UNIVERSITY OF VAASA

SCHOOL OF ACCOUNTING AND FINANCE

Hermanni Laukkanen

ESG RATING AND CORPORATION FINANCING COSTS: EVIDENCE FROM NORDIC COUNTRIES

Master`s Thesis in
Finance

Master`s Degree
Programme in Finance

VAASA 2020

TABLE ON CONTENT

page

LIST OF FIGURES AND TABLES

ABBREVIATIONS

BPS	Basis Points
CSP	Corporate Social Performance
CSR	Corpora Social Responsibility
EIB	European Investment Bank
ENV	Environmental dimension of ESG
ESG	Environmental, Social and Governance
EU	European Union
GRI	Global Reporting Initiative
GOV	Governance dimension of ESG
ROA	Return on Assets
S&P	Standard & Poor`s
SOC	Social dimension of ESG
SRI	Socially Responsible Investing
TEG	Technical Expert Group on Sustainable Finance
UN PRI	United Nations Principles of Responsible Investing

UNIVERSITY OF VAASA
School of Accounting and Finance
Author: Hermanni Laukkanen
Master's Thesis: ESG Rating and Corporation Financing Costs: Evidence from Nordic Countries
Degree: Master of Science in Economics and Business Administration
Master's Programme: Master's Degree Programme in Finance
Name of the Supervisor: Timo Rothovius
Year of Entering the University: 2015
Year of Completing the Thesis: 2020 **Pages:** 114

ABSTRACT

According to the United Nations Sustainable Stock Exchange, all listed firms are expected to disclose their impact from environmental, social, and governance (ESG) practice by 2030 at the latest. The search for a relationship between environmental, social, and governance (ESG) criteria and corporation performance can be followed back to the beginning of the 1970s. Until today there have been more than 2000 empirical studies on this relation. These studies are very fragmented and most of these studies centralize either stock or corporation valuation. The large majority of studies report positive findings, and this suggests that ESG ratings affect corporate financial performance.

Despite all these studies, there have been few studies attempted to investigate the causality between ESG ratings and corporation's financing costs. Motivated by previously mentioned, this thesis's purpose is to investigate the relationship between ESG rating and corporation's financing costs in Nordic countries during the sample period of 2002-2019. Finland, Denmark, Norway, and Sweden are considered as a proxy for the Nordics and are chosen because Nordic countries are stakeholder-orientated where responsible thinking has deepened into society. The proxy for financing cost is the Cost of Debt (CoD) ratio and it is divided into public (bonds) and private (bank loans) debt which are investigated separately. The relationships are tested with OLS method with different control variables.

The results indicate that ESG rating has a significant negative relationship (i.e. lowering the financing costs) with CoD, conventional bond yield spreads and bank loan margin spreads in the Nordic countries. The results for each dimension also present almost the same findings and it is found that the negative relationship is stronger for longer-maturity debt. This thesis not only hopes to validate the claim that improved sustainability leads to a lower cost of debt but also to especially identify specific ESG metrics and debt instruments driving that trend.

KEYWORDS: ESG, CSR, Cost of debt, Conventional bonds, Bank loans, The Nordics, Financing costs

Vaasan Yliopisto
Laskentatoimen ja rahoituksen maisteriohjelma
Tekijä: Hermanni Laukkanen
Otsikko: ESG Rating and Corporation Financing Costs: Evidence from Nordic Countries
Koulutus: Master of Science in Economics and Business Administration
Maisteriohjelma: Master's Degree Programme in Finance
Ohjaaja: Timo Rothovius
Koulutuksen aloitus vuosi: 2015
Tutkielman palautus vuosi: 2020 **Sivumäärä:** 114

TIIVISTELMÄ:

Yhdistyneiden Kansakuntien kestävän kehityksen toimintaohjelman mukaan kaikkien pörssiyhtiöiden odotetaan ilmoittavan ympäristö-, sosiaali- ja hallintotapojen (ESG) vaikutukset viimeistään vuoteen 2030 mennessä. ESG:n ja yritysten suorituskyvyn välisen suhteen tutkiminen on ensimmäistä kertaa aloitettu 1970-luvulla. Tähän päivään asti on tehty yli 2000 empiiristä tutkimusta tästä suhteesta. Kuitenkin nämä tutkimukset ovat hyvin hajanaisia ja suurin osa näistä tutkimuksista on keskittynyt joko osakkeiden tai yritysten arvonmäärityksen tutkimiseen. Suurin osa näistä tutkimuksista raportoi positiivisia löytöjä, joka viittaa siihen, että ESG-luokitukset vaikuttavat yritysten taloudelliseen tulokseen.

