CAPM is still considered one of the most used models to explain asset pricing today. The formula for CAPM is given in equation 1:

$$E(r_i) = r_f + B_i * [E(rm) - r_f] \quad (1)$$

where,

$E(r_i)$ = Expected return of the asset

r_f = Risk-free rate

B_i = Beta of the asset

$E(rm)$ = Expected return on the market

5.2.2 The Fama-French three-factor model

Fama and French (1993) examined return patterns in more detail observing inconsistencies in the expected returns and market efficiency (Fama & French, 1993). Kuhn (1970) defines these deviations as anomalies. The evidence that the observed returns differed from the theoretical returns led to empirical studies of anomalies such as size and value anomalies by Fama and French (1993). Based on the empirical evidence of Fama and French (1993), the authors stated that smaller companies as well as high-book-to-market companies outperform large and low book-to-market companies.

Moreover, several studies have concluded that multi-factor models explain fund performance better than single-factor models such as the capital asset pricing model (Areal et al., 2009; Bauer et al., 2005). Therefore, the Fama-French three-factor (1993) model has begun to dominate empirical research, although the model was developed in the 1990s. This model extends the capital asset pricing model taking into account the firm size and book to market ratio. Thus, the attention is focused on size and value factors besides market risk. The idea is that these variables capture the risk premium and therefore, the expected return is dependent on exposure to the factors mentioned above. In other words, the model is adjusted for the tendency that value and small-cap stocks tend to

outperform under normal circumstances. In line with Fama and French (1993), the model is based on the regression of historical price data and the equation is given below in the equation 2:

$$R_{it} - R_{Ft} = \alpha_i + b_i(R_{Mt} - R_{Ft}) + s_iSMB_t + h_iHML_t + \varepsilon_{it} \quad (2)$$

where,

R_{it} = Return on portfolio i for time t

R_{Ft} = Risk-free return for time t

$R_{it} - R_{Ft}$ = Excess return of a portfolio

$R_{Mt} - R_{Ft}$ = Excess return of a market portfolio

α_i = Abnormal return

SMB_t = Small Minus Big, i.e., the spread return between a portfolio of small stocks and return on a portfolio of large stocks.

HML_t = High Minus Low, i.e., the spread return between a portfolio of stocks with a high book-to-market ratio and the return on a portfolio of stocks with a low book-to-market ratio.

b_i, s_i, h_i = Factor coefficients (beta)

ε_{it} = Error term

5.2.3 The Carhart four-factor model

The Carhart four-factor model is based on the idea of adding a momentum factor to the Fama-French three-factor model. To be more precise, Mark Carhart (1997) added the momentum factor discussed by Jegadeesh and Titman (1993) to the model of Fama and French (1993). The momentum factor is used to explain the abnormal performance of the portfolio relying on empirical evidence that the ones who have outperformed continue to outperform in the near future and vice versa (Jegadeesh & Titman, 1993). The momentum factor, up minus down (UMD), is formed on the returns from 3 to 12 months ago and compared between winning and loser stock portfolios (Carhart, 1997). The

factor is also known as winners minus losers (WML). Carhart's four-factor model is defined in the equation 3:

$$R_{it} - R_{ft} = \alpha_i + b_1(R_{mt} - R_{ft}) + s_iSMB_t + h_iHML_t + p_iUMD_t + \varepsilon_{it} \quad (3)$$

where,

$UMD_t =$ Up minus down (momentum factor)

$p_i =$ Factor coefficients (beta)

Prior literature has investigated the momentum effect in the short, medium and long-time horizon finding exposure to momentum in all periods (e.g., Jegadeesh & Titman, 1993; Moskowitz & Grinblatt, 1999). Carhart (1997) argues that the goodness of fit increases when momentum anomaly is being controlled for. Moreover, Leivo and Pätäri (2011) find that the momentum effect enhances the portfolio performance based on the evidence from the Finnish stock market. Therefore, this thesis also employs Carhart's four-factor model besides the Fama and French three-factor model and CAPM.

6 Empirical analysis

Empirical Analysis begins with descriptive statistics and cumulative returns. Mean, median, maximum and minimum daily returns as well as standard deviations are calculated and analyzed using daily returns. These are followed by the results of the three models which evaluate daily time-series data during crises and in the long-run. Regressions are run for the SRI portfolio, conventional portfolio and difference portfolio.

The results of the regressions are displayed as tables. Following the research of Nofsinger and Varma (2014), the abnormal rate of return (alpha) is the measure of fund's performance and the alphas are annualized for the tables. The explanatory variables are the market factor (MKT), size factor (SMB), value factor (HML) and momentum factor (UMD). Further, adjusted R-squared, which varies between 0 and 1, indicates whether the model is a proper fit for the data. Value 1 predicts that the model is a perfect fit, and all the variance is explained. Hence, in general, the higher R-squared, the better. Moreover, in the brackets are the t-statistics and asterisks summarize the significance levels based on p-values.

6.1 Descriptive statistics and cumulative returns

As Table 2 below presents, the benchmark has a higher maximum daily return and a lower minimum daily return than portfolios in all of the panels. Moreover, the mean and median daily returns of the benchmark are lower in all the study periods than SRI and conventional portfolios. On the other hand, the SRI portfolio has a higher maximum and lower minimum daily return than the conventional portfolio in all of the panels. Thus, the SRI portfolio is more volatile. Moreover, as expected, the lowest returns were obtained during the COVID-19 pandemic. It is worth remembering that the maximum and minimum values presented in Table 2 are one-day returns. Calculating the maximum and minimum values by the monthly data would give a better picture of the trends, not only the daily peaks and bottoms.

In addition, the mean and median daily returns of the SRI portfolio are higher than conventional in the total period. However, the mean of the SRI portfolio's daily returns is lower than the conventional portfolio's in all the crises subsamples. In addition, during the financial crisis and the dot-com bubble the median of the SRI portfolio is lower than the median of the conventional portfolio.

Standard deviations of the data sets indicate the risks associated with the portfolios and benchmark. A higher standard deviation indicates that the data values are more spread out and a lower standard deviation, in turn, indicates that the data points are more clustered around the mean. In this thesis context, standard deviation refers to the consistency of the returns during different time periods. In other words, a low standard deviation means that the returns have been consistent over the time period meanwhile a high one indicates price volatility. Moreover, it is easier to predict the prices of the portfolio or benchmark which has a lower standard deviation. As presented in Table 2 and contrary to the expectations, the standard deviation of the Stoxx Europe 600 Index is greater than the portfolios. One explanatory factor for this could be that the portfolios are constructed entirely of Nordic funds, while the benchmark includes European companies.

Taken together, the SRI portfolio performs worse than the conventional portfolio during all of the crisis periods based on the mean daily returns. This is inconsistent with the hypothesis number one. However, SRI and conventional portfolios have the same mean return during the total sample period. Moreover, the SRI portfolio outperforms based on the median value. The higher median value of the SRI portfolio during the long term supports hypothesis number two. In addition, SRI tends to be more volatile than the conventional portfolio. Again, it needs to bear in mind, that since this study defines crisis periods as at least a 30% drop in the stock market and limits the crisis period to the sharpest decline, especially annualizing the returns from the short period of time, may yield to irrational results.

