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# ESG considerations, stock returns, and firm performance in Nordic countries

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**ABSTRACT:**

The purpose of this thesis is to study if high ESG ratings have a positive impact on stock returns and firm performance measured by both Tobin's Q and return on assets in Nordic countries. The sample selection includes 1329 observations and 192 firms during the years 1999-2021. Moreover, this thesis aims to study whether the results differ between the Nordic countries, Finland, Sweden, Denmark, and Norway.

The importance of corporations' sustainability and responsibility has increased during the recent decades due to for instance environmental and societal issues, such as climate change and human rights, legislation and shift in public opinion. Therefore, the awareness and interest towards them have also increased. The impact of sustainability can be seen for instance in the rapid increase of socially responsible investments. One way of investing responsibly is investing in companies with high ESG scores which has gained popularity during the recent years. ESG stands for environmental, social and governance attributes. With them it is possible to analyse the sustainability of firms and to rank firms by scoring their environmental, social and governance approaches. These ESG scores have traditionally been especially high with Nordic countries which indicates that Nordic companies are more sustainable and responsible when compared to companies in other regions. Based on the popularity of ESG investing and generally strong sustainable status of Nordic countries, it could be assumed that high ESG scores have a positive impact on the stock returns and performance of Nordic companies.

Nevertheless, in line with the previous studies, this thesis finds that high ESG ratings do not unambiguously lead to better stock returns or firm performance. Especially on stock returns sustainability does not seem to have a strong impact but there is found a positive relation between ESG scores and Tobin's Q in some of the Nordic countries. The results seem quite neutral and varying, and therefore, according to this thesis it is challenging to state whether high ESG scores have more positive or negative impact on firms in the Nordics.



**KEY WORDS:** Environmental, social, governance (ESG), corporate social responsibility (CSR), socially responsible investing (SRI), stock returns, firm performance, Tobin's Q, return on assets (ROA), the Nordics

**TIIVISTELMÄ:**

Tämän työn tarkoitus on tutkia vaikuttaako korkea ESG pisteytys positiivisesti pohjoismaisten yritysten osaketuottoihin sekä taloudelliseen suoritukseen, jota mitataan sekä Tobinin Q:n että kokonaispääoman tuottoprosentin (ROA) avulla. Tutkimuksen dataan kuuluu 1329 havaintoa sekä 192 yritystä vuosien 1999-2021 ajalta. Lisäksi tämä tutkimus pyrkii selvittämään eroavatko tulokset eri Pohjoismaiden, Suomen, Ruotsin, Tanskan ja Norjan, välillä.

Yritysten kestävän kehityksen sekä vastuullisuuden merkitys on kasvanut viimeisten vuosikymmenten aikana ympäristöllisten sekä yhteiskuntavastuullisten kysymysten myötä, jotka liittyvät esimerkiksi ilmastonmuutokseen, ihmisoikeuksiin, lainsäädäntöön ja yleiseen mielipiteeseen. Näin ollen, myös tietoisuus ja mielenkiinto näitä asioita kohtaan ovat kasvaneet. Kestävän kehityksen vaikutuksen voi huomata esimerkiksi vastuullisen sijoittamisen suosion voimakkaassa kasvussa. Yksi tapa sijoittaa vastuullisesti on sijoittaa yrityksiin, joilla on korkeat ESG pisteet. Tämä sijoitustapa on kasvattanut suosiotaan viimeisimpien vuosien aikana. ESG (environmental, social, governance) tarkoittaa ympäristöön, yhteiskuntavastuuseen sekä hyvään hallintotapaan liittyviä määritelmiä. Niiden avulla on mahdollista analysoida yritysten vastuullisuutta sekä luokitella yrityksiä pisteyttämällä niiden ESG toimia. Nämä ESG pisteet ovat perinteisesti olleet erityisen korkeat Pohjoismaissam mikä viittaa pohjoismaisten yritysten olevan vastuullisempia kuin muut yritykset. ESG sijoittamisen suosion sekä Pohjoismaiden yleisesti voimakkaan vastuullisen statuksen perusteella voisi olettaa, että korkeilla ESG pisteillä on positiivinen vaikutus pohjoismaisten yritysten osaketuottoihin ja taloudelliseen suoritukseen.

Tästä huolimatta, edellisten tutkimusten mukaisesti, tämä työ ei löydä korkean ESG pisteytyksen johtavan yksiselitteisesti korkeampiin osaketuottoihin, markkina-arvoon tai kannattavuuteen. Yritysten vastuullisuudella löytyy olevan erityisen heikko vaikutus osaketuottoihin, mutta ESG pisteiden ja Tobinin Q:n väliltä löytyy positiivinen korrelaatio joissakin Pohjoismaissa. Tutkimuksen tulokset vaikuttavat kuitenkin melko neutraaleilta, minkä vuoksi tämän työn perusteella on hankala arvioida onko korkeilla ESG pisteillä lopulta enemmän positiivinen vai negatiivinen vaikutus pohjoismaisiin yrityksiin.

**AVAINSANAT:** Ympäristö, yhteiskuntavastuu, hyvä hallintotapa (ESG), yrityksen yhteiskuntavastuu (CSR), vastuullinen sijoittaminen (SRI), osaketuotot, yrityksen taloudellinen suoritus, Tobinin Q, kokonaispääoman tuottoaste (ROA), Pohjoismaat

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## Acronyms

| | |
|---|---|
| CAGR | Compound annual growth rate |
| CSP | Corporate social performance |
| CSR | Corporate social responsibility |
| ESG | Environmental, social, governance |
| ESGP | Environmental, social and governance performance |
| EU | The European Union |
| FINP | Future financial performance |
| MSCI | Morgan Stanley Capital International |
| OLS | Ordinary least squares |
| PRI | Principles for Responsible Investment |
| ROA | Return on assets |
| SDG | Sustainable development goals |
| SIF | Social Investment Forum |
| SRI | Socially responsible investing |
| TSI | Total societal impact |
| UN | The United Nations |
| US | The United States |

# 1 Introduction

Corporate social responsibility and socially responsible investing have increasingly interested investors and researchers during the past few decades. Corporate social responsibility (CSR) and socially responsible investing (SRI) are one of the most current market trends, and they still have relatively short history in financial markets. Corporations' social responsibility affects the investment decision making of investors, and therefore corporations need to pay attention to the ethical and sustainable matters of their businesses. Firms also need to take these matters more and more into account due to legislation. A common way to measure companies' responsibility is to divide responsibility factors into three categories: environmental, social and governance (ESG).

Sustainable investing considers environmental, social and corporate governance (ESG) criteria in order to generate long-term competitive financial returns and positive societal impact. The goal of sustainable investors is strong financial performance but they should also contribute to benefitting environmental, social and governance aspects. The environmental aspect includes for instance sustainable natural resources, clean technology, climate change, and green building, whereas the social aspect includes workplace safety and benefits, diversity, community development, and human rights. Then again, anti-corruption policies, board diversity and independence, and corporate political contributions are part of the corporate governance aspect. (The Social Investment Forum, 2021.) That means doing good while doing well. It has come a long way since the statement that the only responsibility for corporations is providing financial profit for their shareholders, and they have no social responsibility for the society.

In 1970, Milton Friedman stated in his essay that the social responsibility of business is to increase its profits. For a long period of time it has been considered that the core reason for firms' functioning and responsibility is to create profits and value for their shareholders. However, gradually this point of view has changed from shareholders

towards stakeholders since the reasoning for maximizing profits does not anymore mean only financial profits but social value as well.

When it comes to social responsibility and ESG considerations, several different stakeholders are demanding actions from companies they are having interest in. In order to succeed, it is crucial that companies are able to response to these demands and integrate ESG aspects into their procedures. Choi and Wang (2009) even come to the conclusion that good stakeholder relations have positive impact on companies' competitive advantage whereas Velte (2017) conducts that successful stakeholder management leads to improved ESG performance as well as future financial performance. Benabou and Tirole (2010) suggest that the prosocial behaviour of investors', as well as other stakeholders', is driven by intrinsic altruism, material incentives such as laws and taxes as well as social- and self-esteem concerns. Corporations not responding to the expectations and demands of investors increase their risk profile that might even lead to a negative impact of having access to capital markets (Ernst & Young 2020).

Therefore, it is important to recognize and understand the meaning of ESG factors in today's financial markets and economies and integrate them into corporations' business models and procedures. Investors and researchers are particularly interested in how SRI screening impacts on the financial performance of different financial instruments. According to Renneboog, Horst and Zhang (2008) investors have been more aware about their investments' social consequences since the 1960s due to different movements such as anti-war but especially during the 1990s SRI started to become increasingly known and popular worldwide. There exist different strategies for utilizing ESG considerations in SRI. For instance, according to positive screening only stocks with best ESG scores are included in portfolio, whereas stocks with worst ESG scores are excluded when following negative screening.

With ESG scoring it is possible to measure the level of companies' sustainability. Companies can be measured and scored from 0 to 100 based on the total ESG aspects they have integrated into their business or divide scoring into environmental, social or governance aspects and therefore provide more detailed information about the state of a certain sustainable aspect. (Thomson Reuters, 2017.) Alongside the increasing interest towards sustainability, the meaning of this kind of ESG data has increased. For instance, according to Ernst & Young (2020) ESG information has never been more important, and the investors are evaluating nonfinancial firm performance with more and more disciplined and rigorous approach. They also highlight that corporations should have strong connections between financial and nonfinancial performance, and have a robust way of analysing both the risks and opportunities of global concerns such as climate change evoke.

A good example about the increase of SRI are the reports of the Social Investment Forum. US SIF Foundation measured sustainable investments in the United States first in 1995. At that time, the value of sustainable investments was 638 billion U.S dollars. In 2020 out of 51.4 trillion U.S. dollars of U.S. professionally managed asset, 17.1 trillion U.S. dollars were sustainable investing asset, using mostly ESG incorporation. Top ESG criteria for money managers in 2020 were climate change, anti-corruption and board issues, and sustainable natural resources. (US SIF, 2020.) In Europe, sustainable growth keeps also continuing when it comes to most of the SRI strategies. At the end of 2017, SRI assets reached 22.5 trillion euros in Europe. In 2011, the value of SRI assets was half of it which shows the speed of growth in SRI. According to Eurosif Market Study (2018), ESG integration is the strategy growing the fastest. Another study also states that the European Union is the world leader in promoting a vision of sustainable finance (Eurosif, 2021).

Also legislation is one reasoning for taking sustainability more into account and integrating ESG into business. Sustainability matters are increasingly regulated, and besides reputational distress companies may face fines for not committing to

sustainable initiatives which has a negative impact on the performance. In addition, polluting companies may have to pay higher taxes whereas companies aiming to become more sustainable may enjoy tax incentives. Due to tightening regulatory and value of good stakeholder relations, the importance of internal control, transparent information and reporting about firms' sustainability is constantly increasing (Boulhaga, Bouri, Elamer & Ibrahim, 2022; Alcaide González, de La Poza Plaza & Guadalajara Olmeda, 2020; Al Hawaj and Buallay, 2022).

As members of the European Union and European Economic Area, also Nordic countries, Finland, Sweden, Denmark and Norway, encounter several regulations and initiatives considering CSR and SRI such as the European Green Deal. Its aim is the transition to a climate-neutral and -resilient, resource-efficient, and just economy. (European Commission, 2021.) The European Union has also committed to implement 17 Sustainable Development Goals (SDGs) of the United Nations in all their policies by 2030. Through SDGs countries have pledged to eradicate poverty, find sustainable and inclusive development solutions, and ensure everyone's human rights. (European Commission, 2022.)

Nordic countries have traditionally been market leaders when it comes to environmental, social and governance attributes. For instance, according to an article of Morningstar (2020), Finland is the most sustainable stock market of the world due to its corporations leading in ESG. In this comparison of 46 global equity markets, Sweden was on the place six. Also The Country Sustainability Ranking analysis of RobecoSam, conducted on October 2021, comes into the same conclusion. According to it, Finland has the best ESG ranking out of 150 countries from both developed and emerging economies based on seven dimensions: environmental risk, environmental status, aging, social unrest, corruption, institutions, and political risk. Moreover, the analysis shows results where all five Nordic countries are in the top five of sustainable countries in the descendent order: Finland, Sweden, Denmark, Norway and Iceland. This study is updated semi-annually and the positions of top countries vary slightly from one update

to another. Responsibility ranking providers have quite similar but still different definitions for their scores. Nevertheless, Finland, Sweden, Norway and Denmark often have one of the best rankings. Beal, Young, Pollmann-Larsen, Alagiah-Glomseth and Lundestad (2019) find several similarities between Nordic countries such as leadership and stakeholder engagement explaining the generally high sustainability status and ESG ratings of the Nordics whereas Scholtens & Sievänen (2013) conclude that there exists also differences between Nordic countries' cultures and sustainability approaches.

There exist large amount of different studies made about CSR and ESG, and their impact on stock returns and firm performance, with varying results. For instance, Statman and Glushkov (2009) as well as Nagy, Kassam and Lee (2016) find that high ESG scores have a positive impact on stock returns. Velte (2017) concludes that ESG performance in total as well as its three components separately have a positive effect on accounting-based future financial performance. Also Giese, Lee, Melas, Nagy and Nishikawa (2019) suggest good ESG characteristics effecting firms' valuation and performance positively. In addition to this, El Ghoul, Guedhami, Kwok and Mishra (2011) as well as Sassen, Hinze and Hardeck (2016) suggest socially responsible firms having lower firm risk and therefore higher firm value when compared to firms with less responsible activities.