Kaikista näistä tutkimuksista huolimatta ESG-luokitusten ja yritysten rahoituskustannuksen välistä syy-yhteyttä on tutkittu erittäin vähän. Tästä motivoituneena tämän tutkielman tarkoituksena on tutkia ESG-luokituksen ja yritysten rahoituskustannusten suhdetta Pohjoismaissa 2002–2019 vuosien välillä. Suomi, Tanska, Norja ja Ruotsi toimivat pohjoismaiden edustajina ja pohjoismaat on valittu tutkielmaan, koska näissä maissa yritysten sidosryhmien merkitys korostuu ja vastuullinen ajattelu on syventynyt yhteiskuntaan. Tutkielmassa rahoituskustannuksia tarkastellaan velan kustannussuhteen (CoD) näkökulmasta ja tämä voidaan jakaa julkisiin (joukkovelkakirjoihin) ja yksityisiin (pankkilainat) velkoihin, joita tutkitaan myös erikseen. Suhteiden välisiä riippuvuuksia testataan OLS-menetelmällä käyttäen eri kontrollimuuttujia.

Tutkielman tulokset osoittavat, että ESG-luokituksella on merkittävä negatiivinen suhde (alentamalla rahoituskustannuksia) velan kustannussuhteeseen, yritysten joukkovelkakirjojen korkoihin ja pankkilainamarginaaleihin Pohjoismaissa. Kunkin erillisen ESG ulottuvuuden tulokset esittävät myös lähes samat tulokset ja voidaan havaita, että negatiivinen suhde on vahvempi pidemmän maturiteetin lainalla. Näiden lisäksi, tämän tutkielman tarkoituksena on paitsi vahvistaa pätevyys väitteelle, jonka mukaan yrityksen kestävän kehityksen parantaminen johtaa yrityksen velan alhaisempiin kustannuksiin, myös tunnistaa erityiset ESG-mittarit ja velkainstrumentit, jotka ohjaavat tätä suuntausta.

Avainsanat: ESG, CSR, Cost of debt, Conventional bonds, Bank loans, The Nordics, Financing costs

1. Introduction

In the year 2018, there were almost 90 trillion US dollars in assets under management by Principles for Responsible Investment (PRI) signatories (PRI 2018a). This means that almost 75% of the total global institutional assets base is connected to the PRI and the investors are starting to embrace sustainable investment practices increasing pace. According to the United Nations Sustainable Stock Exchange, all listed firms are expected to disclose their impact from environmental, social, and governance (ESG) practice by 2030 at the latest (Sustainable Stock Exchanges 2018). This means that corporate social responsibility (CSR) and ESG practices are changing our economy and corporations need to take this into account.

The search for a relationship between environmental, social, and governance (ESG) criteria and corporation performance can be followed back to the beginning of the 1970s. According to Friede, Busch & Bassen (2015), there have been more than 2000 empirical studies on this relation. These studies are very fragmented and most of these studies centralize either stock or corporate valuation. The large majority of studies report positive findings and this suggests that ESG ratings affect corporate financial performance. Despite all these studies, there have been few studies attempted to investigate the causality between ESG ratings and corporation's financing costs.

According to Cheng, Ioannou & Serafeim (2013), ESG reporting is creating a positive feedback loop. This means that there is increasing transparency around corporations and its shareholders, which will lead to the changing of internal control systems and this will finally improve compliance with regulations and reporting comes to more reliable. The data will come more available for shareholders and this will reduce the informational asymmetry. Because of the lower agency cost through shareholder's commitment and increased transparency through ESG reporting, it can be hypothesized that corporations with excellent ESG rating will face lower capital restraints. This signifies that corporations could benefit from lower financing costs.