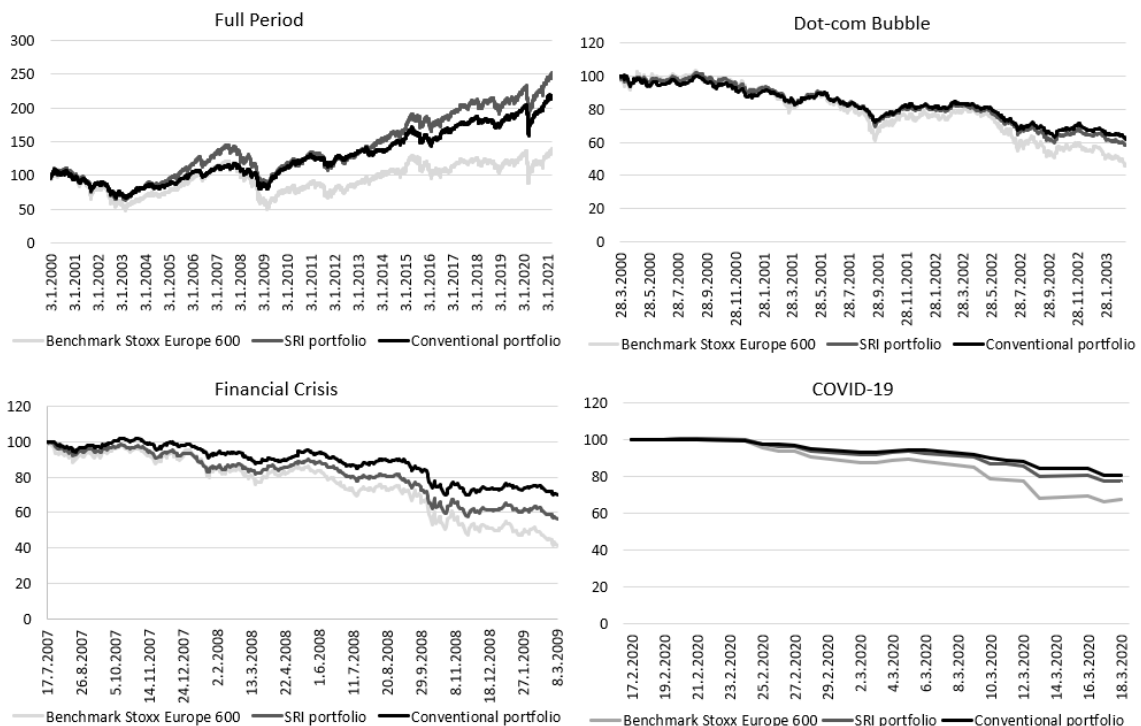
Table 2. Descriptive statistics of the daily returns.

Panel A: Total Period (31.12.1999–31.3.2021)						Panel B: Dot-com Bubble (28.3.2000–12.3.2003)					
Daily Returns	Mean	Median	Max	Min	Standard Deviation	Daily Returns	Mean	Median	Max	Min	Standard Deviation
SRI Portfolio	0,02%	0,05%	4,18%	-5,95%	0,69%	SRI Portfolio	-0,07%	-0,07%	3,37%	-3,39%	0,77%
Conventional Portfolio	0,02%	0,04%	3,43%	-4,53%	0,53%	Conventional Portfolio	-0,06%	-0,04%	1,99%	-2,62%	0,63%
Benchmark Stoxx Europe 600 Index	0,01%	0,04%	9,87%	-11,48%	1,21%	Benchmark Stoxx Europe 600 Index	-0,09%	-0,09%	5,80%	-6,21%	1,48%

Panel C: Financial Crisis (17.7.2007–9.3.2009)						Panel D: COVID-19 (17.2.2020–18.3.2020)					
Daily Returns	Mean	Median	Max	Min	Standard Deviation	Daily Returns	Mean	Median	Max	Min	Standard Deviation
SRI Portfolio	-0,13%	-0,04%	4,18%	-4,91%	1,16%	SRI Portfolio	-1,15%	-0,60%	1,49%	-5,95%	1,74%
Conventional Portfolio	-0,08%	-0,04%	3,43%	-4,06%	0,86%	Conventional Portfolio	-1,00%	-0,61%	0,65%	-4,53%	1,39%
Benchmark Stoxx Europe 600 Index	-0,19%	-0,20%	9,87%	-7,62%	2,00%	Benchmark Stoxx Europe 600 Index	-1,81%	-1,81%	2,26%	-11,48%	3,20%

As Figure 10 illustrates, the SRI portfolio has outperformed the benchmark and conventional portfolio during the entire sample period but in times of crisis, the returns of the conventional portfolio do not decline as much as the other two. In other words, based on this, SRI does not offer downside protection during crises but tends to outperform in the long-run based on the cumulative returns.

Figure 10. The visualization of the cumulative daily returns during study periods.



6.2 The results regarding capital asset pricing model

The excess returns of the SRI and conventional portfolios calculated using the capital asset pricing model are reported in Table 3. Panel A presents the full period, whereas Panels B, C and D measure different crisis periods. During the full period, the annualized alphas for SRI and conventional portfolios are 2.64% and 0.96%, respectively. SRI portfolio's alpha is significant at the 5% significance level which supports the second hypothesis "Nordic SRI equity funds outperform conventional ones in the long-run". The results of Panel A in Table 3 are also in line with the study by Morgan Stanley (2015). Also, Statman (2006) finds that the SRI component generates higher returns.

The findings of the CAPM regressions concerning the full period, contradict the efficient market hypothesis. To be more specific, based on the efficient market hypothesis, it should not be possible to get abnormal returns using the SRI strategy because all the information is already reflected in the prices. However, the results of CAPM regressions concerning the long-time performance are in line with Friedman's (1970) theory which emphasizes maximizing the shareholder wealth. Moreover, as stakeholders, such as customers, support values that are aligned with sustainability, the results mentioned above also please various stakeholders.

Moreover, the long-term alphas are negative in many studies which investigate the performance of SRI funds (e.g., Nofsinger & Varma, 2014). Different time horizons can be considered as one reason why the alphas in this study are positive. In other words, after the COVID-19 pandemic had hit the market, the stock market recovered and reached all-time highs which influenced long-term alphas presented in Panel A in Table 3.

The results of Panels B, C and D give conflicting results about hypothesis one, according to which Nordic SRI equity funds outperform conventional ones during market crises. In line with prior literature (e.g., Gangi & Trotta, 2015; Lins et al., 2017; Nofsinger & Varma, 2014), the SRI portfolio outperforms the conventional portfolio during the financial crisis as presented in Panel C. Specifically, in Panel C, the abnormal rate of return of the SRI

portfolio is positive while alpha of the conventional portfolio is negative. Although all the alphas in the Panel C are statistically insignificant, the possibility that SRI funds offer downside protection has a link to prospect theory (1979). To be more precise, according to Kahneman and Tversky (1979), investors are willing to avoid losses in times of uncertainty because loss of returns is perceived as a greater loss than an equal gain.

Further, Panel D of Table 3, also indicates that the SRI portfolio fared better than the conventional one at the time of the COVID-19 pandemic. However, the alphas are again statistically insignificant. It is also vital to keep in mind that the COVID-19 pandemic led the stock market to decline massively on a global scale in a particularly short period of time (see Figure 7). Because the decline did not last long, the annualized alpha values presented in Panel D, reflect inaccurate values. In other words, in reality, the sharp drop lasted for a short time and thus, the annualization alphas can be misleading. To conclude, the alpha coefficients of Panel C and D support hypothesis one according to which the SRI portfolio outperform the conventional one during crises. However, three out of four of these coefficients are statistically insignificant.

The results of Panel B, in turn, present that the SRI portfolio underperforms the conventional portfolio during the dot-com bubble. The annualized alpha of the SRI portfolio is significantly negative in Panel B. However, the adjusted R-squared is only 0.56 and the difference is insignificant. Moreover, the adjusted R-squared ranges from 0.13 to 0.91 and the average is 0.52 in the panels of Table 3. From this, it can be concluded that the market factor does not explain all the variation in the returns.

As Table 3 presents, 11 out of 12 of the market risk factors are positive and statistically significant at the 1% significance level. Thus, the excess returns of the portfolios are mainly driven by the market return. Moreover, the market factor of the SRI portfolio receives higher values than the conventional portfolio in each of the panels. Thus, the market factor explains the excess returns of the SRI portfolio better than the excess returns of the conventional one. Positive beta coefficients signal the movement in the

same direction as the market and since most of the market factors have a smaller value than one, both portfolios are steadier than the market.