However, according to Hong and Kacperczyk (2009), so called sin stocks such as tobacco and weapons have higher expected returns when compared to other stocks and that neglecting unethical stocks creates financial cost. Also Adler and Kritzman (2005) come into the conclusion that the restrictions investors encounter when investing in socially responsible companies generate substantial costs whereas Bolton and Kacperczyk (2021) find polluting companies generating higher stock returns. In the end, after going through thousands of studies, Friede, Busch and Bassen (2015), state that large majority of previous literature finds positive results about ESG's impact on business.

## 1.1 Motivation and purpose of the study

The importance of sustainable and socially responsible matters has increased due to for instance climate change, human rights, and other environmental and societal issues as well as legislation. Therefore, the awareness and interest of different stakeholders towards them has also increased. That has led to dividing sustainability generally into three categories, environmental, social and governance aspects (ESG) that also corporations need to take into consideration. It is possible to rank companies based on their sustainability by scoring these three categories. Companies cannot neglect the importance of their ESG approaches, and there exist numerous previous studies about ESG ratings' impact on business. Many of these studies focus on stock returns and firm performance. Despite the large variety of existing literature about ESG and its impact on the stock returns and firm performance, there is limited number of studies about smaller markets, for instance Nordic countries. That makes Nordic countries an interesting region to study. Moreover, what makes it particularly interesting to study this matter in Nordic countries is the traditionally high sustainable status and high ESG ranking of Nordic countries.

Therefore, this thesis aims to contribute to the existing literature by examining the relationship of ESG scores and stock returns, and firm performance measured by market value and profitability in Nordic countries. The purpose of this study is to research whether ESG considerations are found to have a positive impact on the stock returns and firm performance in Nordic companies. Moreover, this paper aims to study if there occur significant differences between the relationships of the ESG scores and stock returns as well as ESG scores and firm performance in Finland, Sweden, Denmark and Norway. Firm performance is measured by both Tobin's Q and return on assets. Iceland has been excluded from this study due to the small size of Icelandic markets and publicly traded stocks. Despite the fifth Nordic country, Iceland being excluded, this thesis refers to the sample countries, Finland, Sweden, Denmark and Norway as Nordic countries.

## 1.2 Hypotheses

The increasing importance, awareness, discussion and actions of sustainability and responsibility have also led to increasing interest towards investment strategies that are socially responsible. One of these kind of socially responsible investment strategies is buying stocks of companies with high ESG ratings. As mentioned, these ESG ratings have traditionally been especially high in Nordic countries indicating Nordic companies being more sustainable and responsible than companies in other regions. For instance Nagy, Kassam and Lee (2016) as well as Tzouvanas and Mamatzakis (2021) have found positive relationship between high ESG scores and stock returns. Based on positive results from previous literature, increased popularity of ESG investing, and generally high ESG status and rankings of Nordic countries it could be assumed that high ESG scores have a positive impact on the stock returns in Nordic companies. Nevertheless, despite the numerous studies about ESG's impact on business, previous research is lacking results from the most sustainable region of the world, the Nordics. Since one objective of this thesis is to study whether ESG considerations have a positive impact on the stock returns in Nordic countries, the first hypothesis of this thesis is as follows:

*H1: ESG considerations have a positive impact on the performance of Nordic stocks*

In addition, it could also be assumed that sustainability in a form of high ESG scores has a positive impact on firm performance in Nordic countries due to the increased importance of ESG matters and interest towards them as well as the leading sustainable status of the Nordics. Besides studying ESG's impact on stock returns, the object of this thesis is also to find whether ESG has a positive impact on firm performance in Nordic countries. Firm performance is measured by both Tobin's Q and return on assets (ROA). They are both important measurements that indicate how well firms are performing compared to others, and are also used in several previous studies. Tobin's Q measures the market-based performance of firms whereas ROA measures the accounting-based performance. According to Velte (2017), Tobin's Q is widely accepted and used practice

to measure the market-based performance of firms whereas ROA is the most famous accounting-based measure for financial performance presenting companies' profitability. The second and third hypotheses of this thesis are presented below:

*H2: ESG considerations have a positive impact on Tobin's Q in Nordic countries*

*H3: ESG considerations have a positive impact on ROA in Nordic countries*

## 1.3 Structure of the study

The structure of this thesis is the following. First chapter introduces the topic, research questions and hypotheses. It aims to ground the reasoning and motivation behind this study and also briefly explains some results of previous studies and statistics related to the topic. The second chapter discusses about the theoretical background behind the topic. It covers several subjects behind financial performance and investing based on sustainability and responsibility, and aims to find reasoning behind the leading status of Nordic countries in ESG ratings. The third chapter focuses on previous research made about ESG and CSR's impact on the performance of financial assets and firms. Both elder studies from the beginning of responsible investing and more recent papers are included in this summary. Chapters four and five address the data and methodology used in this thesis as well as the empirical results gotten from the sample selection and regression models. The final chapter discusses about the thesis as a whole and summarises it.

# 2 Theoretical background

This part of the thesis presents theoretical background behind financial performance and investing based on sustainability and responsibility. It first focuses on two classical financial economics concepts, the efficient market hypothesis and modern portfolio theory. In addition, this part presents the shift from shareholder theory towards stakeholder theory as well as a brief background and current state of SRI and ESG. Finally, it discusses about SRI and ESG considerations in the four Nordic countries focused on this study, Finland, Sweden, Denmark and Norway. Moreover, it aims to explain the reasoning behind Nordic region having the highest ESG ratings in the world.

## 2.1 The efficient market hypothesis

In his well-known study of 1970, Eugene Fama highlights that capital market's most important role is to allocate the capital resources of the economy. The ideal market condition would therefore be security prices signalling accurately and reflect all available information of the markets. This kind of situation would be efficient market. There exist three forms for the efficient market which are weak form, semi-strong form and strong form.

In the first form of the efficient market hypothesis, weak form, security prices are based on all the historical information. The assumption is that markets have information only about past prices, returns and volumes, and they are not able to adapt to new public information. Therefore, new announcements of companies impacting assets are not reflected in asset prices, and it is not possible to generate excess returns with only past information. (Fama, 1970.)

Then again, the second form, semi-strong form considers not only historical information but also all information that is publicly available such as annual reports, new security issues and announcements of stock splits. In other words, semi-strong form reflects

markets' information more accurately than the weak form since it absorbs public information making assets more correctly priced. Since markets react instantly to the new information, it is not possible for a single investor to gain additional returns after published news. (Fama, 1970.)

Finally, the third and strongest form of the efficient market hypothesis, strong form, assumes that every investor has access to all information, either public or private, that has an impact on the assets' prices. Therefore, it is not possible to gain abnormal returns based on mispricing and private information. As the author of the study also highlights, it is hardly possible for this kind of situation to actually occur but efficient market can be considered as a benchmark for the market equilibrium. (Fama, 1970.)

There exist studies both for and against markets being efficient. In the older studies, Kendall (1953) finds stock price movement following the random walk whereas Fama, Fisher, Jensen and Roll (1969) come into the conclusion that there is gradual adjustment of prices in the markets. Malkiel (2003) states that the efficient market hypothesis is associated with the random walk theory which suggests that stocks' price movements are uncorrelated with old prices and do not follow any specific patterns. This is due to markets always reflecting the lates information. Therefore, no abnormal returns can be generated. He also suggests that markets may be efficient despite the anomalies that challenge efficient market hypothesis in some behavioural finance theories. On the contrary, Jegadeesh and Titman (1993) as well as Moskowitz and Grinblatt (1999) come into the conclusion that markets are inefficient. Then again, Garleanu and Pedersen (2018) suggest that markets are efficiently inefficient. According to Ang and Weber (2018), investors can predict the future price movement of SRI and generate abnormal returns if the efficient market hypothesis' weak form is not valid for SRI. They also find empirical support for their statement. Bofinger, Heyden and Rock (2022) find that ESG affect significantly misvaluation of companies in the Unites States by leading to increased market valuation when compared to true value. This could be due to sustainable investors behaving irrationally when focusing on ESG instead of financial

figures. On the other hand, benefits from sustainable investments could be taken into account if investors are discounting far future value. The authors point out that CSR could be considered as a friction for market efficiency.

## 2.2 The modern portfolio theory

In 1952 Harry Markowitz introduced the modern portfolio theory. With that method it is possible for investors to select assets in order to maximize expected returns. Expected returns are considered as something every investor pursues whereas variance of return is something to be avoided.

Since investors are assumed to be risk-averse, they choose less risky investment over a riskier investment at a same level of return. For carrying a bigger variance of return, risk, investors should be compensated with greater expected returns. When it comes to choosing the portfolio, investors should maximize the expected returns at an acceptable level of risk. In order to do so, portfolio must be diversified. Also, they should minimize the risk at a certain level of returns. In other words, investors should build their diversified portfolio based on their own risk tolerance. (Markowitz, 1952.)

Markowitz (1952) states that the portfolio which has the maximum expected return may not be the one having minimum variance. Efficient frontier presents portfolios with the highest expected returns at a certain risk level or portfolios' lowest possible variance for a certain level of expected returns. From the set of portfolios investors can choose the most preferrable one. Portfolios below or above the efficient set are not attainable. Portfolios too low do not have high enough level of return whereas portfolios too high have too high risk when compared to the expected returns. The lower covariance there is between the assets, the lower is also the standard deviation of portfolios. It means that risk associated with the portfolios decreases due to diversification. (Markowitz, 1952.)

Even though modern portfolio theory is universally approved theory, there exist some problems in applying it, as Elton and Gruber (1997) point out. For instance, it finds the preferrable portfolio over a single period but not multi-period. With the multi-period problem, the optimum portfolio might differ from the one estimated on single period since the mean return and variance of return change over periods. The authors additionally mention separation problem and that when using the modern portfolio theory, investors should remember that also borrowing rates and short sales have an impact on choosing the optimal portfolio. (Elton & Gruber, 1997.)

One of the main assumptions behind the modern portfolio theory is that investors are rational and seeking for highest possible returns at as low level of risk as possible. Nevertheless, maximizing profits may not always be the only aim of investors. People are more and more aware about their impact on nature and society which has also raised plenty of discussion about firms' role in the battle against climate change, for instance. Therefore, also socially responsible investing has become increasingly popular. Socially responsible investors may be willing to sacrifice part of their returns in order to support their own beliefs and visions about societies as for instance El Ghoul and Karoui (2017) state. Then again, some risks that are associated with ESG considerations, such as natural disasters, are considered as risks that can be diversified, unsystematic risks. After all, modern portfolio theory can also be seen as a good tool for decision making considering environmental asset management and based on the preferred risk-return trade-off (Matthies, Jacobsen, Knoke, Paul & Valsta, 2019). For instance Pedersen, Fitzgibbons and Pomorski (2021) compute ESG-efficient frontier showing the benefits and costs of SRI as ESG information leading either increase or drop in the Sharpe ratio.

## 2.3 From shareholder to stakeholder point of view

According to Milton Friedman (1970), the social responsibility of business is to increase its profits. Friedman also states that actually only people have responsibilities whereas companies only have artificial responsibilities since corporations are artificial people.

Then again, the executives of companies are employees of the owners, and therefore executives have responsibility to the owners. That means generating as much profits as possible to the shareholders. This idea indeed gained support for a long period of time. However, Friedman's dominant shareholder theory has been questioned during the last decades by stakeholder theory when social responsibility has become more and more known and popular.

Due to social responsibility and awareness companies have started to take more actions considering whole society, for example enhancing climate and well-being matters and not merely owners' financial profits. That means that instead of maximizing shareholder value companies aim to maximize the benefit of society and that stakeholder theory has come alongside shareholder theory explaining value creation. In order to maximize the value, firms must identify their stakeholders and stakeholders' interests. By stakeholders it is meant every party having an interest in a firm. It is a wider definition than shareholder since such parties are, besides shareholders, for instance employees, customers, suppliers, investors, government and communities. (Freeman, 1984.)

There exist several studies supporting and criticising both stakeholder and shareholder theories. For instance, Jensen and Murphy (1990) support Milton Friedman and the shareholder theory. They state that shareholders trust chief executive officers to execute policies maximizing the value of shares and therefore shareholders' wealth. In order to maximize good performance of the firm and shareholder value, CEOs should be rewarded for good results. Key (1999), for her part, criticises the whole stakeholder theory itself. She claims that even though stakeholder theory might provide some alternatives to understand firms' behaviour, there is no theory logic explaining the complex relationship between firms and their stakeholders. She considers it impossible to identify stakeholder groups clearly. Instead, the internal and external interests should be identified.

Then again, according to Wijnberg (2000), companies' responsibility is to maximize the value of all stakeholders combining the society instead of considering merely one stakeholder group whereas Choi and Wang (2009) find that good stakeholder relations help well-performing companies to sustain their competitive advantage but also help companies with poor performance to overcome difficult position. In addition, Freeman (2010) highlights that it is better for companies' success to consider all stakeholders instead of only one and not to prioritize stakeholders over another. Shareholder and stakeholder approaches are more compatible than contradictory concepts and managers should maximize stakeholder value since that is how the shareholder value is also maximized. Finally, Fontrodona and Sison (2006) suggest that even though shareholders are bearing greater risk than other parties of companies and they should be compensated for that, they could actually diversify their invested assets and reduce their personal risk whereas this kind of diversification is not possible for other parties of the company such as employees and suppliers.