While there has been a growing amount of literature on CSR, there has been little research on the effect of CSR on the cost of debt financing (Goss & Roberts 2009 and Lubin & Esty 2010.) Authors Goss and Roberts (2009) studied this effect and they concluded that this is a very significant topic. Their research showed that firms with better social and environmental performance tend to have lower costs of capital. They used the concept Eco-premium and their research revealed that corporations in the USA can get 23 basis points lower bank loans if they do better than average in CSR score.

Motivated by previously mentioned, this thesis's purpose is to find that is there a relationship between ESG rating and corporation's financing costs. Sarwar, Samiul & Ikramul (2018), studied why banks should consider ESG risk factors in the bank lending process. The authors founded that banks pioneering in incorporating ESG factors in lending decisions are compensated through better financial performance. So, as ESG ratings are gradually integrated into bank`s risk management practices, it is challenging to quantify how large corporates` financing costs are earning them a margin discount given their ESG ratings. Essentially, this requires a study to investigate how the existing ESG rating correlates to the corporation financing costs. These financing costs include bond yields and loan margins. The expected outcome could be a cure on ESG discount on the financing costs.

Besides, most studies considering ESG are from the USA market. Authors Ghoul, Guedhami, Kmow & Mishra (2011) raised the idea in their article that this research should be made in a country where responsible thinking has deepened into society. That is why this thesis considers Nordic countries corporations. The last studies about this effect are almost 10 years old and mostly considers USA corporations. Doing this research after 10 years and from the Nordic corporations could give more updated results from this effect and it will show that should corporations, banks, and investors implement ESG ratings better into their risk management practices.

This thesis not only hopes to validate the claim that improved sustainability leads to a lower cost of debt but also to especially identify specific ESG metrics driving that trend. This

knowledge can guide corporations to prioritize their assets and resources, lowering the cost of debt not only for the bank but also for the rest of the economy, which relies on banks for capital allocation. Knowledge is truly power as they say. (Asnani 2018.)

1.1. Purpose of the study

The purpose of this thesis is to examine the relationship between ESG ratings and corporation financing costs in Nordic countries. These financing costs include corporate bond yields and bank loan margins. More accurately, the purpose is to find an answer that does banks and investors reward corporations for taking care of ESG factors and being socially responsible corporations. The ESG factors and corporate social responsibility has been the topic of countless articles in recent decades, however, the results of these countless articles have generally included contradictory. Due to these contradictory results, there is a distinct place to examine this relationship more.

There has been some research on this exact topic, but generally, the research has been done outside of Europe. It can be noticed from news and articles that European countries and especially North European countries are more incorporated with ESG and corporate social responsibility. Motivated by this, the thesis focuses on Nordic countries. Therefore, this research will show that has the Nordic corporations gain financial benefits already from being responsible. (PRI 2018a.)

To examine the relationship, empirical research is done by using three factors of ESG, environmental, social, and governance which are used on the corporate bank loan margin rates and corporate bond yields in four North European countries. This way it can be found that how low or high ESG rating affects corporation financing costs in Nordic countries. Also, this thesis is created for a case company which suggested me to study this relationship, as they can use the findings in their business.

1.2. Contribution

As mentioned in the last chapter, there has been some research on the relationship between ESG rating and corporate financing costs, however, the amount of researches is narrow and the results are contradicted. Most of these researches concentrate on the US market and few examine the European market and none examines the Northern European market. Therefore, this thesis gives an important contribution to the existing literature by examining not so familiar market for other authors. Also, this thesis gives important information for Nordic corporations and banks, on the matter that should they give more value for the ESG factors to gain better financial benefits, corporations for getting cheaper funding, and banks to attract more customers by giving better loans to responsible corporations.

1.3. Research question

In this thesis, the main point is to study, that has the corporation ESG rating affected their financing costs when the corporations have got bank loans or have published bonds. In other words, is there a relationship between ESG rating and corporation financing costs? To find an answer to this question, empirical research is needed and hypotheses that are statistically tested. These hypotheses are presented in chapter 4.5. The thesis also includes the research question to which answer will be found later in this thesis. Hereby, the research question of this thesis is written as follows:

RQ: "How does the ESG rating of a corporation affect their financing costs?"