Table 3. Performance of the portfolios using the capital asset pricing model.

Panel A: CAPM, Full period (31.12.1999–31.3.2021)				Panel B: CAPM, Dot-com bubble (28.3.2000–12.3.2003)			
	Alpha	MKT	Adj. R-squared		Alpha	MKT	Adj. R-squared
SRI (1)	2,64** [2,11]	0,49*** [119,14]	0,72	SRI (1)	-8,84* [-1,85]	0,42*** [32,62]	0,58
Conventional (2)	0,96 [0,91]	0,17 [50,21]	0,31	Conventional (2)	-4,6 [-1,12]	0,12*** [10,72]	0,13
(1)–(2)	1,68 [0,29]	0,32*** [57,56]	0,37	(1)–(2)	-4,24 [0,42]	0,30*** [16,38]	0,26
Panel C: CAPM, Financial crisis (17.7.2007–9.3.2009)				Panel D: CAPM, COVID-19 (17.2.2020–18.3.2020)			
	Alpha	MKT	Adj. R-squared		Alpha	MKT	Adj. R-squared
SRI (1)	2,71 [0,23]	1,51*** [38,71]	0,78	SRI (1)	-52,92 [-1,68]	0,52*** [14,97]	0,91
Conventional (2)	-5,27 [-1,31]	0,13*** [15,90]	0,37	Conventional (2)	-65,52** [-2,16]	0,38*** [11,21]	0,85
(1)–(2)	7,98 [-0,26]	1,38*** [21,81]	0,53	(1)–(2)	12,6 [0,70]	0,14*** [4,47]	0,46

* The p-value significant at the 10% significance level

**The p-value significant at the 5% significance level

***The p-value significant at the 1% significance level

6.3 The results regarding Fama-French three-factor model

In order to control for size and value factors besides market factor, Fama-French three-factor model is run for both portfolios and the results are displayed in Table 4. Comparing the alpha coefficients of the Fama-French three-factor model and the CAPM regression results, it can be concluded that the findings are mixed to some extent. Although both of the model results suggest the SRI portfolio does not decline as much as the conventional portfolio during the COVID-19 pandemic, according to the three-factor model SRI portfolio also generates better excess return during the dot-com bubble. However, during the financial crisis conventional portfolio beats the SRI portfolio based on the regression results of the Fama-French three-factor model which contradicts the findings of CAPM. This result differs from the findings of prior literature (e.g., Gangi & Trotta, 2015; Lins et al., 2017; Nofsinger & Varma, 2014) which found that during the financial crisis SRI improves returns.

Furthermore, in line with the research by Schröder (2004), the majority of the alpha coefficients are not statistically significant in Table 4. Thus, there is a possibility that the results occur by coincidence. On the other hand, also in many studies which investigate the performance of the SRI, using different models and methods, the alpha differences are insignificant (Bauer et al., 2006; Geczy et al., 2006; Goldreyer et al., 1999; Hamilton et al., 1993; Kreander et al., 2005; Mallin et al., 1995; Statman, 2000).

The alpha value of the SRI portfolio during the full period is in similar magnitude and significant in both, CAPM and Fama-French three-factor, models. In contrast with the CAPM results, the annualized alpha of the conventional portfolio in Panel A in Table 4, is statistically significant and higher than the alpha of the SRI portfolio. Thus, since the results of the Fama-French three-factor model regression suggest that conventional portfolio generates better excess returns in the long-run, findings contradict the hypothesis two. It is also worth noticing that the adjusted R-squared is higher in Table 4 than in Table 3 indicating a better fit.

The results of the Panel A in Table 4 are similar to those of Goldreyer et al. (1999) and Renneboog et al. (2008a). In other words, these authors also find SRI funds underperform non-SRI funds in the long-run. The underperformance of SRI funds can be explained by Modern Portfolio Theory (1952) which emphasizes diversification since SRI funds have a limited number of companies where to invest due to the constraints imposed by the ESG perspective.

Table 4 also presents that the market factor has the highest beta compared to size and value factors in all of the Panels. In line with the results of the CAPM, the beta coefficients of the market factors are highly statistically significant and SRI portfolio's market factor loadings are higher than the loadings of the conventional portfolio. Hence, the market factor again explains the excess returns of the SRI portfolio better than the alphas of the conventional portfolio. To summarize, the findings suggest that the market factor is the main contributor to the returns based on Fama-French three-factor model.

Although the market factor drives the results, most of the SMB variables are statistically significant at the 1% significance level as well and therefore explain the returns. In addition, since the SMB factors of the portfolios are positive, both portfolios are small-cap tilted. In other words, portfolios are positively exposed to the Fama-French size factor. Also, Renneboog et al. (2008) get similar results regarding market capitalization. Furthermore, 8 out of 12 of the HML factors are significant meaning that book-to-market ratios explain excess returns of the portfolios to some extent according to the Fama-French three-factor model. In addition, most of the HML factors are negative signaling that the portfolios are weighted toward growth stocks.

Table 4. Performance of the portfolios using the Fama-French three-factor model.

Panel A: Three-factor model, Full period (31.12.1999–31.3.2021)						Panel B: Three factor model, Dot-com bubble (28.3.2000–12.3.2003)					
	Alpha	MKT	SMB	HML	Adj. R-squared		Alpha	MKT	SMB	HML	Adj. R-squared
SRI (1)	2,44*	0,47***	0,09***	-0,07***	0,76	SRI (1)	0,77	0,42***	0,08***	-0,24***	0,73
	[1,72]	[78,22]	[6,97]	[-6,60]			[0,17]	[18,75]	[2,75]	[-7,39]	
Conventional (2)	2,64*	0,27***	0,09***	-0,10***	0,40	Conventional (2)	-2,2	0,31***	0,11***	-0,17***	0,49
	[0,97]	[44,49]	[7,46]	[-8,84]			[-0,49]	[13,52]	[4,03]	[-5,27]	
(1)–(2)	-0,2	0,20***	0	0,03***	0,53	(1)–(2)	2,97	0,11***	-0,03*	-0,07***	0,30
	[-0,92]	[48,47]	[-1,03]	[3,70]			[0,91]	[7,00]	[-1,81]	[-2,84]	
Panel C: Three factor model, Financial crisis (17.7.2007–9.3.2009)						Panel D: Three factor model, COVID-19 (17.2.2020–18.3.2020)					
	Alpha	MKT	SMB	HML	Adj. R-squared		Alpha	MKT	SMB	HML	Adj. R-squared
SRI (1)	-0,02	0,56***	0,27***	0,08*	0,89	SRI (1)	-38,56	0,56***	0,18	-0,07	0,91
	[-0,00]	[25,21]	[5,20]	[1,69]			[-1,01]	[9,32]	[1,32]	[-0,38]	
Conventional (2)	2,76	0,36***	0,35***	0,11**	0,50	Conventional (2)	-40,33	0,43***	0,20*	0,07	0,86
	[-0,49]	[13,52]	[4,03]	[-5,27]			[-1,29]	[8,76]	[1,83]	[0,46]	
(1)–(2)	-2,78	0,20***	-0,08**	-0,03	0,72	(1)–(2)	1,77	0,13***	-0,02	-0,14	0,47
	[-0,58]	[13,57]	[-2,56]	[-0,92]			[0,06]	[2,90]	[-0,23]	[-1,00]	

* The p-value significant at the 10% significance level

**The p-value significant at the 5% significance level

***The p-value significant at the 1% significance level

6.4 The results regarding Carhart four-factor model

The findings of the Carhart four-factor model regressions are described in Table 5. Carhart's four-factor model expands Fama-French three-factor model by adding the momentum factor (UMD). Again, as presented in Panel A in Table 5, the alphas of the portfolios covering the full period are positive and statistically significant. Similarly to the

results of the Fama-French three-factor model, the conventional portfolio outperforms the SRI portfolio in the long-run. Thus, the regression results of the Carhart four-factor model contradict with the hypothesis two. Moreover, these findings are supported by Renneboog et al. (2007) who emphasize the challenge to earn abnormal returns through sustainable strategy because, as the efficient market hypothesis states, the information is reflected in the prices already.