## 2.4 Socially responsible investing

In 1987 the Brundtland Report first defined sustainable development meaning societies meeting their present needs without compromising the future generations' ability to meet the needs of their own (The World Commission on Environment and Development, 1987). This definition also has an impact on SRI. There are different strategies to execute SRI but they all focus investing responsibly in sustainable industries either with good ESG scores or some specific sustainable and ethical agenda. For instance, some SRI strategies are strongly linked to the seventeen Sustainable Development Goals (SDGs) of the United Nations (Eurosif, 2018). Responding to the Brundtland Report, SRI aims to guarantee investing in sustainable businesses without disrupting economic growth. According to The Social Investment Forum (2021), sustainable investors aim to generate not only strong long-term financial performance but also positive societal impact. Benabou and Tirole (2010) conclude that investors', as well as other stakeholders',

prosocial behaviour is driven by intrinsic altruism, material incentives such as laws and taxes as well as social- and self-esteem concerns.

According to Eurosif (2018), socially responsible investing, SRI, has been existing already in the 18th century whereas for instance Glaeser and Scheinkman (1998) come into the conclusion that the very early stages of SRI have ancient origins from as far as approximately one thousand years ago. At first, the investment decisions of religious groups were led by their moral. This meant excluding industries that risked the health of people such as chemical production. Later it also meant excluding certain stocks harmful for people, tobacco and weapons among others, known as sin stocks. This kind of exclusion is still one of the popular SRI strategies. Renneboog, Horst and Zhang (2008) clarify that investors have been more aware about their investments' social consequences since the 1960s due to different movements considering for instance anti-war. According to them, the Pax World Fund founded in 1971 and opposing the Vietnam War was the first modern SRI mutual fund. Since that, different social conflicts and environmental disasters have made investors more and more aware about their surroundings and also increased the popularity of SRI. That signals that SRI has developed from negative screening into more active engagement.

Especially during the 1990s SRI started to become increasingly known and popular worldwide (Renneboog, Horst & Zhang, 2008). SRI market has become more and more diverse and after the financial crisis investors have also started to value more responsibility and transparency of the markets (Scholtens & Sievänen, 2013). When US SIF Foundation measured sustainable investments in the United States first in 1995, the value of sustainable assets was 638 billion U.S dollars. At the end of 2017 this number was 12.0 trillion U.S. dollars whereas at the end of 2019, out of 51.4 trillion U.S. dollars of U.S. professionally managed assets, 17.1 trillion U.S. dollars were sustainable investing assets. That means 42% increase in two years. Most of the assets used ESG incorporation. (US SIF, 2020.) These values are also demonstrated in the figure 1 below. In Europe, assets under SRI reached 22.5 trillion euros at the end of 2017 whereas in

2011, the same number was only half of it (Statista, 2021). These measurements demonstrate how extremely rapidly managed assets using sustainable investing strategies grow around the world.

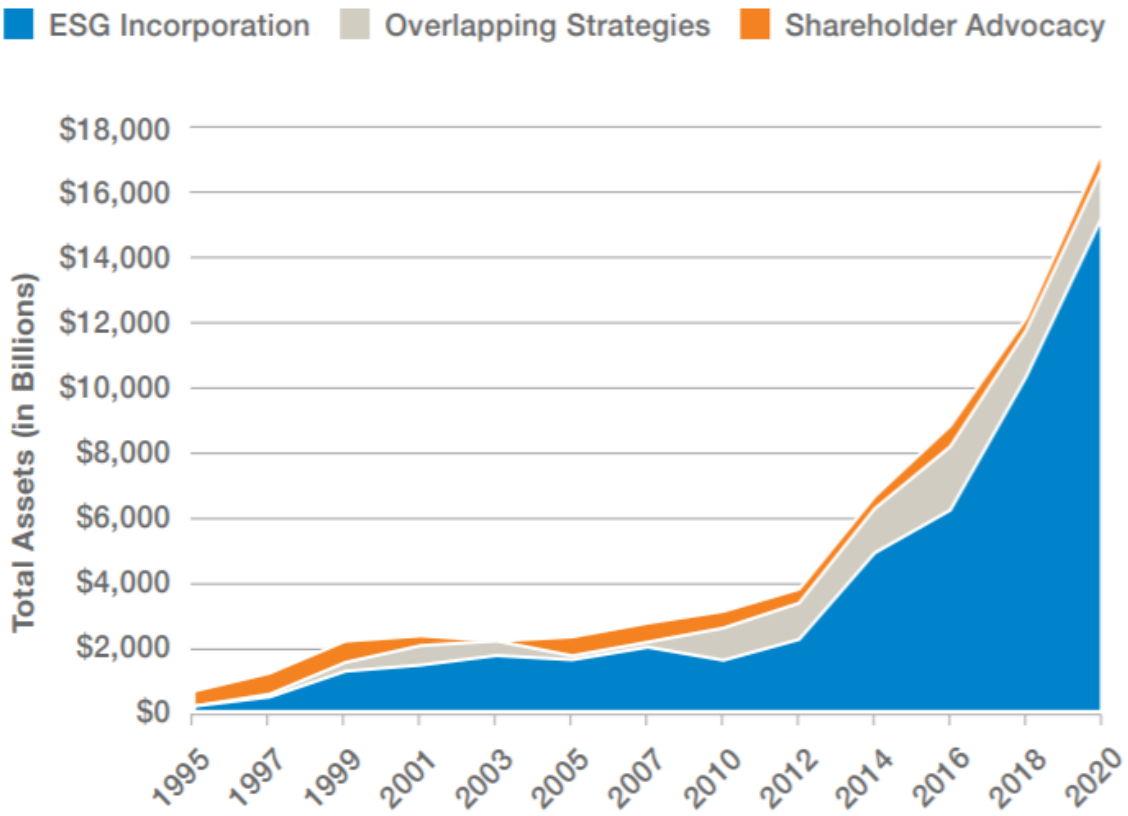


**Figure 1.** Sustainable investing in the United States 1995-2020 (US SIF, 2020).

According to a study made by European sustainable investing forum in 2018, much change can be seen in SRI and change keeps increasing. SRI has become more essential and consolidated investing practice with several different investment strategies. The data for this study is collected from European key SRI market participants which include asset managers, banks and asset owners such as pension funds. During 2015-2017, seven SRI strategies, best-in-class, sustainability themed, norm-based, ESG integration, engagement and voting, exclusions, and impact investing, in Europe were studied. Five strategies out of seven provided positive compound annual growth rate (CAGR). The study points out that in order to succeed, investors should take into consideration ESG

integration which has the biggest CAGR by 27%, and that stakeholders wish to be more engaged in investment decisions. Below in the figure 2 is presented the overview of SRI strategies in Europe during 2015-2017.

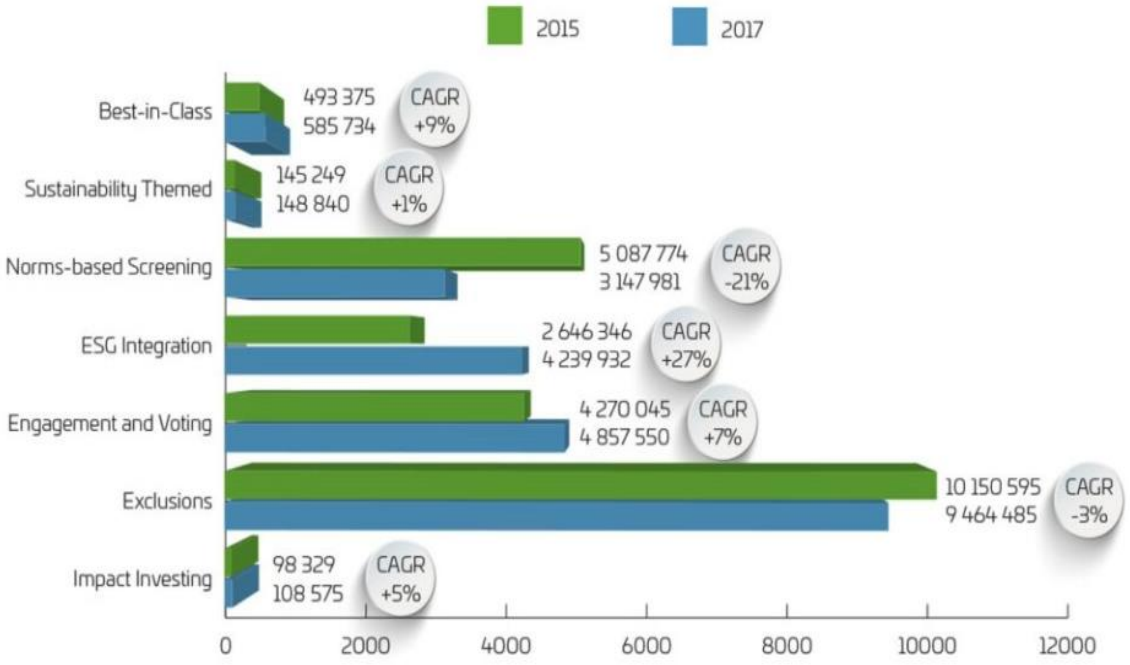


**Figure 2.** The overview of SRI strategies in Europe during 2015-2017 (in millions) (Eurosif, 2018).

Best-in-class means investing in companies with the best ESG scores. Investors select the criteria and specific industries themselves and then form the portfolio. Good ESG scores should also meet the financial criteria. Best-in-class's CAGR increased by 9% during 2015-2017 and it has had a steady growth for also a longer period of time across Europe.

Sustainability themed investment strategy focuses on assets in funds related to some particular sustainable theme such as climate change, water management or renewable energy which have also been the most popular themes for investors. Interest towards climate change and sustainability has had a positive impact on this SRI strategy. The

CAGR of sustainability themed strategy has grown by 25% during 2009-2017 but it has slowed down since during 2015-2017 it was only 1%.

In norm-based screening investors invest in firms that are consistent with investors own compliance of general standards and norms monitored by for instance the United Nations and OECD. Such norms are, among others, anti-corruption, environmental protection and human rights. It is possible to use norm-based screening together with other SRI strategies which often is exclusion. Norm-based screening had the biggest decrease of CAGR by 21% during 2015-2017 which could partly be explained by the 3% decrease in exclusions.

Exclusions is the oldest and most popular SRI strategy with 9.5 trillion euros at the end of 2017. It excludes investments related to so called sin stocks which often refers to weapons, tobacco, animal testing and pornography. As mentioned, exclusions had a decrease in CAGR during 2015-2017 but it has had a positive CAGR of 23.5% during 2009-2017. Decrease might be due to increasing interest towards other SRI strategies. Since there still is investors investing in sin stocks, it is said that exclusions does not even have an impact. That is why this strategy is linked to the second most popular strategy, engagement and voting. If owning stocks that should be excluded, socially investors could actually start changing the norms and operations from the inside. Engagement and voting's CAGR grew 7% during 2015-2017 and it has had quite steady growth before that period as well. It means that stakeholders want to be more active in management and more involved in the decision making.

ESG integration means asset managers including ESG factors into traditional financial analysis. It is the most used SRI strategy of investors and it has also gained momentum. These ESG considerations are aligned with the Sustainable Development Goals (SDGs) During 2015-2017, ESG integration was the SRI strategy with largest CAGR by 27% and 4.5 trillion euros.

The CAGR of impact investing grew by 5% during 2015-2017 whereas during 2011-2017 it grew by 52%. This growth is indicating that investors are conscious about their position and power and therefore choose some specific investment categories that they feel having social and environmental effect. Like ESG integration, also impact investing as a SRI strategy is in line with SDGs. Impact investing is also considered as the most ideal SRI strategy linking expectations and returns.

## 2.5 ESG

Socially responsible investing based on ESG screening started in the 1960s. Common drive for this kind of investing are, as in SRI in general, personal ethics and values as well as individuals' willingness to have a positive impact on their surroundings. (MSCI, 2022.) According to Scholtens and Sievänen (2013), socially responsible investing offers a framework to include more ethical considerations into investment decision making process whereas corporate social responsibility is a framework to investigate how different investment targets act in ESG areas. In order to generate both long-term competitive financial returns and positive societal impact, sustainable investors should consider environmental, social and corporate governance criteria (The Social Investment Forum, 2021).

Three different ESG factors, environmental, social and governance, are often incorporated with traditional financial analysis in the investment process. This is a popular and increasing SRI strategy called ESG integration. Another method of using ESG as a driver for investment decision is best-in-class strategy which helps to combine a portfolio based on the best ESG scores that also meet the financial criteria. (Eurosif, 2018.) Since the interest towards sustainability has increased, the meaning of ESG data such as ESG scores has also increased. Ernst & Young (2020) state that ESG information has never been more important, and that investors are evaluating nonfinancial firm performance with more and more disciplined and rigorous approach.

ESG scoring is a way of measuring the level of different companies' sustainability. It is possible to score companies based on the total ESG or divide scoring into environmental, social or governance aspect or even into their sub-groups and therefore provide detailed information about certain sustainable aspect. The lowest possible score for ESG is 0 whereas the highest is 100. The higher the score is, more sustainable is the company. (Thomson Reuters, 2017.) In order to achieve high ESG scores, corporations need to have integrated ESG practices, such as provided for clarity in the figure 3 below, into their business.


**Figure 3.** Examples of ESG criteria used by sustainable investors (US SIF, 2021).

The E factor of ESG, environment, consists of large variety of environmental aspects from companies' point of view. It considers companies' impact on the environment in

whole value chain, from the use of resources to waste management. As it is shown in the figure below, water usage, sustainable natural resources, pollution, clean technology, climate change, and green building are all part of the E factor. Especially climate change, water management and sustainable natural resources are important ESG criteria for socially responsible investors (Eurosif, 2018 and US SIF, 2020).