1.4. Structure of the thesis

The thesis has the following structure: The second chapter focus on previous literature and prior empirical findings and is divided into private and public debt chapters. This chapter goes through the most important researches and findings on this ESG literature and forms the basis for this thesis. Afterward, the third chapter will give a theoretical framework for the central terms and concepts of this thesis. The fourth chapter presents the data, methodology,

regressions, variables, and research hypothesis that is used in this thesis and the fifth chapter presents empirical results that are obtained from the regression models and robustness test. The final chapter summarizes major findings from empirical results and gives a conclusion, limitations, and future suggestions.

2. Literature review

This chapter provides previous literature on the topic. As mentioned in the introduction this relationship between ESG rating and corporation financing costs is not a very studied topic in the ESG and corporate performance literature. The studies have mostly considered the association between ESG and the value of a corporation. The studies which have researched the relationship have often produced different results, hence, the results include contradictions. This chapter will introduce the most important empirical researches on this matter. Also, the following chapter contains many different terms, like Corporate Social Performance (CSP), Corporate Social Responsibility (CSR), sustainability, and ESG. These terms are used synonymously throughout this thesis because these have the same meaning and this kind of view is normal in this field of study. (Menz 2010; Sarwar 2018.)

In order to determine the relationship between ESG rating and corporation financing costs, it is required to examine how social responsibility has affected the cost of equity and investing. This relationship can help us to understand how the ESG rating might affect the financing costs. Bengtsson (2008) stated in his article that the concept of Social Responsibility Investing (SRI) emerged in the US during the 70s and early 80s and at that time ethical, environmental, and social performance of corporations started to affect financial values. However, it took 20 more years to become a global practice. The author also found that in the Scandinavian countries there is a national idiosyncrasy in SRI, which creates investors and corporations being more toward SRI practices. This point of view is important for the thesis because it might affect the empirical results.

SRI has been the topic of countless articles and there is a lot of obtained results on this practice, but often these results are contradicted. Heinkel, Kraus & Zechner (2001) made a theoretical model with two types of investors to study the SRI. Neutral investors who did not care about the ethical concerns and green investors who refuse to invest in stocks that did not meet their ethical criteria. The study revealed that, when green investors decide to boycott non-ethical corporations, their cost of capital gets higher and these corporations expected

returns are therefore decreasing. Authors Arx & Ziegler (2008) also found out in their research about stock price and CSR that corporations that are highly socially responsible are earning higher returns than corporations in the same industries that were not socially responsible. But because this matter is not that simple author's Hong & Kasperczyk (2009) found opposed results. Their study revealed that sin stocks are less analyzed by professionals than normal and ethical corporation stocks and sin stocks have higher expected returns. Therefore, following social norms can reduce the profitability of the portfolio and by avoiding SRI practices better returns could be obtained.

El Ghoul et al. (2011) were the first authors who used a large panel of U.S corporations to examine the effect of CSR on the cost of equity capital. The cost of equity capital measures the rate of return required by investors to induce them to maintain their investment in the corporation and it reflects the riskiness of the corporation's future cash flows. The authors showed that overall CSR performance is associated with a significantly lower cost of equity capital for a longer sample period and using a wider range of implied cost of capital models. Also, their study showed that corporations that are connected to "sin" industries have a higher cost of equity, and corporations that have socially responsible practices have a higher valuation and lower risk and this also supports the lower cost of equity. Author Reverte (2012) also examined the same relationship in Spanish listed corporations and found out that the effect of CSR disclosure quality is a crucial risk measure. Top-performing corporations in the CSR rating has 88 basis points less cost of equity capital than the lowest-performing corporations. The study also revealed that this effect is more pronounced for corporations that are operating in environmentally sensitive industries. This result was maintained by using Fama and French (1993) risk factor model. Both of these findings were consistent with the literature of this area. (Reverte 2012.)