Overall, the alphas of the four-factor model are consistent with the alphas of the three-factor model and therefore, the links to the prior literature and to the theoretical framework remain the same as mentioned in Chapter 6.3. However, in Panel C in Table 5, the abnormal rate of return of the SRI portfolio is now positive indicating excess performance over the benchmark. The explanation given in Chapter 6.3 for exceptional alphas in Panel D in Table 4, also applies in Table 5. Again, the crisis alphas are statistically insignificant.

Also, in line with the results of CAPM and the three-factor model, the market factors are highly significant. Thus, it can be stated that the market factor explains variation in returns based on all three asset pricing models. Besides alpha and the market factor, the portfolio's characteristics can be described based on SMB, HML and UMD factors. In line with the Fama-French three-factor results, the size factor loadings in the Carhart four-factor model are significant, except in Panel D. Although the SMB coefficients are slightly smaller than earlier, the values remain positive which indicates exposure to small stocks.

Similarly, HML factor loadings are on the same scale in both multi-factor models, although smaller in the results of Carhart's model. However, fewer of the HML factors are significant according to the four-factor model than the three-factor model. To be more specific, the HML loadings are not significant anymore in Panel C. Since all the negative HML coefficients are significant at the 1% significance level, it can be concluded that both portfolios are more tilted towards growth.

The new factor, momentum coefficient (UMD), is negative and statistically significant in Panels A, B and C of Table 5 except for the differences. Negative statistically significant UMD coefficients indicate that companies which used to have the best returns are not the winners in this period. UMD factor is more negative in Panels B and C than in Panel A. This finding is in line with Kent and Moskowitz (2016) who state that during a market crisis, momentum tends to underperform.

Comparing adjusted R-squares of the Carhart model to the ones of the Fama-French and CAPM models, it can be concluded that the explanatory power increases when adding the size, value and momentum factors. To be more specific, the CAPM, Fama-French three-factor model and Carhart's four-factor model give a range of adjusted R-squared between 13%–91%, 47%–91% and 23%–91%, respectively. Similarly, the average of the adjusted R-squared statistics are 52%, 63% and 86%. Since R-squared is the highest in the four-factor model, it can be concluded that the greatest model to explain the excess returns of the portfolios is the Carhart's four-factor model.

Table 5. Performance of the portfolios using the Carhart four-factor model.

Panel A: Four-factor model, Full period (31.12.1999–31.3.2021)							Panel B: Four-factor model, Dot-com bubble (28.3.2000–12.3.2003)						
	Alpha	MKT	SMB	HML	UMD	Adj. R-squared		Alpha	MKT	SMB	HML	UMD	Adj. R-squared
SRI (1)	3,00**	0,46***	0,07***	-0,08***	-0,06***	0,76	SRI (1)	2,96	0,40***	0,05**	-0,26***	-0,10***	0,76
	[2,13]	[77,71]	[6,03]	[-7,39]	[-8,85]			[0,68]	[18,03]	[1,96]	[-8,36]	[-6,93]	
Conventional (2)	3,33**	0,27***	0,08***	-0,11***	-0,07***	0,41	Conventional (2)	-0,04	0,28***	0,09***	-0,20***	-0,10***	0,53
	[2,31]	[43,85]	[6,35]	[-9,83]	[-10,62]			[-0,01]	[12,72]	[3,28]	[-6,17]	[-6,77]	
(1)–(2)	-0,33	0,19***	-0,01	0,03***	0,01***	0,53	(1)–(2)	3,00	0,12***	-0,04*	-0,06***	0,00	0,23
	[-0,35]	[48,58]	[-0,71]	[3,95]	[2,99]			[0,92]	[6,90]	[-1,81]	[-2,83]	[-0,10]	
Panel C: Four-factor model, Financial crisis (17.7.2007–9.3.2009)							Panel D: Four-factor model, COVID-19 (17.2.2020–18.3.2020)						
	Alpha	MKT	SMB	HML	UMD	Adj. R-squared		Alpha	MKT	SMB	HML	UMD	Adj. R-squared
SRI (1)	0,60	0,52***	0,17***	0,03	-0,13***	0,91	SRI (1)	-40,92	0,56***	0,17	-0,07	0,02	0,90
	[0,09]	[23,90]	[3,18]	[0,64]	[-5,98]			[-0,94]	[8,90]	[1,26]	[-0,39]	[0,13]	
Conventional (2)	3,59	0,32***	0,22***	0,04	-0,18***	0,59	Conventional (2)	-49,22	0,42***	0,19	0,05	0,09	0,88
	[0,47]	[13,45]	[3,86]	[0,82]	[-7,37]			[-0,49]	[13,52]	[4,03]	[-5,27]	[0,60]	
(1)–(2)	-2,99	0,20***	-0,05	-0,01	0,05***	0,73	(1)–(2)	8,30	0,14**	-0,02	-0,12	-0,07	0,48
	[-0,63]	[13,99]	[-1,49]	[-0,37]	[2,96]			[0,25]	[2,88]	[-0,16]	[-0,90]	[-0,47]	

* The p-value significant at the 10% significance level

**The p-value significant at the 5% significance level

***The p-value significant at the 1% significance level

7 Conclusions

Socially responsible investing has begun to dominate the strategies of institutional and individual investors. Therefore, an increasing amount of capital is invested in SRI funds which consider environmental, social and governance issues by measurable means. The focus of this thesis is on the Nordics since the region is highlighted as a leader in various sustainable rankings and based on different sustainability indexes (e.g., Sustainable Development Report, 2021). The reasons behind the success have been explained, for example, by sustainable policies and by financial systems that have been realigned with sustainability (Sovacool, 2017; Rahi et al., 2021).

Following prior studies, Nordic SRI equity funds are matched with conventional ones using age, total net assets and total expense ratios of the funds. Moreover, funds are ranked as sustainable or conventional based on the MSCI ESG Fund Ratings. Once a matching conventional counterpart has been found for each of the 100 SRI funds, two equally-weighted portfolios are constructed using the daily price data. The performance of funds has typically been investigated through asset pricing models and therefore also in this thesis the excess returns of the portfolios are calculated using CAPM, Fama-French three-factor and Carhart models. The study period is from 2000 to 2021 including the dot-com bubble, the financial crisis and the COVID-19 pandemic. The aim of the study is to find out whether Nordic SRI equity funds outperform conventional ones during market crises and in the long-run.

Prior studies have indicated conflicting results on the performance of the SRI funds. Some researchers argue that financial outperformance is possible when emphasizing sustainable values (e.g., Auer, 2016) while others state that SRI investors must settle for lower returns (e.g., Renneboog et al., 2008). However, an increasing number of investors are willing to invest in funds that are in line with their beliefs and values despite the possibility of lower returns (Bollen, 2007). Moreover, there are empirical findings that SRI offers downside protection during times of uncertainty (e.g., Nofsinger & Varma, 2014). The reasons why SRI funds outperform in market crises are explained by moral

capital which refers to shared norms and values (Godfrey et al., 2009; Shan & Tang, 2020; Lins et al., 2017). On the other hand, there is evidence that, although SRI had once generated abnormal returns, it has diminished over time (e.g., Halbritter & Dorfleitner, 2015; Revelli & Viviani, 2015).