Then again, social or the S factor is formed by human rights, avoidance of harmful products, community development, diversity, workplace benefits, labour relations, and workplace safety, as can be seen in the figure above. Stakeholders pay special attention to these matters of social factor. The increased number of headlines and scandals impacting negatively corporations may explain conflict risk being the largest social criterion for investors in 2020 by 1.8 trillion U.S dollars (US SIF, 2020).

Finally, the G factor or governance is focused on legal practises and rules of the company and board such as corporate political contributions, executive compensation, board diversity, anti-corruption policies, and board independence. From governance factors, anti-corruption and board issues are the biggest criteria for investors to consider by 2.4 trillion U.S dollars each (US SIF, 2020).

According to some studies, investing in socially responsible companies with high ESG scores generates less returns than investing in more sinful stocks. However, there exist also risks, such as reputational and financial risks, if taking ESG matters properly into consideration fails. Companies may face lawsuits which could also affect to stakeholders' image about the companies. Also, financial institutions reassess their assets that are lent or invested in order to guarantee specific sustainability goals being met and for instance limit exposure to carbon producers. (Thomson Reuters, 2021.) These matters may also have an impact on stock returns and firm performance.

## 2.6 SRI and ESG in Nordic countries

Nordic countries, Finland, Sweden, Denmark and Norway, are often perceived as very similar entities, either economically, socially or culturally. According to La Porta, Lopez-De-Silanes and Shleifer (2008), the civil laws of these countries are very similar to each other, and they distinct from other countries as their own small entity. They all are at the very top of human rights, education, equality and ESG matters according to different measurements and indexes, and they have stable governments supporting all these matters (Environmental Performance Index, 2020; the United Nations Development Programme, 2020; World Economic Forum, 2020). Cai, Pan and Statman (2016) conclude that besides economic development for instance different cultures and institutions have an important role when it comes to differences in corporate social performance (CSP). That could explain the high sustainable status of the Nordic countries. According to Morningstar (2020), Finland is the most sustainable stock market of the world due to its corporations leading in ESG, other Nordic countries following also at the very top. Also the Country Sustainability Ranking analysis of RobecoSam (2021) finds Nordic countries the most sustainable. According to it, Finland has the best ESG ranking out of 150 countries from both developed and emerging economies. Sweden, Denmark and Norway are on the places two, three and four. Additionally, from year to year all four Nordic countries are in the very top of the United Nations Sustainable Development Goals Index (Sustainable Development Report, 2021) as demonstrated below in the figure 4 by Boston Consulting Group (2019).

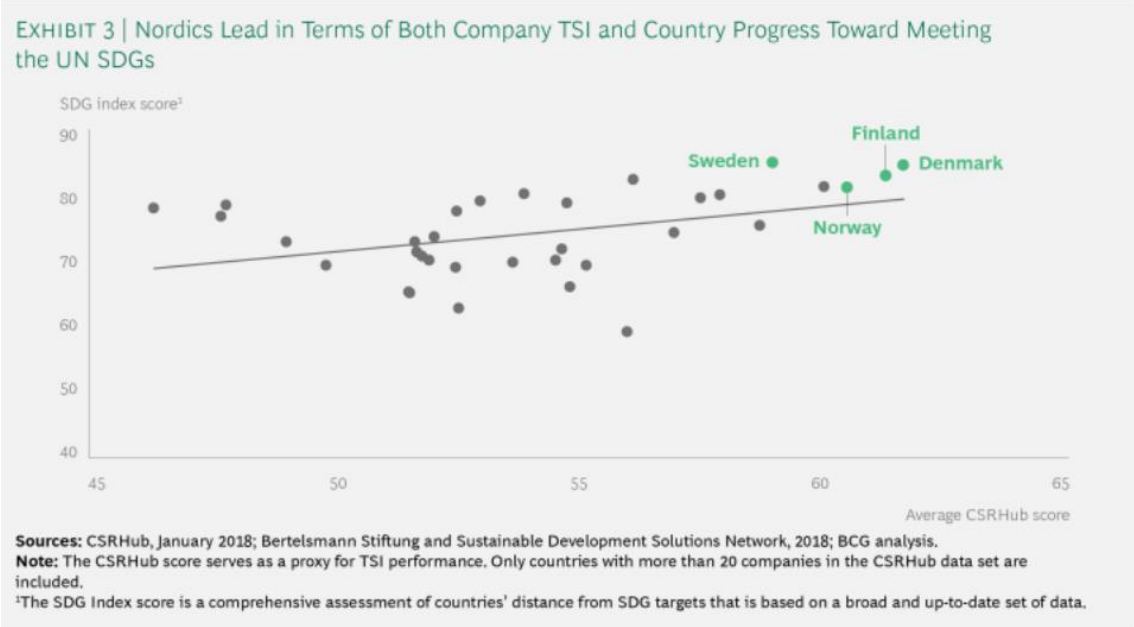


**Figure 4.** The United Nations Sustainable Development Goals Index in Nordic countries (Boston Consulting Group, 2019).

However, there exist differences in SRI between the Nordic countries. Scholtens and Sievänen (2013) find that especially economic openness, size of the pension industry, and cultural values have an impact on Nordic countries' size and composition of SRI, differentiating them from each other. They come to the conclusion that due to cultural values such as feminine society and uncertainty avoidance, investors in Nordic countries are willing to invest in ESG factors. In addition, well developed pension fund system is found to favour SRI whereas economic openness decreases SRI in Nordic countries due to investments being international. The authors also conclude that financial and economic development have a positive impact on SRI explaining the leading status of Nordic countries in sustainability.

When compared to other Nordic countries, Finland is relatively new country in SRI. SRI activity started in Finland in late 1990s (Kreander, 2001). However, during the last decade Finnish SRI markets have grown rapidly. For instance, all the most substantial asset managers report the carbon footprint of mutual funds, Finnish pension system has committed to take environment into consideration in their investments, and Finnish

government has CSR guidance for companies they have ownership in. Finland has also focused on developing ESG matters by new ESG departments and evaluations. In 2016, exclusions and norm-based screening were the most popular SRI strategies in Finland. The biggest exclusions involve tobacco products and nuclear energy. Since Finnish equity markets are relatively small when compared to other Nordic countries, it on its own part explains why also engagement and voting remains quite popular SRI strategy. In addition, impact investing was started in Finnish SRI markets in 2016. (Eurosif, 2016.) When it comes to cultural indicators of SRI, Finnish nation has low individualism and high masculinity as well as assertiveness which could explain the lower SRI when compared to other Nordic countries (Scholtens & Sievänen, 2013).

In Sweden, the SRI markets are mature. SRI started there at its very early stages, already in the 1960 after the establishment of the first ethical funds which makes Sweden a pioneer in SRI (Scholtens & Sievänen, 2013). Also, it became the first country demanding state-owned companies to publish sustainability reports in 2007 (Boston Consulting Group, 2019). Several large institutional investors have been active in Sweden for a relatively long period of time with some kind of an ESG theme. However, also smaller players are still entering the markets. Since 1980s, exclusions has been a popular SRI strategy. In 2018, it was the second most popular SRI strategy in Sweden after engagement and voting. The increase of these SRI strategies has slightly decreased the rate of other SRI strategies. During the recent years, the Swedish government has had an increased focus towards investments related to ESG. When it comes to sustainability, Sweden is a responsive nation. It is common for Swedish investors forming portfolios to promptly take into consideration international initiatives, for instance Principles for Responsible Investment (PRI). (Eurosif, 2018.) Also, Sweden has its own innovative initiatives related to climate and green finance (EU Industrial R&D Investment Scoreboard, 2020). According to Scholtens and Sievänen (2013), Sweden has feminine society with low assertiveness which could be a partial reasoning behind the advanced SRI. Norway is found to be culturally similar nation as Sweden. (Scholtens & Sievänen, 2013.)

Both in Norway and Denmark first ethical funds were introduced in the late 1980s and early 1990s (Scholtens & Sievänen, 2013). Scholtens and Sievänen (2013) find that when compared to other Nordic countries, the largest institutional investors are in Norway, Norway is significantly wealthier per capita and it has higher savings rate than Finland, Sweden or Denmark. Traditionally, Norway's financial industry has been considered at the very top of SRI, and Norway expects state-owned firms to be front-runners in CSR matters (Boston Consulting Group, 2019). Even though there is no specific scheme for SRI in Norway, most of the Norwegian substantial investors have robust SRI policies and practices. However, Norwegian Government Pension Fund Global has a heavy impact on the decision-making of investors. Another big influence on social and environmental matters is the European Union whose legislation is the biggest reason for regulatory adjustments in Norway. Even though Norway is not part of the EU, as Finland, Denmark and Sweden are, it must adopt EU regulations and directives since it belongs to the European Economic Area. (Eurosif, 2018.)

Also Denmark is considered as one of the most advanced nations when it comes to SRI. In Denmark, as well, most of the largest investors have strong SRI policies of which the most adapted policies are screening and exclusions, and engagement, both policies with the adaption of 82%, as well as voting with 61%. ESG integration is continuously being developed among Danish investors. However, that as well as the usage of most of other SRI strategies decreased in 2017. (Eurosif, 2018.) Danish government encourages investing in a socially responsible way, and SRI is regulated for public pension funds in Denmark. Together with Sweden, Denmark is more open economy than Finland and Norway when measured economic openness by the percentage of imports and exports to GDP. This could explain SRI being more core in Finland and Norway. (Scholtens & Sievänen, 2013)

As Scholtens and Sievänen (2013) suggest, there exist differences in economies and cultures of Nordic countries that have an impact on approaching SRI and ESG matters in

different ways. But what is common for all these four Nordic countries is that they all have strong existing SRI policies, some older than others, and the governments are involved in developing them further. According to Scholtens and Sievänen (2013), the important role of institutional investors, religious movements and investment strategies are similar in all four countries. Also, the European Union has a heavy impact on the actions of all of them. One of the biggest concerns related to sustainability these countries share is the climate change and battle against it. In addition, SRI seems to be an increasing trend in most of the Nordic countries, as in the rest of Europe and worldwide as well. Similar to Scholtens and Sievänen (2013), the Eurosif report (2016) concludes that sustainable development and corporate responsibility come naturally to Nordic investors since they generally score high despite the measurement. This also explains the popularity of different SRI strategies and high ESG rankings in Nordic countries.

Also the study of Boston Consulting Group (BCG) (2019) finds several similarities between Nordic countries explaining the generally high sustainability status and ESG ratings of the Nordics. The study of 8000 firms worldwide finds that especially in the Nordic countries companies create higher positive societal impact than companies in other regions. Even 65% of Nordic firms are found to be in the global top quantile. Below in figure 5 is presented the total societal impact (TSI) results.


**Figure 5.** Total societal impact scoring worldwide (Boston Consulting Group, 2019).

BCG concludes that particularly visionary and capable leadership of companies and boards, integrating sustainability matters into core business, and exceptionally sophisticated ESG reporting have led to high TSI in Finland, Sweden, Denmark and Norway. Nordic leaders are deeply committed to creating positive societal impact which can be seen in companies' strategies. There also exists traditionally broad stakeholder engagement in the Nordics. It could be concluded that this commitment of leaders is driven by owners and investors who have focus on ESG matters, general public that values TSI, and governments trusting firms pay close attention to CSR and ESG matters and act as leaders in developing them. Due to these characteristics, it is not uncommon for Nordic firms to accept initially lower margins in achieving positive societal impact. (Boston Consulting Group, 2019.)

# 3 Previous research

As mentioned, the interest towards sustainability and responsibility has also increased the popularity of responsible investing. Therefore, there exist numerous studies both for and against the benefits of taking ESG considerations into account in business and investment decision making. As the aim of this thesis is to study whether ESG considerations have a positive impact on stock returns, Tobin's Q and ROA, this part of the thesis introduces and combines results from some of the previous studies with similar objectives.

## 3.1 ESG and stock returns

Often socially responsible investors may abstain from investing in particular stocks due to them being in conflict with ethical values or social norms. According to Hong and Kacperczyk (2009), these kind of sin stocks, which include alcohol, tobacco and gaming products, have higher expected returns when compared to other stocks. They state that some institutions neglecting sin stocks pay a financial cost. Due to social norms many institutions do not invest in these sin stocks encouraging vice. Therefore, sin stocks face greater litigation risk when compared to other stocks.

Adler and Kritzman (2005) find similar results suggesting that the restrictions investors encounter when investing in socially responsible or "good" companies generate substantial costs. This is demonstrated by the Monte Carlo simulation. First the returns of securities from unrestricted universes are simulated, and then the returns of securities from restricted, socially responsible, universes. The difference between these two simulations is the cost arisen from socially responsible investing. The cost of socially responsible investing is found to increase with the number of securities in the portfolio.

Also Statman and Glushkov (2009) suggest that excluding sin stocks affects negatively to portfolio's return, and according to Hwang, Titman and Wang (2021) SRI ownership

leads to negative stock returns as high CSR scores are found to have a negative impact on stock returns. Additionally, Bolton and Kacperczyk (2021) as well as Hsu, Li and Tsou (2022) come into the conclusion that polluting companies have higher stock returns when compared to less polluting companies. According to Bolton and Kacperczyk (2021), investors require compensation for carbon emission risk.

On the contrary, Kempf and Osthoff (2007) find that socially responsible stocks may generate high abnormal returns, even after transaction costs. In their study, they buy stocks which have high socially responsible ratings and sell stocks with ratings that are socially responsibly low during the years 1992-2004. Measured by Carhart's four-factor model, this long-short strategy leads annually to positive alpha of up to 8.7%. The qualitative criteria for the stocks in S&P 500 and the DS 400 include community, diversity, employee relations, environment, human rights, and product.