Most of the studies that investigate the effect of CSR on a cost of equity capital have offered a vast amount of evidence that CSR strengthens corporation value by reducing their cost of equity capital. Other authors like Tencati & Perrini (2011) and Chava (2014) studied the CSP effect on corporation cost of equity and debt capital. To measure this effect authors

Tencati et al. (2011) used a weighted average cost of capital (WACC). The WACC represents both the overall cost of funding weighted for the components of debt and equity and the hurdle rate in capital investment decisions that involve choosing among several investment options (Tencati et al. 2011, p.141). The study clearly showed the existence of a negative correlation between CSP and WACC. By achieving better CSP corporations get better access to various sources of capital and this way lowers the overall cost of funding. Chava (2014) provided clear evidence that the environmental aspect has the most significant effect on corporation cost of capital. According to the study investors and lenders, today seem to notice environmental problems of corporations and this leads to a higher cost of equity and debt capital for the corporation. The corporations that have strong environmental stability are not benefiting from the low cost of capital, in general, but banks often charge lower interest rates on bank loans to corporations that obtain significant revenue from environmentally favorable products.

Friede et al. (2015) combined 2200 individual studies considering ESG criteria and corporate financial performance. From these studies, more than 2100 suggested a positive ESG relation. The authors mentioned that ESG outperformance opportunities exist in many areas of the market. They concluded that the orientation toward long term responsible investing should be important for all kinds of rational investors to fulfill their duties to society. Therefore, all stakeholders need to understand how to integrate ESG criteria into investment processes to harvest the full potential of value-enhancing ESG factors.

The initial focus on environmental issues has been on industrialization where manufacturing firms have been accused of destroying our environment. Sarwar et al. (2018) highlighted that banks could not be in disguise for long as their direct association with industrialization came into the forefront. Any irresponsible lending might have a negative impact on them in terms of criticism, adverse publicity, and the imposition of penalty. So if banks want to have responsible credit management, they have to add ESG factors to their lending process. They stated that responsible lending is not only a concern of the regulators and banks anymore,

investors are also aware of the ESG issues and implications of these factors for their businesses.

Since the equity capital market is recognized as more efficient for pricing corporations CSP than the credit market the number of studies considering the CSP relationship between the costs of debt is limited. This has led to the situation that there are very few large-sample empirical studies that investigate this relationship. (Erragragui, 2017.) Next, the following chapters present the existing literature about the relationship between CSR and corporation funding costs. The first two chapters present the literature based on the public debt market as the yield of conventional bonds and literature on green bonds. The third chapter considers literature based on the private market and the interest rate on bank loans. The last chapter provided the prior empirical evidence and summarizes this literature review section

2.1. CSR and public debt market

From the literature, it can be noticed that one popular way to study the relationship between CSR and the cost of debt is to study the public debt market. In the previous literature studying bonds has been much more used than studying the relationship of private debt. When this relationship has studied the measure that is used is the bond yield spread and the bond credit rating.

Menz (2010) was the first author who studied this relationship between CSR and conventional bonds yield spreads. The study included 498 bonds from European corporations from July 2004 to August 2007. The assumption was that corporations with high CSR are often regarded as stronger and less risky, and therefore, benefit from lower risk premiums. The data panel was investigated with different models and only one model gave significant results, thus, the relationship between CSR and yield spreads was rejected. The study proved that bonds credit ratings are more important for lenders than CSR measures, but the author encouraged that this relationship needs to be studied more and with different sustainability

measures. Besides, Menz (2010) argued that this study will be better in the future when CSR is more popular in the eyes of investors, lenders, and consumers.

Authors Oikonomou, Brooks & Pavelin (2014), investigated the differential impact that various dimensions of CSP have on the pricing of corporate debt as well as the assessment of the credit quality of specific bond issues. Their study showed that corporations that are doing well in CSP can decrease their cost of corporate debt with it. The study included more than 3,000 bonds issued by 742 firms operating in 17 different industries. The time period was 1993-2008. The most important dimensions were a higher level of marketed product safety, support for local communities, avoidance of controversies regarding the corporation's workforce, and quality characteristics. These dimensions can reduce the risk premia in conventional bonds and therefore decrease the cost of corporate debt. The study also revealed that the financial benefits produced from CSP accrue mainly in the long run as the link between ESG and yield spreads is more significantly negative for longer maturity bonds. According to the authors, corporate managers should be aware of the effect that their corporation's responsible posture has on the cost of debt financing and the credit quality of its bond issues.