Regarding the first hypothesis, whether Nordic SRI equity funds outperform conventional ones during market crises, the results are mixed to some degree. The results of the CAPM regressions suggest that during financial crises and the COVID-19 pandemic, SRI portfolio performed better than the conventional portfolio while the findings based on the factor model regressions indicate that the SRI portfolio provided downside protection in times of the dot-com bubble and the COVID-19 pandemic. Moreover, the alpha coefficients of the Fama-French three-factor and Carhart's models are in similar magnitudes and have higher explanatory power than CAPM regressions. Furthermore, similarly to the study of Schröder (2004), the majority of the alphas measured during crises are statistically insignificant. Therefore, it can not be ruled out that the results occur by chance.

Often SRI is considered as a long-term strategy and therefore it may underperform conventional ones during a short time horizon (e.g., Eurosif, 2018). Inspired by the long-term perspective, the second hypothesis compares the performance of the SRI equity funds to conventional ones in the long-run. As presented by CAPM regression results, the SRI portfolio generates excess returns which are statistically significant at the 5% significance level in the entire sample period. The results also suggest that the conventional fund generates excess returns although inferior compared to the SRI portfolio. However, the alpha coefficient of the conventional fund is not statistically significant. In conclusion, the findings of the CAPM regressions tests suggest that the SRI portfolio outperforms the conventional portfolio in the long-run.

On the other hand, the regression results of the Fama-French three-factor and Carhart's model contradict the second hypothesis. All of the SRI and conventional alpha

coefficients are statistically significant, and the excess returns of the conventional portfolios are higher than the alphas of the SRI portfolio. Thus, in line with prior studies (e.g., Renneboog et al., 2008a), investors must pay a price for ethics. However, as presented in the panel A of Table 4 and 5, the annualized alpha differences are relatively small based on the Fama-French three-factor and Carhart four-factor models, since the differences are -0.2% and -0.33%. Further, based on the daily mean returns during 2000–2021, the SRI portfolio does not generate higher returns than the conventional portfolio in the long-run.

According to Tables 3, 4 and 5, the adjusted R-squared values increases as new explanatory variables are added to the model. Thus, by adding the SMB, HML and UMD factors, the explanatory power of the model is increased. Moreover, Carhart's four-factor model has the highest average adjusted R-squared in 11 out of 12 regressions and the average adjusted R-squared in Table 5 is 0.86%. Also, the results of the factor models are quite well aligned. Hence, after using three different asset pricing models, this thesis suggests that Carhart's four-factor model is the most appropriate method to explain the performance of the SRI and conventional portfolios.

This thesis evokes many directions for future research. First, as Halbritter and Dorfleitner (2015) address, the ESG rating concept as well as the time interval drives the results and therefore one could replicate the study using a different ESG database. In other words, although MSCI ESG Fund Ratings is a globally well-recognized database, the accuracy of the results would be increased if the outcome was similar when the ESG information had been collected from another database. One could, for example, categorize the funds using the article 6, 8 and 9, introduced in the Sustainable Finance Disclosure Regulation (SFDR, 2019) and presented in Chapter 3.1.

Second, this thesis provides a comprehensive walkthrough of the performance of the Nordic funds during crises and in the long-run. In addition, this thesis emphasizes the Nordics being the pioneers in the sustainability field (e.g., Rahi et al., 2021) as well as

Nordics' unique ability to cope and recover from the crises (e.g., Allen & Gale, 1999; Jochem, 2011). Although studies based on other countries are discussed, the scope of this thesis does not include in-depth comparisons between the performance of Nordic and US SRI funds. Moreover, the target of future research should not be limited to the United States. By this, I mean that many unethical activities such as tobacco manufacturing are centralized in developing countries and therefore it would be intriguing to investigate the impacts of socially responsible investing in those markets and compare the results with Nordics.

Third, to validate and elaborate the findings of this thesis, one could use more sophisticated quantitative research methods. Introduced by Fama and French (2015), the profitability factor (RMW) and investment factor (CMA) could be added to the regressions. In other words, one could replicate the study by using the Fama-French five-factor and six-factor models. These factor loadings can be used to cover anomalies that are not explained in the CAPM, Fama-French three-factor or Carhart models.

To conclude, the aim of this thesis was to investigate whether Nordic SRI equity funds outperform conventional ones during crises and in the long-run highlighting the characteristics of the Nordics and taking into account the most recent crisis, the COVID-19 pandemic. The results are mixed to some extent. The regression results of the Fama-French and Carhart models are in similar magnitudes and have higher explanatory power than the outcomes of CAPM regressions. Therefore, more weight is given to factor model results which suggest that Nordic SRI equity funds underperform conventional ones in the long-run and that there is no guarantee that SRI funds outperform during crises. Specifically, based on the factor models of this thesis, SRI funds outperformed conventional funds during the dot-com bubble and the COVID-19 pandemic but performed worse during the financial crisis. However, the differences between the returns of the portfolio are relatively small.

The practical implication of this thesis is that investors should not assume that integrating ESG factors into a portfolio would generate abnormal returns in the long-run but it may minimize downside risk during crises. These findings could be useful for investors, portfolio managers and companies which incorporate ESG attributes into decision-making. In other words, none of the participants in the financial sector can close their eyes to SRI. The massive growth of regulation has ensured that sustainability is here to stay. In practice, the increased role of sustainability has already been seen in expansions of mandatory disclosure requirements, reshapes of business strategies and rapid development of sustainable products and services.

References

- Albuquerque, R., Koskinen, Y., Yang, S., & Zhang, C. (2020). Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies*, 9(3), 593–621. <https://doi.org/10.1093/rcfs/cfaa011>
- Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). Corporate social responsibility and firm risk: Theory and empirical evidence. *Management Science*, 65(10), 4451–4469. <https://doi.org/10.1287/mnsc.2018.3043>
- Alessandrini, F., & Jondeau, E. (2020). ESG investing: From sin stocks to smart beta. *The Journal of Portfolio Management*, 46(3), 75–94. <https://doi.org/10.3905/jpm.2020.46.3.075>
- Ali, A., & Camp, R. (2017). Executives' morality and sustainability. *Journal of Competitiveness Studies*, 25(3/4), 180–187.
- Allen, F., & Gale, D. (1999). Bubbles, crises, and policy. *Oxford Review of Economic Policy*, 15(3), 9–18. <https://doi.org/10.1093/oxrep/15.3.9>
- Altig, D., Baker, S., Barrero, J. M., Bloom, N., Bunn, P., Chen, S., & Thwaites, G. (2020). Economic uncertainty before and during the COVID-19 pandemic. *Journal of Public Economics*, 191. <https://doi.org/10.1016/j.jpubeco.2020.104274>
- Areal, N., Cortez, M., & Silva, F. (2009). The performance of European socially responsible funds. *Journal of Business Ethics*, 87(4), 573–588. <http://dx.doi.org.proxy.uwasa.fi/10.1007/s10551-008-9959-x>
- Auer, B. R. (2016). Do socially responsible investment policies add or destroy European stock portfolio value?. *Journal of Business Ethics*, 135(2), 381–397. <https://doi.org/10.1007/s10551-014-2454-7>
- Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal*, 28(2), 446–463. <https://doi.org/10.2307/256210>