Also Nagy, Kassam and Lee (2016) come into the conclusion that with ESG it is possible to create alpha. They analyse two different strategies based on MSCI ESG data, and find both of them outperforming the global benchmark, MSCI World Index. The other strategy, "ESG tilt" strategy overweights stocks which have high ESG ratings whereas another "ESG momentum" strategy overweights stocks whose ESG ratings have improved recently. Then again, Lins, Servaes and Tamayo (2017) consider CSR activities as tools of risk management since firms with high CSR scores are found to have 4%-7% higher stock returns during the financial crisis when compared to firms with low CSR. They are also found to have higher growth, profitability and sales per employee.

Some of the previous studies focus individually on E, S and G aspects, or even their sub-categories. For instance, Tzouvanas and Mamatzakis (2021) study S&P 500 companies during 2005-2018 and found environmental stocks performing better than non-environmental stocks. Environmental stocks are found to have higher equity valuation and lower idiosyncratic risk, but systematic risk is higher when compared to less

environmental stocks. Additionally, both Tang and Zhang (2020) and Flammer (2021) find the issuance of green bonds leading to positive stock market reactions.

Edmans (2011) focuses on the social aspect on ESG finding that employee satisfaction has a positive relation with stock returns and that some SRI screens might have a positive impact on investment returns. According to Edmans (2011), during the years 1984-2009 a value-weighted portfolio of the one hundred best firms to work in America generated an annual alpha of 3.5%. Based on the findings it can be conducted that the markets do not fully incorporate intangible assets into stock valuations.

Dumitrescu and Zakriya (2022) study G factor's, governance's, impact on stock returns finding that until the early 2000s stocks with good governance outperformed stocks with poorer governance. However, these results seem to fade until 2008 financial crisis when stocks with poor governance started to perform better when compared to stocks with better governance. According to this study, the governance-returns relation changes are explained by investors adapting investments strategies based on information and risks related to governance. Study also finds that stocks related to poor governance suffer from future stock price crashes and higher future idiosyncratic volatility more likely than good governance stocks.

According to Bae, Yang and Kim (2021), risk related to stock price crashes has been studied particularly during the 21$^{st}$ century. They find high ESG scores decreasing the risk of stock price crash but this decrease is suppressed by financial constraints. ESG scores' decreasing impact on stock price crashes is due to for instance reduced information asymmetry. Lee, Cho and Kim (2022) study multinational companies and also suggest that high ESG scores have a negative relation with future price crash of stocks. Especially the social aspect of ESG is found to mitigate the risk of stock price crash. That means that increase in S score decreases the probability of negative stock returns. The authors conclude that firms need to pay attention to ESG matters especially when they are expanding their business multi-nationally.

Stock returns may also have an impact on ESG and not only the other way round. Shackleton, Yan and Yao (2022) conclude that after poor performance on stock markets, firms' environmental and social (ES) performance improve. ES performance is improved especially by product and diversity performance. This is found to be accurate during the post-financial crisis period and with companies having fewer financial constraints such as high debt ratios, higher customer awareness or shareholders who are active on ES matters. However, the authors do not find good ES performance having an impact on stock returns. According to Dyck, Lins, Roth and Wagner (2019), firms aim to appear more socially responsible after poor stock performance and gain back the trust of shareholders and other stakeholders.

When it comes to mutual funds, according to Gil-Baso, Ruiz-Verdu and Santos (2010), SRI funds do outperform conventional funds before and after the fees during the years 1997-2005 while having also the same characteristics. They also find SRI funds being cheaper than conventional funds. On the contrary, El Ghoul and Karoui (2017) find high-CSR funds having weaker performance, stronger performance persistence, weaker performance-flow relationship, and comparable persistence in flows when compared to low-CSR funds. The authors analysed a sample of 2168 US equity funds during the period of 2003-2011 and measured funds' performance using Carhart's model. Funds' CSR scores and characteristics are analysed by univariate and multivariate analyses. It is implied that an increase in funds' CSR reduces the financial performance because the CSR score has a negative correlation with alpha. This result is found also with different fund characteristics such as number of stocks, flows and volatility. In addition to this, the high CSR score is associated with low risk since CSR is negatively correlated with return volatility. Due to CSR scores and fund performances' negative relation, high-CSR funds are not attractive for investors who are looking for good performance. These funds are likely attractive for investors who are less sensitive when it comes to performance, but also investors who are socially conscious. Even if the high-CSR fund would not show as good performance as funds with lower CSR, socially conscious

investors may not be willing to change them into other funds if they do not response to certain CSR standards.

Also Nofsinger and Varma (2014) come into the conclusion that socially responsible mutual funds underperform when compared to conventional mutual funds by using Fama and French's three-factor factor model and Carhart's four-factor model. Nevertheless, they additionally find socially responsible mutual funds outperforming conventional mutual funds by 1.61%-1.70% when there exist marker crises. Downside protection seeking investors might be attracted by this asymmetry. Especially mutual funds focusing on ESG matters are found to drive the outperformance during crises when compared to conventional funds. The authors also state that these finding may not occur due to SRI attributes but more other firm characteristics such as size and age.

Then again, Renneboog Horst and Zhang (2008) conclude that it is challenging to state if investing in socially responsible companies is more beneficial than investing in less responsible firms. Dorfleitner and Halbritter (2015a) have similar findings. By using both Carhart's four-factor model and cross-sectional regressions of Fama and Macbeth, they do not find significant differences in returns between firms having high or low ESG ratings. The results are the same for all ESG pillars individually, the total combined scores as well as sector specific best-in-class approach. The dataset is based on KLD, Bloomberg and ASSET4 during 1991-2012 in the U.S. market. Also, for instance Hamilton, Hoje and Statman (1993), Statman (2000), and Bauer, Koedijk and Otten (2005) do not find a significant difference between the performance of SRI funds and conventional funds.

In addition, some studies provide mixed results about ESG considerations' impact on stock returns. According to Statman and Glushkov (2009), high ESG stocks generate excess returns when compared to conventional portfolios after analysing the returns of stocks which had been rated based on their social responsibility during 1992-2007. Nevertheless, they also find excluding the sin stocks disadvantageous. Therefore, the net effect of high ESG scores is not significant since the expected returns are nearly equal

between the socially responsible stocks and conventional stocks. Peiris and Evans (2010) suggest that there does not exist consistency between the relationship of ESG ratings and stock returns when analysing the S&P 500 and DSI indices during 1991-2006. However, they find a positive relationship between ESG ratings related to stakeholders, and firms' operating performance and market valuation. This finding could imply higher earnings expectations for stocks with high ESG rates.

## 3.2 ESG and firm performance

Velte (2017) finds that environmental, social and governance performance (ESGP) in total as well as its three components separately affect positively accounting-based future financial performance (FINP). The performance of governance impacts FINP the most. He studied companies listed on the German Prime Standard during 2010-2014. Velte (2017) states that after the financial crisis of 2008, the initiatives of the European Commission related to enhancement of corporate governance's quality have improved sustainable management strategies by including better different stakeholder's interests. This has also improved the ESGP. However, Tobin's Q indicates that ESGP has no significant impact on market-based FINP.

Also Giese, Lee, Melas, Nagy and Nishikawa (2019) suggest good ESG characteristics effecting firms' valuation and performance positively. This financial value creation is a multi-channel process which is shown by three transmission channels, cash-flow channel, idiosyncratic risk channel and valuation channel. They were tested by MSCI ESG data and financial variables. The findings show that better ESG ratings lower cost of capital and exposure to tail risk, and give higher valuations and profitability values. In addition, ESG ratings are found to have lower impact on the firm performance than some other factors, such as momentum, but this impact lasts longer. The authors also highlight that there does not exist many other studies explaining the reasons for positive correlation between ESG and financial performance.

Sassen, Hinze and Hardeck (2016) also suggest higher corporate social performance (CSP), formed by ESG factors, decreasing firm risk and therefore increasing firm value. In their study, they analysed 8752 European companies during 2002-2014 and divided the risk into three categories, systematic, idiosyncratic, and total risk. According to the study, both idiosyncratic and total risk are decreased by CSP. Moreover, social aspect of CSP affects significantly and negatively on all of the three risks whereas governance does not have a significant impact on firm risk. Environmental factor is able to decrease idiosyncratic risk but is has an impact on systematic and total risk only in industries that are environmentally sensitive. Based on these findings, the authors suggest that ESG considerations should be integrated into both strategical and operational risk as well as compliance management strategy of firms.

All Gao and Zhang (2015), Ferrell, Liang and Renneboog (2016) as well as Chang, Chen, Chen and Peng (2019) have similar findings about the positive impact of corporates' social responsibility on firm value. Chang, Chen, Chen and Peng (2019) find higher CSR activities resulting in higher market value for firms. Also according to Gao and Zhang (2015) CSR scores have a positive impact on Tobin's Q as well as earnings-return relationship. Ferrell, Liang and Renneboog (2016) conclude that good governance with mitigated agency problems increases CSR, and that there exists a positive relation between CSR and firm value measured by Tobin's Q.

As the importance of sustainability and responsibility matters of firms have been increasing during the recent decades, also reporting about firms' sustainability has gained interest. Al Hawaj and Buallay (2022) study 3000 companies from seven different sectors in 80 countries worldwide during 2008-2017 and find that sustainability reporting of firms impacts differently the measurements of firm performance, ROA, ROE and Tobin's Q. ESG is found to have a positive impact on ROA particularly in sectors related to energy, manufacturing, retail and tourism. According to the authors, this highlights the importance of employee satisfaction as it improves operational performance. ROE is significantly positively affected by ESG in only retail and

manufacturing sectors. This indicates that good ESG satisfies shareholders and improves financial performance in these sectors. Then again, Tobin's Q has a significant and positive correlation with ESG manufacturing, retail and tourism sectors which means that ESG has a positive impact on market performance in these sectors. In banks and financial sector the relation between ESG and all firm performance measurements is found to be negative.

Like sustainability reporting, also regulatory related to sustainability has gained more and more focus. As the regulations related to firms' sustainability tightens, companies need to pay attention to their internal control. Boulhaga, Bouri, Elamer and Ibrahim (2022) find that ESG ratings and internal control have a positive impact on firm performance, measured by Tobin's Q. The results highlight that ESG scores have a positive impact on firm performance due to internal control. Boulhaga, Bouri, Elamer and Ibrahim (2022) conclude that CSR information impacts stakeholders' behaviour. Internal control helps to evaluate CSR and its impact which is why internal control supports the CSR of companies. Therefore, companies should take internal control closely to their consideration.

According to Alcaide González, de La Poza Plaza and Guadalajara Olmeda (2020), information related to firms' corporate social responsibility has an impact on how they are perceived by stakeholders such as investors. They find that transparently published CSR information improves firms' brand value, credit ratings and also partially firm performance. Also, larger companies are found to publish CSR information more transparently when compared to smaller firms. These results highlight the importance of good stakeholder relations. This is also the conclusion of Bardos, Ertugrul and Gao (2020) who find that firm value is increased indirectly by CSR via product market perception improvements. Especially community and environmental aspects of CSR are found to have a positive impact on product quality which improves the product market perception.

Then again, Sahut and Pasquini-Descomps (2015) highlight that the relation between ESG scores and market performance depends much about the year and sector. They find that even though in theory firms' high ESG scores should decrease the residual risks and increase market value, ESG rating does not seem to impact the valuation of firms expect during some specific market conditions. That means that increase or decrease in ESG ratings is not sanctioned by the markets.

Even though many of the previous studies find corporates' social responsibility leading to improved firm performance, some studies find it disadvantageous. For instance, according to Di Giuli and Kostovetsky (2014), CSR has a negative impact on ROA since firms with higher CSR have also substantially higher expenditures. Also Buchanan, Cao and Chen (2018) find responsibility leading to higher costs and decreased Tobin's Q and firm value during the financial crisis. Then again, Humphrey, Lee and Shen (2012) conclude that CSP does not have an effect on risk-adjusted firm performance.

## 3.3 ESG and other studies

Moreover, there are studies conducted about the impact of responsible investing on for instance the cost of capital risks. El Ghoul, Guedhami, Kwok and Mishra (2011) find that high CSR scores decrease the cost of capital significantly whereas being associated with sin industries makes equity financing more expensive. That means that firms associated with socially responsible practices have also better valuation and lower risk when compared to firms with less responsible activities. The decrease of equity financing costs is especially driven by improvements in responsible employee relations, environmental policies, and product strategies. Also Hong and Kacperczyk (2009) come into the conclusion that there are higher costs in equity markets for sin industries.

Albuquerque, Koskinen and Zhang (2019) agree with higher CSR leading to lower cost of equity. According to them, projects that increase companies' reputation for CSR should be discounted with lower cost of equity than other projects. Also, stocks having high CSR

should decrease the overall riskiness of a portfolio. As systematic risk is decreased the firm value increases. The results are found to be stronger for companies with higher product differentiation. Despite the positive impact of CSR, the authors of this study also note that CSR is not necessarily beneficial for all companies at all times.

Also several studies have been conducted about CEO and board characteristics' relation with sustainability and responsibility matters. For instance Borghesi, Houston and Naranjo (2014) find that firms where women are in leading roles or board members have higher CSR scores. They also find that firms with young CEOs have higher CSR scores than firms with older CEOs and that institutional ownership structure has a negative relation with CSR scores. McGuinness, Vieito and Wang (2017) conclude that gender diversity in boards is found to have a positive relation with CSR scores. Then again, according to McCarthy, Oliver and Song (2017), overconfident CEOs may be narcissists, and there exists a negative relation between CEO confidence and CSR. When it comes to politics, Di Giuli and Kostovetsky (2014) state that political views have an impact on CSR ratings. They suggest that firms led by Democratic CEOs have better CSR ratings.