Stellner, Klein & Zwegel (2015), also studied the relationship between CSR and conventional bonds in the Eurozone. Their main focus was to investigate the bond credit ratings and how the CSR effect to it. The study also included ESG performance comparison between different European countries, and they found evidence that country ESG performance and CSR has a link between each other. Stellner et al. (2015) argued that corporations with solid CSR will gain rewards from this measure if the corporation is located in a country where the country’s ESG performance is stronger compared to international standards. This reward will be a better bond credit rating.

Authors Capelle-Blancard, Crifo. Diaye, Oueghlissi & Scholtens (2015) did a similar study to Stellner et al. (2015), but their study focused on sovereign bond spreads. Their empirical analysis is centralized to counties that are part of an organization for economic co-operation

and development (OECD). Their main finding was that countries with excellent ESG performance tend to be less risky and thus these countries have lower bond spreads. The economically impactful effect is stronger in the long run, suggesting that a country`s ESG factors are long-deterministic concept (Capelle-Blancard et al. 2015). Besides, their study revealed that the relationship between ESG performance and bond spreads is stronger in Europe than elsewhere. Therefore, the best area to study the effects of ESG rating is Europe.

The biggest study considering the relationship between CSR and conventional bond yield spreads was made by authors Ge & Liu (2015). This study included 4260 newly issued public bonds in the USA between the years 1992-2009. Their main finding was that CSR has a correlation with lower yield spreads for conventional bonds in the US primary bond market and low CSR has a correlation with higher yield spreads. In addition, Ge & Liu (2015) supported Stellner et al. (2015) and Capelle-Blancard et.al (2015) findings that excellent CSR affects the bond credit ratings positively. The authors suggested that if a corporation has excellent CSR performance they should get funding from the public debt market because they can achieve it with lower costs.

Huang, Hu & Zhu (2018) studied the relationship between CSR and the cost of bonds in China between the periods of 2011-2015. They founded the same results that Ge & Liu (2015) suggesting that there exists a negative relationship between CSR and the cost of a bond. The authors gave several practical implications for this matter. First, because the empirical results show that corporations which are excellent in CSR are rewarded with lower yield spreads, the regulators need to create more policies to encourage more corporations to take commitment to CSR. Second, corporations that are looking for funding from the public debt market, should first take a strategic view on the CSR and incorporate it before bond issuing to reduce the cost of debt.

2.2. CSR and green bonds

This chapter will provide previous literature from quite a new subject green bond. The literature mainly focuses on its pricing and features, which differ from conventional bonds. The green bonds were first introduced to the market in the year 2007, but there is not a lot of empirical research considering them. (Tang & Zhang 2018.)

Green bonds are financial instruments that are created for a sustainable future. These bonds have a specific goal that is improving the world environment and social wellbeing. The green bonds are like conventional bonds and work in the same way. Corporations can issue these to raise capital to finance their investments. The only difference between the features is that green bonds are intended to have a positive environmental benefit. These positive benefits can be such as preventing pollution, cutting down CO2 emissions, or creating a better working environment for the employees. Green bonds are always certified by third parties. (Tang & Zhang 2018.)

Since the year 2007, the issuance of corporate green bonds has more than doubled every year. However, there is not much evidence that whether the green bonds offer more attractive risk-return payoffs than conventional bonds. Conventional bonds are classified as non-green bonds. Authors Hachenberg & Schiereck (2018) were the first to address this question by studying the daily yield spreads of the green-labeled and non-green bonds. The authors first provided evidence that there are no significant pricing differentials between green and non-green bonds. However, later in their study, they found statistically significant results for single A-rated bonds. Results indicated that A-rated green bonds are trading 3.88 bps tighter than comparable non-green bonds. The same kind of tighter results can be seen with AA and BBB-rated bonds although the findings are not statistically significant. The authors argued that despite the more expensive issuing cost of the green bonds, the issuers could potentially make up the external costs in the difference in pricing for issuing green bonds in rating classes AA, A, and BBB. Also, the authors further find evidence that the existence of an ESG rating of the issuer has a significant effect on green bond pricing.