- Baba, N., & Packer, F. (2009). From turmoil to crisis: Dislocations in the FX swap market before and after the failure of Lehman Brothers. *Journal of International Money and Finance*, 28(8), 1350–1374. <https://doi.org/10.1016/j.jimonfin.2009.08.003>
- Banerjee, A. V. (1992). A simple model of herd behaviour. *The Quarterly Journal of Economics*, 107(3), 797–817. <https://doi.org/10.2307/2118364>
- Barnett, M. L., & Salomon, R. M. (2006). Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. *Strategic Management Journal*, 27, 1101–1122. <https://doi.org/10.1002/smj.557>
- Bauer, R., Kees K., & Otten, R. (2005). International evidence on ethical mutual fund performance and investment style, *Journal of Banking and Finance*, 29, 1751–1767. <https://doi.org/10.1016/j.jbankfin.2004.06.035>
- Bauer, R., Otten, R., & Rad, A. T. (2006). Ethical investing in Australia: Is there a financial penalty? *Pacific-Basin Finance Journal*, 14(1), 33–48. <https://doi.org/10.1016/j.pacfin.2004.12.004>
- Be´nabou, R., & Tirole, J. (2010). Individual and corporate social responsibility. *Economica*, 77(305), 1–19. <https://doi.org/10.1111/j.1468-0335.2009.00843.x>
- Beal, D. J., Goyen, M., & Philips, P. (2005). Why do we invest ethically?. *The Journal of Investing*, 14(3), 66–78. <https://doi.org/10.3905/joi.2005.580551>
- Beaudry, P., & Lahiri, A. (2014). The allocation of aggregate risk, secondary market trades, and financial boom–bust cycles. *Journal of Money, Credit and Banking*, 46(1), 1–42. <https://doi.org/10.1111/jmcb.12096>
- Bello, Z. Y. (2005). Socially responsible investing and portfolio diversification. *Journal of Financial Research*, 28(1), 41–57. <https://doi.org/10.1111/j.1475-6803.2005.00113.x>
- Bengtsson, E. (2008). Socially responsible investing in Scandinavia – a comparative analysis. *Sustainable Development*, 16(3), 155–168. <https://doi.org/10.1002/sd.360>
- Berry, T., & Junkus, J. (2012). Socially responsible investing: An investor perspective. *Journal Of Business Ethics*, 112(4), 707–720. <https://doi.org/10.1007/s10551-012-1567-0>

- Bollen, N. (2007). Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis*, 42(3), 683–798. <https://doi.org/10.1017/S0022109000004142>
- Bowen, H. R. (1953). *Social responsibilities of the businessman*. New York: Harper&Row.
- Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of Finance*, 52(1), 57–82. <https://doi.org/10.1111/j.1540-6261.1997.tb03808.x>
- Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & Society*, 38(3), 268–295. <https://doi.org/10.1177/000765039903800303>
- Carson, S. G., Hagen, Ø., & Sethi, S. P. (2015). From implicit to explicit CSR in a Scandinavian context: The cases of HÅG and Hydro. *Journal of Business Ethics*, 127(1), 17–31. <https://doi.org/10.1007/s10551-013-1791-2>
- Chatjuthamard, P., Wongboonsin, P., Kongsompong, K., & Jiraporn, P. (2020). How do socially controversial companies do during a stressful time? Evidence from the Great Recession. *The North American Journal of Economics and Finance*, 54, 100898. <https://doi.org/10.1016/j.najef.2018.12.010>
- Congressional Research Service. (2021). *Global economic effects of COVID-19 (CRS Report No. R46270)*. Retrieved February 26, 2022 from <https://sgp.fas.org/crs/row/R46270.pdf>
- Dahlsrud, A. (2008). How corporate social responsibility is defined: an Analysis of 37 Definitions. *Corporate Social Responsibility and Environmental Management*, 15(1), 1–13. <https://doi.org/10.1002/csr.132>
- Dawkins, C. E. (2018). Elevating the role of divestment in socially responsible investing. *Journal of Business Ethics*, 153(2), 465–478. <https://doi.org/10.1007/s10551-016-3356-7>
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59–100. <https://doi.org/10.2308/accr.00000005>

- Dimson, E., Karakaş, O., & Li, X. (2015). Active ownership. *The Review of Financial Studies*, 28(12), 3225–3268. <https://doi.org/10.1093/rfs/hhv044>
- Ding, W., Levine, R., Lin, C., & Xie, W. (2020). Corporate immunity to the COVID-19 pandemic. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3578585>
- Donath, L. E., Ioan, R., & Mandimutsira, T. (2018). Evaluating the performance of socially responsible investment funds. *Scientific Annals of Economics and Business*, 65(2), 139–158. <https://doi.org/10.2478/saeb-2018-0008>
- El Ghoul, S., Guedhami, O., Kwok, C. C., & Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital?. *Journal of Banking & Finance*, 35(9), 2388–2406. <https://doi.org/10.1016/j.jbankfin.2011.02.007>
- Environmental Performance Index (EPI). (n.d.). *About the EPI*. Retrieved May 10, 2021 from <https://epi.yale.edu/>
- European Commission. (n.d.). *A European Green Deal*. Retrieved May 10, 2021 from https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
- Eurosif. (2018). *European SRI study 2018*. Retrieved May 10, 2021 from https://www.spainsif.es/wp-content/uploads/dlm_uploads/2018/11/Eurosif-SRI-2018-study.pdf
- EY. (2020). *Why sustainable investing matters*. Retrieved May 10, 2021 from <https://www.ey.com/engl/financial-services/why-sustainable-investing-matters>
- Fabozzi, F. J., Gupta, F., & Markowitz, H. M. (2002). The legacy of modern portfolio theory. *The Journal of Investing*, 11(3), 7–22.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383–417. <https://doi.org/10.1111/j.1540-6261.1970.tb00518.x>
- Fama, E. F. (1991). Efficient capital markets: II. *The Journal of Finance*, 46(5), 1575–1617. <https://doi.org/10.1111/j.1540-6261.1991.tb04636.x>
- Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3–56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5)

- Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1), 1–22. <https://doi.org/10.1016/j.jfineco.2014.10.010>
- Ferrell, A., Liang, H., & Renneboog, L. (2016). Socially responsible firms. *Journal of Financial Economics*, 122(3), 585–606. <https://doi.org/10.1016/j.jfineco.2015.12.003>
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston, Pitman Publishing Inc.
- Friedman, M. (1970). The social responsibility of business is to increase its profits, September 13. *The New York Times Magazine*.
- Gangi, F., & Trotta, C. (2015). The ethical finance as a response to the financial crises: An empirical survey of European SRFs performance. *Journal of Management & Governance*, 19(2), 371–394. <https://doi.org/10.1007/s10997-013-9264-7>
- Geczy, C. C., Stambaugh, R. F. & Levin, D. (2021). Investing in socially responsible mutual funds. *Review of Asset Pricing Studies*, 11(2), 309–351. <https://doi.org/10.1093/rapstu/raab004>
- Global Sustainable Investment Alliance (GSIA). (2018). *Global Sustainable Investment Review*. Retrieved May 11, 2021 from http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf
- Glode, V. (2011). Why mutual funds “underperform”. *Journal of Financial Economics*, 99(3), 546–559. <https://doi.org/10.1016/j.jfineco.2010.10.008>
- Godfrey, P., Merrill, C., & Hansen, J. (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. <https://doi.org/10.1002/smj.750>
- Goldreyer, E., Ahmed, P., & Diltz, J. (1999). The performance of socially responsible mutual funds: Incorporating sociopolitical information. *Journal of Financial Research*, 28, 41–57. <https://doi.org/10.1108/03074359910765830>
- Greene, S. (2008). Investing in doing good can be good risk management. *Financial Times*. Retrieved May 11, 2021 from <https://www.ft.com/content/299751b2-a787-11dd-865e-000077b07658#axzz3pzn1D0xD>