The providers of suitable information about corporations' social performance and sustainability play an important role when operating with corporations. This is especially since the interest towards SRI and ESG has increased, and information related to firms' ESG and CSR considerations has an impact on investors' investing decision making. In their study, Dorfleitner, Halbritter and Nguyen (2015b) compare three different providers for sustainability ratings due to the comparison of corporate social performance (CSP) rating methods. These providers include ASSET 4 by Thomson Reuters, KLD by MSCI, and Bloomberg Sustainability. ESG scores are used for rating the CSP in this comparison. The ESG data set of this study includes over 8500 companies globally. According to the authors, there is a distinct difference between different methods for rating ESG scores. That is why all the stakeholders relying on CSP information and rating should evaluate critically used ESG models.

Also Christensen, Serafeim and Sikochi (2022) come into the conclusion that ESG ratings might be subjective. The study finds that the higher ESG disclosure is, the higher is also disagreement about ESG ratings between different ESG rating agencies. Environmental and social information is found to have greater impact on ESG ratings disagreement than governance aspects. The results highlight that ESG ratings from only one agency are not as reliable as combined ratings from several sources.

Differences in the sustainability ratings may be due to for instance the measurement of firm and country characteristics. Cai, Pan and Statman (2016) highlight that country factors explain variations in corporate social performance (CSP) ratings significantly more than firm characteristics. After studying 2600 companies from 36 countries the differences are explained by different culture, institutions and economic development measured by income-per-capita. CSP ratings are found to be high in countries that have autonomy and harmony oriented cultures, strong civil liberties and political rights as well as high income-per-capita. These factors are also linked to each other since higher income fosters stronger civil liberties and political rights.

As mentioned, there exist numerous previous studies related to ESG and CSR with large variety of results. Friede, Busch and Bassen (2015), however, conclude that after going through over 2000 previous studies, large majority of them finds positive results about ESG's impact on business. Therefore, the authors conclude there existing a business case for ESG investing.

# 4 Data and methodology

This part of the study presents the data and methodology used in the thesis. It explains the suitability and exclusion of the data and also presents the used variables and descriptive statistics. Finally, methodology and regression models of this thesis are presented. This chapter aims to give a reasoning for the data and methodology used in examining the impact of ESG considerations on stock returns, Tobin's Q and ROA. The methodology used in this chapter is strongly based on the study of Velte (2017) due to the similarities of the objectives it and this thesis hold.

## 4.1 Data

The data of this study is formed by public companies listed in Finnish, Swedish, Danish and Norwegian stock exchanges. This sample includes 192 companies and 1329 observations during the years 1999-2021. As in several previous studies, financial sector has been excluded from the sample selection due to its different business model when compared to other sectors and therefore having different impact of ESG scores (Eccles, Ioannou & Serafeim, 2014). Financial sector also encounters different regulations (Velte, 2017). The financial and ESG data is gathered from Refinitiv and the Thomson Reuters' database called Datastream which has ESG and financial data for more than 6000 global companies with over 400 ESG measures. Datastream provides ESG data from 1999 to this date which explains the time period of the thesis. It is quite challenging to find ESG and R&D data for companies, especially during the earliest years covered in this study. This explains the relatively low number of companies in the sample selection of this thesis.

### 4.1.1 Dependent variables

Since this thesis aims to study the impact of ESG on stock returns and firm performance, the dependent variables in this study are the stock returns, Tobin's Q which measures firms' market-based performance, and ROA measuring the accounting-based performance of sample selection's companies. The values of stock returns and ROA have been downloaded from Datastream. Tobin's Q has been calculated manually based on the financial data provided by Datastream. Tobin's Q is calculated by dividing market capitalization by total assets, and it is widely accepted and used practice to measure the market-based performance of firms. ROA is the most famous accounting-based measure for financial performance presenting companies' profitability in relation to the total assets. (Velte, 2017.) For instance Velte (2017), Fischer and Sawcyn (2013), and Choi and Wang (2009) among others use Tobin's Q and ROA as dependent variables in their studies.

### 4.1.2 Independent variable

The aim of this thesis is to examine the impact of ESG scores and therefore the independent variable is the ESG scores provided by Datastream. The scores range from 0 to 100, 0 being the lowest possible value and 100 the highest. The higher the score is, more sustainable is the company. Datastream divides transparently and objectively three factors of ESG, E, S and G, into three individuals pillars and provides in total ten categories under these pillars. The categories in environmental pillar E include resource use, emissions and innovation. Social pillar S is formed by workforce, human rights, community, and product responsibility whereas governance pillar G includes management, shareholders, and CSR strategy. The overall ESG score is a weighted average of these ten categories' scores. The categories, then again, are formed by over 70 key performance indicators which are a combination of more than 400 data points. (Thomson Reuters, 2017.) The combined ESG score of the ten categories will be used as

the independent variable in this thesis. For clarity, the overview of ESG score formation is provided below in the Figure 6.

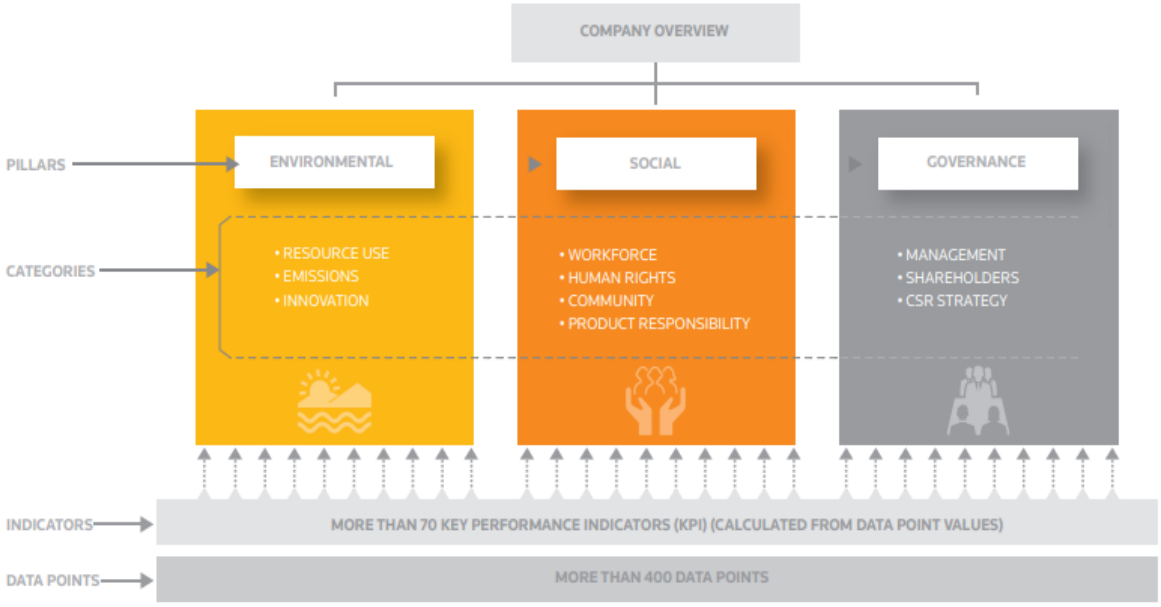


**Figure 6.** The overview of ESG scores' formation (Thomson Reuters, 2017).

### 4.1.3 Control variables

Since other factors besides ESG scores can be assumed to have an impact on stock and firm performance, control variables are included in this thesis. R&D expenses is the measure for innovation and technological knowledge of companies. According to the 2020 EU Industrial R&D Investment Scoreboard, Finland, Sweden and Denmark are all one of the top countries in the EU when it comes to R&D intensity. In 2020 Finland and Sweden both had R&D growth above the average of the EU. Succeeding in incorporating ESG matters requires research and development methods, and Nordic countries are forerunners in inventing new forms of sustainable solutions such as green inventions including ICT, energy and transportation among others. (EU Industrial R&D Investment Scoreboard, 2020.) Therefore, it is particularly interesting to study if R&D has an impact

on the stock returns and firm performance in the Nordic countries. R&D is measured by the R&D expenditures to sales ratio.

Previous literature shows how firm risk affects financial performance and that is why risk should also be considered in this thesis. Firm risk is divided into systematic and unsystematic risk. Beta measures the systematic risk that cannot be diversified whereas unsystematic and diversifiable risk is measured by financial leverage ratio. Firms with high level of debt are therefore seen riskier and that likely has a negative impact on the financial performance as for instance El Ghoul, Guedhami, Kwok and Mishra (2011) as well as Giese, Lee, Melas, Nagy and Nishikawa (2019) have shown.

Fama and French (1993) come into the conclusion that smaller firms gain higher profits. Then again, Robert and Dowling (2002) state that large size is beneficial for firms due to the economies of scales. They also have more resources to enhance their ESG considerations (Drempetic, Klein, & Zwergel, 2019). That is why size has been included as a control variable in previous studies (Velte, 2017; Fischer & Sawcyn, 2013; Choi & Wang, 2009) and is included in this thesis as well. It is measured as a natural logarithm of total assets.

Finally, the industry dummy is set to control the differences in manufacturing and services industries. Since there are companies in the data sample not included in manufacturing or services industry, a third category of industries is set. Therefore there are two dummies for industry. IND1 is set for services getting the value 1 whereas other industries get value 0, and IND2 for manufacturing companies getting the value 1 while other companies getting value 0. The industries of these companies are based on the Standard Industrial Classification codes (SIC codes). As a summary, it can be concluded that the control variables used in this thesis are R&D, beta, financial leverage, firm size and industry. These control variables were also used by Velte (2017).

### 4.1.4 Descriptive statistics

Table 1 below presents the descriptive statistics of this thesis. It includes all the variables used in the regressions. Each variable has 1329 observations. The highest ESG score of companies included in the data sample is 95.13 whereas the lowest is 2.24. There exists a significant difference between the highest and lowest values of ESG scores giving the mean value of 55.95.

**Table 1**. Descriptive statistics.

| | *Mean* | *Median* | *Standard Deviation* | *Minimum* | *Maximum* | *Observations* |
|---|---|---|---|---|---|---|
| *Tobin's Q* | 1,91 | 1,13 | 2,41 | 0,01 | 26,08 | 1329,00 |
| *ROA* | 6,89 | 6,79 | 14,21 | -165,12 | 128,42 | 1329,00 |
| *Stock returns* | 0,17 | 0,10 | 0,67 | -0,96 | 15,98 | 1329,00 |
| *ESG Score* | 55,95 | 57,95 | 19,47 | 2,24 | 95,13 | 1329,00 |
| *R&D* | 41,08 | 2,10 | 794,57 | 0 | 27616,82 | 1329,00 |
| *Beta* | 1,01 | 0,99 | 0,55 | -0,29 | 5,25 | 1329,00 |
| *Fin.lev.* | 21,87 | 21,14 | 14,41 | 0 | 107,81 | 1329,00 |
| *Size* | 16,23 | 16,28 | 1,79 | 11,22 | 20,73 | 1329,00 |
| *IND1Serv.* | 0,08 | 0 | 0,27 | 0 | 1 | 1329,00 |
| *IND2Manuf.* | 0,77 | 1 | 0,42 | 0 | 1 | 1329,00 |

There exist also large differences in dependent and control variables. The mean values for Tobin's Q, ROA and stock returns respectively are 1.91, 6.89 and 0.17. Their highest values are 26.08, 128.42 and 15.98 whereas the lowest values are 0.01, -165.12 and -0.96. Beta has mean value of 1 highest and lowest values being 5.25 and -0.29. Some of the companies have not had either R&D expenditures or financial leverage which highlights the 0 values difference to the highest values of these two variables explaining also the large standard deviations. Mean value for size is 16.23 while the highest and lowest values are 20.73 and 11.22. Both industry dummies take naturally either values 1 or 0.

## 4.2 Methodology

In order to being able to answer research questions about ESG considerations' impact on stock returns, Tobin's' Q and ROA in Nordic countries, three different regression models based on an unbalanced panel data are run. Since the methodology of this thesis has characteristics of both time-series and cross-sectional models, panel data is a suitable way for organizing the data. Formulas for three different regressions are provided below:

$$Stock\ returns_{i,t} =$$

$$\alpha + \beta_1 ESG_{i,t} + \beta_2 R\&D_{i,t} + \beta_3 BETA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 IND1_{i,t} + \beta_7 IND2._{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Tobin's\ Q_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 R\&D_{i,t} + \beta_3 BETA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 SIZE_{i,t}\ \ \beta_6 IND1_{i,t} + \beta_7 IND2._{i,t} + \varepsilon_{i,t} \quad (2)$$

$$ROA_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 R\&D_{i,t} + \beta_3 BETA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 IND1_{i,t} + \beta_7 IND2._{i,t} + \varepsilon_{i,t} \quad (3)$$

Where,

*Stock returns* = Calculated from share prices gathered from Datastream

*Tobin's Q* = Calculated by dividing market capitalization by total assets both gathered from Datastream

*ROA* = Return on assets gathered from Datastream

$\alpha$ = Constant

$\beta$ = Coefficients

*ESG* = Combined score of environment, social and governance factors gathered from Datastream

$R\&D$= Research and development expenditures divided by sales gathered from Refinitiv

*BETA* = Systematic risk gathered from Refinitiv

*LEV* = Financial leverage ratio of total debt gathered from Refinitiv

*SIZE* = Firm size by natural logarithm of total assets gathered from Datastream

*IND1* = Industry dummy of services

*IND2* = Industry dummy of manufacturing companies

$\varepsilon$= Error term

When testing the regression models, it was found that models violate classical assumptions of linear regression model about linearity, normal distribution of the error term, serial correlation and homoscedasticity indicating that result of the regression models cannot be very reliable. Serial correlation means that the error terms of observations are correlated whereas heteroscedasticity means the variance of the error term being non-constant. With panel data, fixed effects model is a common way to cope with serial correlation and heteroscedasticity. Therefore, robust fixed effects model was used to eliminate serial correlation and heteroscedasticity from the regression models used in this study. Multicollinearity was not observed as can be seen from table 2 since there does not occur coefficients between variables exceeding value 0.8.