Karpf & Mandel (2017) came to different results in their research. Their research included 1,880 US municipal green bonds and 34,100 non-green bonds from the same set of issuers and the purpose was to compare the yields of these bonds. The results revealed that green bonds trade on average at a 5 to 7 basis points higher yield to non-green bonds with comparable characteristics. The authors argued that the higher yield for green bonds is probably due to the green bonds being a newer asset class. Besides, investors might think that the green label may proxy for increased risk, and for green bonds to be attractive they require larger returns. Still, the authors believed that changes in yield could occur in the future when investors become more familiar with the green bonds.

Authors Tang & Zhang (2018) did a first worldwide empirical analysis on the reactions that the market provided when corporations increased their ESG activities. They used a dataset that included all corporate green bond issuances worldwide and green bonds were used as a proxy. Their finding suggested that when corporations issue a green bond their stock price increase significantly. This effect is stronger for new issuers than for repeated issuers. The reason for this positive return was increased institutional ownership and improved stock liquidity after the issuance of a green bond. Also, when corporations issue green bonds, they often can attract more media exposure and this might impact some investors to buy the stocks. Finally, Tang & Zhang (2018) concluded that the main advantage of green bonds is not cheaper debt financing. They founded little evidence that green bonds are issued at a lower yield than conventional bonds.

Febi, Schäfer, Stephan & Sun (2018) studied the effects of liquidity premium on the green bond yield spreads. Authors argued that because investors and corporations need to address SRI and ESG factors in their decision making, the demand for green bonds is likely to increase. Now, when there is a lack of monitoring of green bonds this can cause a shortage of green bonds supply in the market because the issuance of green bonds is less attractive than conventional bonds. This means that the issuers can offer green bonds at a lower interest rate. The authors' main result was the evidence that green bonds are on average more liquid

when compared to conventional bonds. The liquidity and the bid-ask spread measures are positively related to the yield spread of green bonds.

Recent studies considering green bond premiums were done by authors Nanayakkara & Colombage (2019). They examined the pricing difference between green bonds and conventional bonds worldwide. From the credit spreads, they recorded that investors are willing to pay at least 63 bps premium for green bonds. The findings revealed that investors appreciate green bonds and this asset class can give valuable risk diversify solutions for an investment portfolio. Issuers who can issue green bonds should supply more of these because demand is increasing, and they can enjoy significant benefits through raising capital at a lower cost. Furthermore, this study singles out that the reputation of the issuing corporation is the key reason for the credit spread. The authors suggested that the green bond issuing corporations should preserve the integrity of their green credentials. Thus, this research proves that the issuer's ESG ratings can affect yields of green bonds.

2.3. CSR and private debt market

The literature on the impact of CSR on the private debt market has only become widespread since 2010. Goss & Roberts (2011) were the first to study whether corporations with excellent ESG ratings are benefiting from cheaper private debt. The study included a sample of 3996 bank loans to US corporations, and it revealed that corporations that have socially responsible concerns pay between 7 and 18 bps more than more responsible corporations. Corporations get less attractive terms for loan contracts due to banks seeing CSR concerns as risks. Authors argue that banks provide modest incentives for corporations to correct their socially responsible behaving by demanding a higher interest rate. However, Goss & Roberts (2011) did not find significant results for high ESG rating to impact interest rates in bank loans.