- Grossman, S. J., & Stiglitz, J. E. (1980). " On the impossibility of informationally efficient markets." *American Economic Review*, 70(3), 393–407.
- Gyönyörová, L., Stachoň, M., & Stašek, D. (2021). ESG ratings: Relevant information or misleading clue? Evidence from the S&P Global 1200. *Journal of Sustainable Finance & Investment*, 1–35. <https://doi.org/10.1080/20430795.2021.1922062>
- Halbritter, G., & Dorfleitner, G. (2015). The wages of social responsibility — Where are they? A critical review of ESG investing. *Review Of Financial Economics*, 26, 25–35. <https://doi.org/10.1016/j.rfe.2015.03.004>
- Hamilton, S., Hoje J., & Statman, M. (1993). Doing well while doing good? The investment performance of socially responsible mutual funds, *Financial Analysts Journal*, 49, 62–66. <https://doi.org/10.2469/faj.v49.n6.62>
- Hickman, K., W. & Kohls, J. (1999). Social investing and modern portfolio theory. *American Business Review*, 17(1), 72–78.
- Hill, R. P., Ainscough, T., Shank, T., & Manullang, D. (2007). Corporate social responsibility and socially responsible investing: A global perspective. *Journal of Business Ethics*, 70(2), 165–174. <https://doi.org/10.1007/s10551-006-9103-8>
- Humphrey, J., & Tan, D. (2014). Does it really hurt to be responsible? *Journal of Business Ethics*, 122(3), 375–386. <https://doi.org/10.1007/s10551-013-1741-z>
- Hussain, N., Rigoni, U., & Orij, R. (2018). Corporate governance and sustainability performance: Analysis of triple bottom line performance. *Journal of Business Ethics*, 149(2), 411–432. <https://doi.org/10.1007/s10551-016-3099-5>
- Jamali, D. (2007). A stakeholder approach to corporate social responsibility: A fresh perspective into theory and practice. *Journal of Business Ethics*, 82(1), 213–231. <https://doi.org/10.1007/s10551-007-9572-4>
- Jeffrey D. S., Kroll C., Lafortune, G., Fuller G., & Woelm. F. (2021). *Sustainable development report 2021*. Retrieved July 17, 2021 from <https://s3.amazonaws.com/sustainabledevelopment.report/2021/2021-sustainable-development-report.pdf>
- Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of Finance*, 48(1), 65–91. <https://doi.org/10.2307/2328>

- Jochem, S. (2011). Nordic employment policies—change and continuity before and during the financial crisis. *Social Policy & Administration*, 45(2), 131–145. <https://doi.org/10.1111/j.1467-9515.2010.00760.x>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 46, 171–185. https://doi.org/10.1142/9789814417358_0006
- Kempf, A., & Osthoff, P. (2007). The effect of socially responsible investing on portfolio performance. *European Financial Management*, 13(5), 908–922. <https://doi.org/10.1111/j.1468-036X.2007.00402.x>
- Kent, D., & Moskowitz, T. J. (2016). Momentum crashes. *Journal of Financial Economics*, 122(2), 221–247. <https://doi.org/10.1016/j.jfineco.2015.12.002>
- Kindleberger, C. (1978). *Manias, panics, and crashes: A history of financial crises*. New York: Basic Books.
- Krane, D. A. (2002). The state of American federalism, 2001–2002: Resilience in response to crisis. *The Journal of Federalism*, 32(4), 1–28. <https://doi.org/10.1093/oxfordjournals.pubjof.a004962>
- Krause, P. R., Fleming, T. R., Longini, I. M., Peto, R., Briand, S., Heymann, D. L. & Henao-Restrepo, A. M. (2021). SARS-CoV-2 variants and vaccines. *New England Journal of Medicine*, 385(2), 179–186. <https://doi.org/10.1056/NEJMSr2105280>
- Kreander, N., Gray, R. H., Power, D. M. & Sinclair, C. D. (2005). Evaluating the performance of ethical and non-ethical funds: A matched pair analysis. *Journal of Business Finance and Accounting*, 32, 1465–1493. <https://doi.org/10.1111/j.0306-686X.2005.00636.x>
- Kuhn, T. (1970). *The Structure of Scientific Revolutions*. 2nd Ed. Chicago: University of Chicago Press.
- Kurtz, L. (2005). Answers to four questions. *The Journal of Investing*, 14(3), 125–135. <https://doi.org/10.3905/joi.2005.580558>
- Leite, P., & Cortez, M. (2014). Style and performance of international socially responsible funds in Europe. *Research in International Business and Finance*, 30(1), 248–267. <https://doi.org/10.1016/j.ribaf.2013.09.007>

- Leite, P., & Cortez, M. (2015). Performance of European socially responsible funds during market crises: Evidence from France. *International Review of Financial Analysis*, 40, 132–141. <https://doi.org/10.1016/j.irfa.2015.05.012>
- Leivo, T., & Pätäri, E. (2011). Enhancement of value portfolio performance using momentum and the long-short strategy: The Finnish evidence. *Journal of Asset Management*, 11(6), 401–416. <https://doi.org/10.1057/jam.2009.38>
- Liang, H., & Renneboog, L. (2017). On the foundations of corporate social responsibility. *The Journal of Finance*, 72(2), 853–910. <https://doi.org/10.1111/jofi.12487>
- Lins, K. V., Servaes, H. & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance*, 72(4), 1785–1824. <https://doi.org/10.1111/jofi.12505>
- Lintner, J. (1965). The Valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *The Review of Economics and Statistics*, 47(1), 13–37. <https://doi.org/10.2307/1924119>
- Luther, R., Matatko, J., & Corner, D. (1992). The investment performance of UK ethical unit trusts. *Accounting, Auditing and Accountability Journal Review*, 5, 57–70. <https://doi.org/10.1108/09513579210019521>
- Mallin, C. A., Saadouni, B., & Briston, R. J. (1995). The financial performance of ethical investment funds. *Journal of Business Finance and Accounting*, 22, 483–496. <https://doi.org/10.1111/j.1468-5957.1995.tb00373.x>
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77–91. <https://doi.org/10.2307/2975974>
- McKinsey & Company. (2020). *The ESG premium: New perspectives on value and performance*. Report, McKinsey & Company, New York. Retrieved March 31, 2021 from <https://www.mckinsey.com/business-functions/sustainability/our-insights/the-esg-premium-new-perspectives-on-value-and-performance>
- Michelon, G., & Parbonetti, A. (2010). The effect of corporate governance on sustainability disclosure. *Journal of Management and Governance*, 16(3), 477–509. <https://doi.org/10.1007/s10997-010-9160-3>

- Morgan Stanley. (2015). *Study shines light on sustainable investing*. Retrieved August 28, 2021 from <https://www.morganstanley.com/pub/content/msdotcom/en/ideas/sustainable-investing-performance-potential/>
- Morningstar. (2021). *SFDR – The first 20 Days*. Retrieved August 24, 2021 from https://www.morningstar.com/content/dam/marketing/emea/pan_emea/SFDR_The_First_20_Days.pdf
- Moskowitz, T. J., & Grinblatt, M. (1999). Do industries explain momentum? *Journal of Finance*, 54(4), 1249–1290. <https://doi.org/10.1111/0022-1082.00146>
- Moskowitz, T. J. (2000). Mutual fund performance: An empirical decomposition into stock-picking talent, style, transaction costs, and expenses: discussion. *The Journal of Finance*, 55(4), 1655–1695. <https://doi.org/10.1111/0022-1082.00263>
- Mossin, J. (1966). Equilibrium in a capital asset market. *Econometrica*, 34(4), 768–783. <https://doi.org/10.2307/1910098>
- MSCI. (2021). *MSCI ESG Fund Ratings Summary*. Retrieved May 11, 2021 from <https://www.msci.com/documents/1296102/15388113/MSCI+ESG+Fund+Ratings+Exec+Summary+Methodology.pdf/>
- Nofsinger, J., & Varma, A. (2014). Socially responsible funds and market crises. *Journal of Banking & Finance*, 48, 180–193. <https://doi.org/10.1016/j.jbankfin.2013.12.016>
- OECD Intern Economic Assessment. (2020). *Coronavirus: The world economy at risk*. Retrieved July 19, 2021 from <https://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf>
- Pascal, P. (2019). Modeling financial crises. *FRBSF Economic Letter*, 2019, 08.
- Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, 12(S2), 95–117. <https://doi.org/10.1002/smj.4250121008>
- Poulsen, T., Strand, T., & Thomsen, S. (2010). Voting power and shareholder activism: A study of Swedish shareholder meetings. *Corporate Governance: An International Review*, 18(4), 329–343. <https://doi.org/10.1111/j.1467-8683.2010.00811.x>
- Preston, L. E., & O’Bannon, D. P. (1997). The corporate social-financial performance relationship: A typology and analysis. *Business and Society*, 36(4), 419–429.