**Table 2**. Correlation matrix.

| | *Tobin's Q* | *ROA* | *Stock returns* | *ESG score* | *R&D* | *Beta* | *Fin.lev.* | *Size* | *IND1serv.* | *IND2manuf.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Tobin's Q* | 1 | | | | | | | | | |
| *ROA* | 0,202 | 1 | | | | | | | | |
| *Stock returns* | 0,301 | 0,128 | 1 | | | | | | | |
| *ESG score* | -0,117 | 0,079 | -0,069 | 1 | | | | | | |
| *R&D* | 0,072 | -0,143 | 0,029 | -0,049 | 1 | | | | | |
| *Beta* | -0,110 | -0,209 | -0,012 | 0,083 | 0,022 | 1 | | | | |
| *Fin.lev.* | -0,241 | -0,015 | -0,091 | -0,016 | -0,069 | -0,031 | 1 | | | |
| *Size* | -0,253 | 0,089 | -0,071 | 0,507 | -0,060 | 0,087 | 0,124 | 1 | | |
| *IND1serv.* | 0,134 | -0,065 | 0,025 | -0,084 | 0,058 | -0,042 | -0,100 | -0,249 | 1 | |
| *IND2manuf.* | 0,048 | 0,094 | 0,013 | 0,041 | -0,019 | -0,004 | -0,013 | 0,106 | -0,534 | 1 |

As can be seen from the correlation matrix above, Tobin's Q, ROA and stock returns are positively correlated with each other which implies that an increase in one leads also to increase in others. The correlation between Tobin's Q and ROA is 0.202, and between Tobin's Q and stock returns 0.301. Then again, the relationship between ROA and stock returns is 0.128. Tobin's Q is correlating negatively with the independent variable as well as beta, financial leverage and firm size. Its highest negative correlation is with the firm size with value of -0.253. This means that higher firm size leads to lower market value in the Nordic countries. Besides other dependent variables, ROA correlates positively with ESG scores, size and manufacturing sector implying that these three variables have a positive impact on the profitability of Nordic firms. Then again, stock returns have a positive correlation with R&D and both industry dummies. Based on the correlation matrix, all three dependent variables are negatively impacted by both systematic and unsystematic risk. Unlike other two dependent variables, ROA is positively impacted by ESG scores and firm size but has negative correlation with R&D and services industry.

The highest positive value in this correlation matrix is between ESG scores and firm size with the value of 0.507 which indicates that larger firms have also higher ESG ratings when compared to smaller firms in Nordic countries. Then again, the strongest negative correlation is quite naturally found to be between the two industry dummies whereas another relatively strong negative relation is between size and services sector indicating that services companies are found to be smaller than companies in other industries.

Both non-linearity and non-normal distribution of error term were observed since residuals seemed to have a pattern around dependent variables' fitted values, and the mean of error terms was not zero. To overcome the issue with non-normal distribution of the error term and models being non-linear, either logarithm transformation or removal of the outliers of dependent variables can be used. Since the dependent variables of this thesis have both positive and negative values, logarithm transformation was not suitable way to cope with non-linearity and non-normal distribution of the error term, and outlier removal, or winsorizing, was used. Removing the outliers of dependent variables improved the results but did not fully overcome the issues as can be seen in figure 8 examining the normality of regression 2 about Tobin's Q. With stock returns and ROA, error term is approximately normally distributed having a mean of zero.

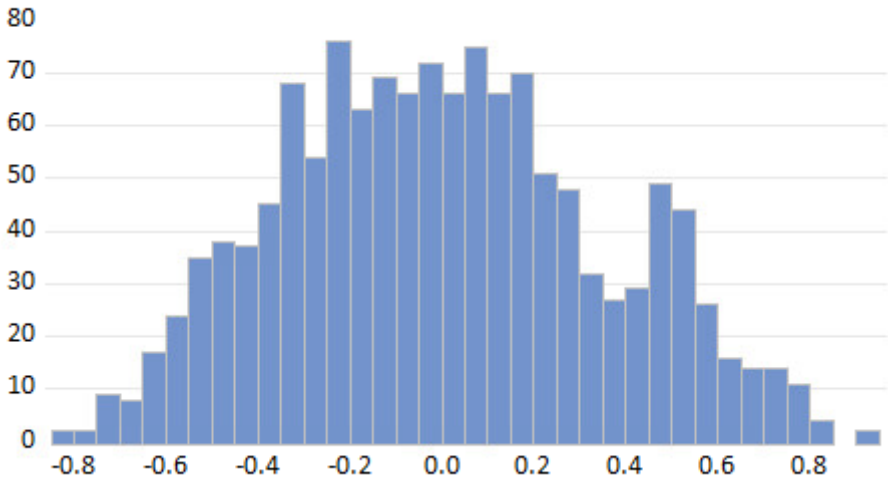


**Figure 7.** Distribution of error term (stock returns).

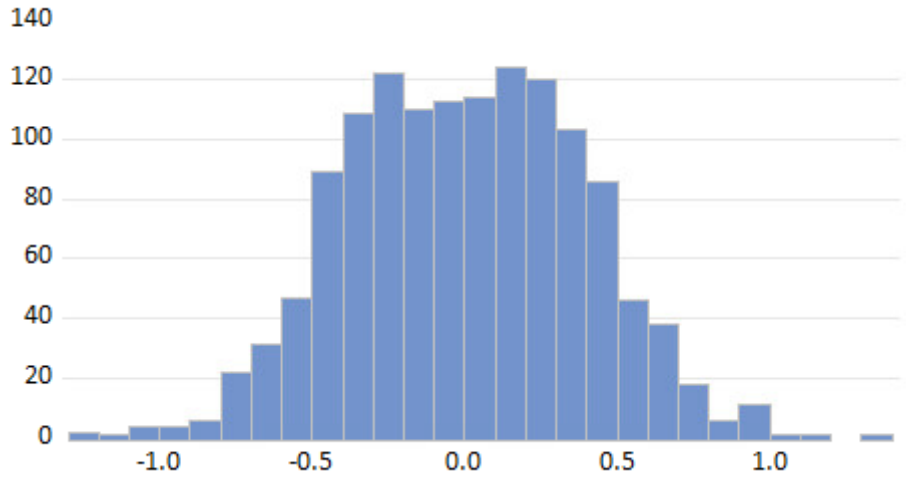


**Figure 8**. Distribution of error term (Tobin's Q).

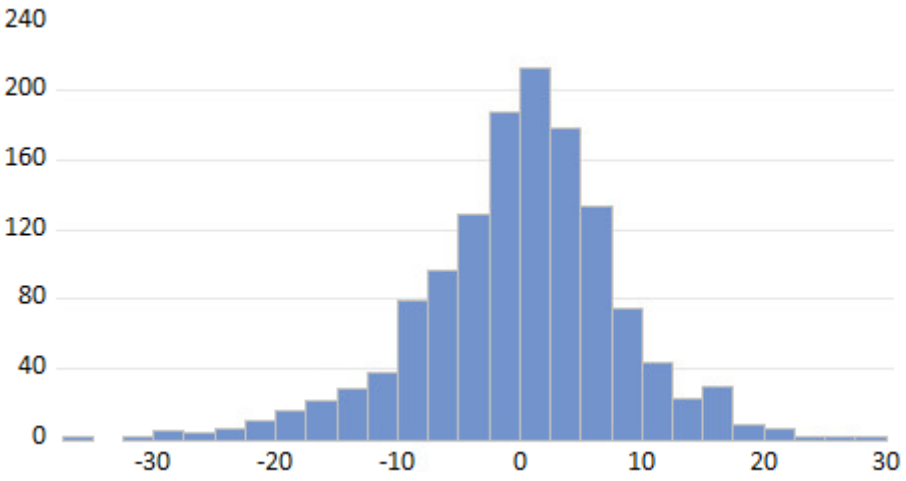


**Figure 9**. Distribution of error term (ROA).

# 5 Empirical analysis

This part of the thesis introduces the empirical results of ESG scores' impact on stock returns, ROA and Tobin's Q in Finland, Sweden, Denmark and Norway, and analyses them. First sub-chapter analyses the results of total combined ESG scores' impact on stock returns and firm performance in Nordic countries as one entity. Other sub-chapters are focused on analysing results in Nordic countries individually since this thesis also aims to find whether there occur differences in the results between the four countries.

## 5.1 Combined empirical results in Nordic countries

According to table 3 below, the coefficients between ESG scores and stock returns, Tobin's Q and ROA in Nordic countries are -0.001, -0.002 and -0.017, respectively. That means that when ESG rating increases by 1 score, for instance the Tobin's Q of a company should decrease by 0.002 units in the Nordics indicating that hypothesis two about good ESG ratings having a positive impact on Tobin's Q should be rejected. This result is statistically significant but there is no economic significance. In addition, ESG ratings do not have a statistically significant or particularly significant economic impact on stock returns or ROA either. That means that hypotheses one and three should also be rejected since ESG scores are not found to have a significant positive impact on stock returns or ROA in Nordic countries.

**Table 3**. Combined empirical results in Nordic countries.

| *Variables* | *Stock returns* | *Tobin's Q* | *ROA* |
|---|---|---|---|
| *ESG Score* | *-0.001* | *-0.002** | *-0.017* |
| | (-1.07) | (-2.46) | (-1.44) |
| *R&D* | *0.000* | *0.000**** | *-0.002** |
| | (1.32) | (5.87) | (-2.16) |
| *Beta* | *-0.021* | *-0.025* | *-2.799**** |
| | (-1.02) | (-0.84) | (-4.70) |
| *Fin.Lev* | *-0.002**** | *-0.006**** | *-0.066*** |
| | (-3.41) | (-4.30) | (-2.61) |
| *Size* | *-0.008* | *-0.052**** | *0.158* |
| | (-1.15) | (-4.83) | (0.90) |
| *IND1Serv.* | *0.100* | *0.408**** | *-0.353* |
| | (1.92) | (3.61) | (-0.21) |
| *IND2Man.* | *0.027* | *0.221** | *1.903* |
| | (0.85) | (2.55) | (1.92) |
| $R^2$ | *0.056* | *0.716* | *0.348* |

When it comes to control variables, R&D is found to have a statistically significant impact on Tobin's Q and ROA but no economic significance can be found. This suggests that R&D expenditures do not have an impact on the stock returns, market value or profitability of Nordic firms. Then again, both beta and financial leverage have a negative relation with all dependent variables. Beta has both statistically and economically significant effect on ROA whereas financial leverage has a statistically significant negative impact on all stock returns, Tobin's Q and ROA. There is also economic significance in the findings between financial leverage and ROA. These results imply that both higher systematic and unsystematic risk have a negative impact on the profitability

of firms in Nordic countries, as predicted. Especially on ROA high beta affects negatively, the coefficient being -2.8.

Firm size has statistically and economically significant relation with only Tobin's Q. The coefficient is negative indicating that larger firm size leads to lower market value but has no impact on stock returns or profitability in the Nordics. Finally, both industry dummies have positive coefficients with nearly all dependent variables though the results are showing statistical significance only with Tobin's Q. This implies that industries firms belong to do have an impact on their market value in Nordic countries.

R-squared measures how much variation in dependent variables can be explained by independent and control variables. In this thesis ESG scores, R&D, beta, financial leverage, size and industry dummies explain 5.6%, 71.6% and 34.8% of variation in stock returns, Tobin's Q and ROA, respectively. These values are relatively low indicating that ESG scores and other variables do not explain much of the variation in stock returns, Tobin's Q and ROA in the Nordics. This is no surprise since especially stock returns and ROA are not statistically significantly impacted by independent and control variables.

## 5.2 Empirical results in Finland

When examining results in Finland, it is found that ESG scores have a negative impact on Tobin's Q and ROA and neutral impact on stock returns indicating that higher sustainability leads to decreased firm performance in Finland. These results are however both statistically and economically significant only when it comes to ROA. Therefore, it can be concluded that all three hypotheses of this thesis about high ESG scores leading to increased stock returns and firm performance are rejected.

**Table 4.** Empirical results in Finland.

| *Variables* | *Stock returns* | *Tobin's Q* | *ROA* |
|---|---|---|---|
| *ESG Score* | *0.000* | *-0.005* | *-0.059*** |
| | (0.26) | (-1.78) | (-3.09) |
| *R&D* | *-0.012**** | *0.034* | *-0.396** |
| | (-5.06) | (1.06) | (-2.30) |
| *Beta* | *-0.003* | *-0.103* | *-0.937* |
| | (-0.09) | (-1.26) | (-1.16) |
| *Fin.Lev* | *-0.003** | *-0.023**** | *-0.193**** |
| | (-2.41) | (-4.41) | (-4.84) |
| *Size* | *-0.036**** | *-0.056* | *0.316* |
| | (-3.45) | (-1.32) | (0.83) |
| *IND1Serv.* | *-0.003* | *-0.061* | *1.585* |
| | (-0.04) | (-0.23) | (0.73) |
| *IND2Man.* | *-0.030* | *-0.147* | *0.608* |
| | (-0.53) | (-0.98) | (0.39) |
| $R^2$ | *0.064* | *0.535* | *0.385* |

Only financial leverage is found to have a statistically significant impact on all three dependent variables in Finland. The coefficients are negative indicating that diversifiable risk has a decreasing impact on stock returns and firm performance in Finnish companies. It is the only control variable having a statistically significant relation with Tobin's Q in Finland. When it comes to stock returns, it has statistically significant coefficients with also R&D and firm size. Both coefficients are negative which indicates that R&D expenditures as well as higher firm size result in poorer stock returns in Finnish companies. R&D impacts also ROA negatively and significantly since the coefficient between these two variables is -0.396. It can be concluded that in Finland almost all independent and control variables have a negative and statistically non-significant

impact on both stock returns and firm performance though economic significance can be observed.

## 5.3 Empirical results in Sweden

In Sweden, ESG scores have either positive or neutral impact on all three dependent variables. However, this impact is statistically significant only on Tobin's Q. The results imply that one score increase in ESG ratings would have a positive impact of 0.8% on the market value of Swedish companies. This result strengthens the hypothesis two of this thesis.

Even though R&D has a statistically significant impact on Tobin's Q and ROA of Swedish firms, there is no economic significance in the results. Beta has a statistically significant relation with only ROA, and this negative impact is also economically very significant. Then again, financial leverage affects stock returns and Tobin's Q negatively whereas size correlates both statistically and economically significantly with Tobin's Q impacting it negatively. Industry dummies have a positive impact on all stock returns, Tobin's Q and ROA in Swedish companies.

**Table 5**. Empirical results in Sweden.

| *Variables* | *Stock returns* | *Tobin's Q* | *ROA* |
|---|---|---|---|
| *ESG Score* | *0.000* | *0.008** | *0.013* |
| | (0.00) | (2.41) | (0.55) |
| *R&D* | *0.000* | *0.000** | *-0.001** |
| | (1.71) | (2.26) | (-2.42) |
| *Beta* | *0.028* | *-0.145* | *-2.207*** |
| | (0.86) | (-1.48) | (-2.63) |
| *Fin.Lev* | *-0.002** | *-0.023*** | *-0.024* |
| | (-2.53) | (-3.11) | (-0.51) |
| *Size* | *-0.005* | *-0.378**** | *-0.344* |
| | (-0.57) | (-5.76) | (-0.80) |
| *IND1Serv.* | *0.149* | *1.380*** | *1.918* |
| | (1.13) | (3.18) | (0.72) |
| *IND2Man.* | *0.073* | *1.062*** | *7.025*** |
| | (1.55) | (3.20) | (3.21) |
| $R^2$ | *0.055* | *0.629* | *0.339* |

## 5.4 Empirical results in Denmark

Also in Denmark ESG scores correlate statistically significantly and positively with Tobin's Q. That result is also economically significant indicating that ESG factors impact positively the market value of Danish companies strengthening the hypothesis two of this thesis about high ESG ratings' positive impact on Tobin's Q.

**Table 6.** Empirical results in Denmark.

| *Variables* | *Stock returns* | *Tobin's Q* | *ROA* |
|---|---|---|---|
| *ESG Score* | *0.001* | *0.024*** | *-0.009* |
| | *(0.53)* | (2.84) | (-0.57) |
| *R&D* | *0.000* | *-0.002* | *-0.010* |
| | *(1.59)* | (-1.96) | (-0.82) |
| *Beta* | *-0.061* | *-0.539*** | *-1.232* |
| | *(-1.32)* | (-3.03) | (-0.77) |
| *Fin.Lev* | *-0.003** | -0.025 | *-0.142**** |
| | *(-2.08)* | (-1.88) | (-3.78) |
| *Size* | *-0.008* | -0.279* | *0.538* |
| | *(-0.28)* | (-2.56) | (0.75) |
| *IND1Serv.* | *-0.067* | 2.343* | *10.322** |
| | (-0.45) | (2.55) | (2.18) |
| *IND2Man.* | *0.064* | -1.465** | *2.736* |
| | (0.77) | (-3.22) | (0.84) |
| $R^2$ | *0.068* | *0.685* | *0.544* |

When it comes to control variables, R&D has no statistically significant impact on any of the three dependent variables in Danish companies. Both beta and financial leverage have negative relation with all stock returns, Tobin's Q and ROA. The negative effect of beta is statistically significant on Tobin's Q whereas the negative impact of financial leverage is statistically significant on both stock returns and ROA. Also economic significance can be observed. Then again, firm size is found to impact only Tobin's Q both statistically and economically negatively. Also in Denmark industry dummies are found to have mostly positive impact on dependent variables.

## 5.5 Empirical results in Norway

Finally, in Norway there is observed neutral coefficients between ESG scores and Tobin's Q but negative coefficients between ESG scores and both stock returns and ROA. On ROA ESG ratings have also both statistically and economically significant effect. Based on these findings, rejecting all three hypotheses of this thesis is supported.

Unlike in other Nordic countries, in Norway R&D is found to have a statistically and economically significant positive impact on one dependent variable, Tobin's Q. Also in Norway beta and financial leverage have both statistically and economically significant negative coefficients with almost all three dependent variables which strengthens the assumption about higher risks having a negative impact on financial performance of firms. Then again, firm size has statistically and economically significant negative impact only on Tobin's Q indicating that larger firms have lower market value in Norway.

**Table 7.** Empirical results in Norway.

| *Variables* | *Stock returns* | *Tobin's Q* | *ROA* |
|---|---|---|---|
| *ESG Score* | *-0.001* | *0.000* | *-0.124*** |
| | (-0.49) | (0.16) | (-3.37) |
| *R&D* | *-0.003* | *0.032**** | *-0.312* |
| | (-0.26) | (5.73) | (-1.17) |
| *Beta* | *-0.135**** | *-0.462**** | *-5.162**** |
| | (-3.98) | (-5.95) | (-4.01) |
| *Fin.Lev* | *-0.001* | *-0.006**** | *-0.158**** |
| | (-0.81) | (-4.06) | (-4.50) |
| *Size* | *-0.017* | *-0.175**** | *0.630* |
| | (-0.51) | (-15.83) | (1.88) |
| *IND1Serv.* | *0.546**** | *-0.373*** | *-2.172* |
| | (5.82) | (-2.99) | (-0.23) |
| *IND2Man.* | *-0.026* | *-0.118* | *2.315* |
| | (-0.41) | (-1.79) | (1.62) |
| $R^2$ | *0.102* | *0.712* | *0.400* |

It can be concluded that this thesis finds quite similar results about the impact of ESG ratings on stock returns and firm performance between the four Nordic countries, Finland, Sweden, Denmark and Norway. Most of the results are not statistically or economically significant or they are quite weak implying that ESG ratings or control variables do not have a strong impact on stock returns, market value or profitability of Nordic firms. Especially with stock returns the results seem statistically and economically insignificant in almost all Nordic countries. That suggests that hypothesis one about high ESG scores impacting stock returns positively should be rejected.

However, there is found to be some variety between the results of the impact of ESG on the firm performance in Nordic countries. After examining Nordic countries both as one entity and as individual countries, it is observed that in Finland, Sweden, Denmark and Norway ESG scores have a statistically significant impact only on Tobin's Q and ROA. The impact on Tobin's Q is positive in Sweden and Denmark whereas in Finland and Norway high ESG ratings are found to affect ROA negatively. Then again, combined results show statistically significant negative relation between ESG scores and Tobin's Q. Some of the results show also economic significance. Therefore, it could be concluded that it is beneficial for the market value of some companies in Nordic countries to be sustainable and responsible. That suggests that hypothesis two could be partially accepted but also hypothesis three should be rejected.

When it comes to control variables, the results between four Nordic countries show quite similar results. Nevertheless, most of the results are statistically insignificant. Quite large portion of the results show economic significance but no straightforward conclusions should be drawn if there is no statistical significance. In addition, most of the control variables, except industry dummies, seem to have a negative coefficient with three dependent variables, stock returns, Tobin's Q and ROA. Based on this study it could be concluded that high R&D expenses, systematic and unsystematic risk as well as large firm size are found to have a negative impact on stock returns and firm performance in Nordic countries.

As previous literature, also this thesis finds varying results about the benefits of high ESG scores. Even though majority of the previous literature concludes that high ESG scores have a positive impact on business (Friede, Busch & Bassen, 2015), studies also state that it is challenging to unambiguously claim that good ESG ratings lead to high stock returns or good firm performance (Renneboog, Horst & Zhang, 2008; Albuquerque, Koskinen & Zhang, 2019). This thesis concludes that high ESG scores have no statistically significant positive impact on stock returns or ROA but depending on the company and country it might be beneficial for firms' market value to have good ESG ratings. Since

most of the results of this study do not find statistically significant relation between ESG scores and stock returns or firm performance, according to this thesis it is challenging to state whether high ESG scores have more positive or negative impact on firms in the Nordics. The observed negative impact could be due to Nordic countries' existing good performance in ESG which makes the positive impact of ESG improvements more limited than in less sustainable countries.

# 6 Summary & conclusion

## 6.1 Limitations and future research

As mentioned, the data of this study is constructed by relatively small sample selection of Nordic firms. Larger sample size would provide more robust and reliable results about ESG's impact on stock returns and firm performance in the Nordics. For instance, one proposal for future research could be studying companies outside the stock markets even though finding data would be much more challenging.

One remark regarding the independent and control variables is that R&D could be endogenous to ESG scores since ESG ratings are found to have an impact on green innovations (for instance Tan & Zhu, 2022). This could decrease the reliability of results. There could also be more control variables added to the regression models to see how the outcomes would change and to have broader understanding about the topic. This could improve the reliability of the results. For example, adding variables about the key drivers for Nordic countries' high sustainability status such as indexes about anti-corruption or sovereignty would be intriguing. Additionally, it would be interesting to test the causality between ESG performance and the dependent variables.

## 6.2 Concluding remarks

The importance of sustainability and responsibility is undeniable when it comes to business. As mentioned, the impact of these matters has increased due to for instance environmental and societal issues, such as climate change and human rights, legislation and shift in public opinion. Therefore, the awareness and interest towards them have also increased. In order to analyse the sustainability of firms, it can be divided into three categories which are environmental, social and governance, ESG, aspects. It is possible to rank companies based on sustainability by scoring their environmental, social and

governance approaches. One way of investing responsibly is investing in companies with high ESG scores which has gained popularity during the recent years. These ESG scores have traditionally been especially high with Nordic countries which indicates that Nordic companies are more sustainable and responsible when compared to companies in other regions. Based on the popularity of ESG investing and generally strong sustainable status of Nordic countries it could be assumed that high ESG scores have a positive impact on the stock returns and performance of Nordic companies. Previous research has varying results about the relationship between ESG and business but Friede, Busch and Bassen (2015) find large majority of previous literature having positive results. Despite the numerous studies about ESG's impact on business, previous research is lacking results about the most sustainable region, the Nordics. That is why the object of this thesis was to study if high ESG ratings have a positive impact on the stock returns and firm performance in the Nordic countries.

In line with the previous studies, this thesis contributes to the existing research by concluding that ESG ratings do not unambiguously lead to better stock returns or firm performance. However, the results imply that there is for instance a positive relation between ESG and Tobin's Q in Sweden and Denmark. That means that good ESG scores could have a positive impact on market-based firm performance in Nordic countries. Then again, results also show high ESG ratings leading to decreased profitability in Finland and Norway. Therefore, it could be concluded that it is beneficial for the market value of some companies in Nordic countries to be sustainable and responsible. However, based on this thesis it is challenging to state whether high ESG scores have more positive or negative impact on firms in the Nordics. Nordic countries are similar in several ways between each other but as Scholtens and Sievänen (2013) conclude, there also exist differences between the four Nordic countries based on their economics, finance, culture and institutions. This could partially explain the different results of this thesis between Finland, Sweden, Denmark and Norway.

A lot has changed during the past decades, gradually towards the few recent years. This can be noticed in not only corporations' sustainable goals and actions but also in theory and general atmosphere towards socially responsible investing and corporate social responsibility, not to speak ESG considerations. It was only approximately fifty years ago when Milton Friedman wrote his well-known essay about corporations' only social responsibility being maximizing the shareholder value (Friedman, 1970). After that, equally known if not even more known theory about stakeholder value has risen to one of the most discussed topics of today. Different stakeholders wish to be more engaged in decision making (for example Eurosif, 2018) and good stakeholder relations have a positive impact on companies' competitive advantage (Choi & Wang, 2009). Today, in the current social and political atmosphere, it would be challenging for companies not to pay attention to their social and environmental impact and taking ESG factors into consideration.

The sustainability of corporations has an impact on for instance their reputation, amount of taxes, access to capital and cost of capital. Therefore, different measurement for sustainability and responsibility of companies is crucial today, even more important than ever, as Ernst & Young (2020) state. That also highlights the role of ESG scoring which measures corporations' sustainability. As the fight against climate change escalates, legislation about emissions tightens and sustainable awareness increases, it could be expected that the impact of CSR and ESG considerations increase and SRI keeps growing. SRI market has become more and more diverse and as it is stated in the Eurosif study of 2018, increased awareness of social responsibility helps to advance the future growth of SRI and assure SRI being an essential investing practice that keeps increasing.

Change from the Friedman's era seems to grow. Even though it is challenging to announce whether ESG considerations do have a positive or negative impact on stock returns or firm performance, it is certain that researchers and investors will be focused on evaluating them also in the future. Companies must response to different stakeholders' demand and expectations in order to succeed which means also

integrating ESG consideration into their businesses. In addition, reporting and regulations regarding companies' sustainability and social responsibility seem to increase also in the future as does the interest of public, especially during the time of crises.

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