- PRI. (2015). *Enabling institutional investors' collective action: the Role of PRI*. Retrieved May 15, 2021 from <https://www.unpri.org/academic-research/enabling-institutional-investors-collective-action-the-role-of-pri/3095.article>
- PRI. (2017). *How and where will millennials invest?* Retrieved May 18, 2021 from <https://www.unpri.org/academic-research/how-and-where-will-millennials-invest/534.article>
- PRI. (2018). *PRI reporting framework main definitions*. Retrieved March 14, 2022 from https://www.unpri.org/Uploads/x/l/q/maindefinitionstoprireportingframework_971173.pdf
- PRI. (n.d.a). About the PRI. Retrieved May 12, 2021 from <https://www.unpri.org/about-us/about-the-pri>
- PRI. (n.d.b.). *What is responsible investment?* Retrieved May 10, 2021 from <https://www.unpri.org/download?ac=10223>
- PwC (2020). *2022 - The growth opportunity of the century - Are you ready for the ESG change?* Retrieved July 17, 2021 from <https://www.eticanews.it/wp-content/uploads/2020/10/pwc-esg-report-the-growth-opportunity-of-the-century.pdf>
- Rahi, A. F., Akter, R., & Johansson, J. (2021). Do sustainability practices influence financial performance? Evidence from the Nordic financial industry. *Accounting Research Journal*. <https://doi.org/10.1108/ARJ-12-2020-0373>
- Regulation (EU) 2019/2088 of the European parliament and of the council of 27 November 2019 on sustainability-related disclosures in the financial services sector. SFDR. (2019). EUR-Lex. Retrieved May 10, 2021 from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019R2088-20200712>
- Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial folly*. Princeton University Press.
- Renneboog, L., Horst, J. T., & Zhang C. (2007). Socially responsible investments: Methodology, risk exposure and performance. *SSRN Electronic Journal*. http://ssrn.com/abstract_id=985267.
- Renneboog, L., Ter Horst, J., & Zhang, C. (2008a). The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. *Journal*

- of Corporate Finance*, 14(3), 302–322. <https://doi.org/10.1016/j.jcorpfin.2008.03.009>
- Renneboog, L., Ter Horst, J., & Zhang, C. (2008b). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance*, 32(9), 1723–1742. <https://doi.org/10.1016/j.jbankfin.2007.12.039>
- Revelli, C., & Viviani, J. (2015). Financial performance of socially responsible investing (SRI): What have we learned? A meta-analysis. *Business Ethics: A European Review*, 24(2), 158–185. <https://doi.org/10.1111/beer.12076>
- RobecoSAM. (2021). *Country sustainability ranking: What are the most sustainable countries in the world?* Retrieved May 12, 2021 from <https://www.robeco.com/en/key-strengths/sustainable-investing/country-ranking/>
- Roser, M. (2014, updated in November 2019). *Human development index (HDI)*. Retrieved May 10, 2021 from <https://ourworldindata.org/human-development-index>
- Ruf, B., Muralidhar, K., Brown, R., Janney, J., & Paul, K. (2001). An empirical investigation of the relationship between change in corporate social performance and financial performance: A stakeholder theory perspective. *Journal Of Business Ethics*, 32(2), 143–156. <https://doi.org/10.1023/A:1010786912118>
- 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. [https://doi.org/10.1016/S1058-3300\(97\)90002-1](https://doi.org/10.1016/S1058-3300(97)90002-1)
- Schröder, M. (2004). The performance of socially responsible investments: Investment funds and indices. *Financial Markets and Portfolio Management*, 18(2), 122–142. <https://doi.org/10.1007/s11408-004-0202-1>
- Schueth, S. (2003). Socially responsible investing in the United States. *Journal of Business Ethics*, 43(3), 189. <http://dx.doi.org.proxy.uwasa.fi/10.1023/A:1022981828869>
- Shan, C., & Tang, D. (2020). The value of employee satisfaction in disastrous times: Evidence from COVID-19. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3560919>

- Shank, T., Manullang, D., & Hill, R. (2005). "Doing well while doing good" Revisited: A study of socially responsible firms' short-term versus long-term performance. *Managerial Finance*, 30(8), 33–46. <https://doi.org/10.1108/03074350510769794>
- Sharpe, W.F. (1964). Capital asset prices: A Theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425–442. <https://doi.org/10.1111/j.1540-6261.1964.tb02865.x>
- Siegel, J. (2003). What is an asset price bubble? An operational definition. *European Financial Management*, 9(1), 11–24. <https://doi.org/10.1111/1468-036X.00206>
- Sovacool, B. K. (2017). Contestation, contingency, and justice in the Nordic low-carbon energy transition. *Energy Policy*, 102, 569–582. <https://doi.org/10.1016/j.enpol.2016.12.045>
- Sparkes, R. (2003). *Socially responsible investment: A global revolution*. John Wiley and Sons, Chichester, UK.
- Sparkes, R., & Cowton, C. J. (2004). The maturing of socially responsible investment: A review of the developing link with corporate social responsibility. *Journal of Business Ethics*, 52(1), 45–57. <https://doi.org/10.1023/B:BUSI.0000033106.43260.99>
- Statman, M. (2000). Socially responsible mutual funds. *Financial Analysts Journal*, 56, 30–38. <https://doi.org/10.2469/faj.v56.n3.2358>
- Statman, M. (2006). Socially responsible indexes. *Journal of Portfolio Management*, 32(3), 100–109. <https://doi.org/10.3905/jpm.2006.628411>
- Thomsen, S., & Conyon, M. (2012). *Corporate governance: mechanisms and systems*. McGraw Hill.
- Thurow, L. C. (1977). The implications of zero economic growth. *Challenge*, 20(1), 36–43. <https://doi.org/10.1080/05775132.1977.11470298>
- Trinks, P. J., & Scholtens, B. (2017). The opportunity cost of negative screening in socially responsible investing. *Journal of Business Ethics*, 140(2), 193–208. <https://doi.org/10.1007/s10551-015-2684-3>

- Tversky, A., & Kahneman, D. (1996). On the reality of cognitive illusions. *Psychological Review*, 103(3), 582–591. <https://doi.org/10.1037//0033-295X.103.3.582>
- UNFCCC. (2021). *The Paris Agreement*. Retrieved January 3, 2021 from <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- United Nations (n.d.). *The 17 goals*. Retrieved March 3, 2022 from <https://sdgs.un.org/goals>
- Vance, S. C. (1975). Are socially responsible corporations good investment risks. *Management Review*, 64(8), 19–24.
- Wasiuzzaman, S., & Nurdin, N. (2018). Debt financing decisions of SMEs in emerging markets: Empirical evidence from Malaysia. *International Journal of Bank Marketing*, 37(1), 258–277. <https://doi.org/10.1108/IJBM-12-2017-0263>
- WHO. (2019). *Drinking-water*. Retrieved March 3, 2022 from <https://www.who.int/news-room/fact-sheets/detail/drinking-water>
- WHO. (2020). *Food safety*. Retrieved March 3, 2022 from <https://www.who.int/news-room/fact-sheets/detail/food-safety>
- WHO. (2022). *Tracking SARS-CoV-2 variants*. Retrieved February 26, 2022 from <https://www.who.int/en/activities/tracking-SARS-CoV-2-variants/>
- Wiedmann, T., Lenzen, M., Keyßer, L. T. & Steinberger, J. K. (2020). Scientists' warning on affluence. *Nature Communications*, 11(1), 1–10. <https://doi.org/10.1038/s41467-020-16941-y>