Authors Kim, Surroca & Tribo (2014), and Hoepner, Oikonomou, Scholtens & Schroder (2014), did similar studies as Goss & Roberts (2011) however, only on a worldwide scale. Kim et al. (2014) study empirical results revealed that corporations get compensated with

lower interest rates on bank loans if they have a high CSR score. The study included 12 545 syndicated loan facilities from 19 countries. The time period was from 2003 to 2007. The results indicated that when there is an increase of one standard deviation in corporation CSR scores from the mean value it leads to a 24,8% decrease in the mean of loan interest spreads. Hoepner et al. (2014) used 470 loan agreements from 28 different. The data set was newer than Kim et al. (2014) used covering the periods from 2005 to 2012. Their study included country sustainability scores and they focused on environmental and social matters. The author's findings were controversial to previous results because the results were only significant for the country's sustainability score. Higher country sustainability decreases the interest rates that the banks are charging from corporations. Corporation's sustainability score does not have a significant impact on the interest rates.

Cheung, Tan & Wang (2018), also used the country sustainability perspective in their study, however, their focus was on how the relationship between ESG and bank loan pricing is affected by the degree of national stakeholder orientation. Their study included 1462 observations issued by 622 corporations in 20 countries. They found that firms with superior ESG performance are more likely to enjoy lower loan costs in more stakeholder-oriented countries that are their counterparts in less stakeholder-oriented countries. They highlighted the importance of national institutional environments in determining the economic consequences of ESG practices and corporations with superior ESG performance in more stakeholder-oriented countries are more likely to obtain bank loans with lower interest rates. Cheung et al. (2018) argued that European countries are more stakeholder-oriented countries and their results revealed that corporations that are borrowing in European countries are more likely to be getting bank loans with lower interest rates.

The country's sustainability score is part of the ESG classification and inside the environmental measure. From the previous studies, it can be seen that the environmental measure is considered as the most important measure and having the most significant impact on the bank loan interest rate. Jung, Herbohn & Clarkson (2018) studied whether banks incorporate corporation exposure to carbon-related risk into their lending decision.

Corporation's carbon emissions are part of the environmental measure. Their study included 255 corporation-year observations from eight industries between the period 2009 and 2013. Jung et al. (2018) found that if corporations are failing to respond to carbon disclosure project surveys there are positive relationships to the cost of bank debt. There can be between a 38 and 62 bps increase in the interest rates when carbon risk mapping increases for one standard deviation. Corporations that are carbon risk-aware will benefit from better environmental scores and exhibit the lower cost of debt.

Bae, Chang & Yi (2018) did a similar study to Kim et al. (2014) but they also used credit ratings as controls to determine loan spreads. Their study included 5810 syndicated bank loans from the U.S between periods 1991 to 2008. Authors found that strong CSR and weak CSR of the borrowing corporations are affecting significantly to their bank loan spreads when they used credit ratings as controls. Corporation's strong CSR performance lowers their risk and reduces the loan spread, whereas weak CSR performance increases the risk and the loan spread. Bae et al. (2018) argued that credit rating agencies have started to include CSR measures in their rating process, and this affects the loan spreads when banks provide funding to corporations.

The previous CSR and private debt literature have mainly focused on the corporate perspective as beneficiaries of acting responsibly. Sarwar et al. (2018) studied why banks should consider ESG risk factors in bank lending processes. Their sample included 30 private commercial banks that are operating in Bangladesh. Sarwar et al. (2018) study results indicate that banks are compensated with better financial performance if they incorporate ESG factors into their lending processes. The ESG factors had a significant positive influence on the bank's return on assets (ROA).

The latest study investigating ESG ratings and private debt was done by authors Eliwa, Aboud & Saleh (2019). They examined whether banks in 15 EU countries reward corporations for their ESG rating in the form of lowering their bank loan interest rates. From the sample of 6 018 corporation-year observations, the authors found that an increase in ESG

rating leads to a lower cost of debt and this is even more significant in stakeholder-oriented countries. This means that when a corporation belongs to a country in which stakeholder groups such as the government, communities, consumers, and employees are possibly to influence the corporation's different decisions, the corporations can benefit from a lower cost of debt by their ESG practices. Eliwa et al. (2019) showed that especially corporations that are located in Denmark are benefiting from the lower cost of debt. Besides, their finding suggests that the private debt market plays a very important role in motivating corporations ESG behavior.

2.4. Conclusion of prior empirical evidence

Although the literature on CSR and ESG implementation has grown tremendously, the literature of their impact on the cost of debt has not been as extensive as other same fields of studies. Hence, the results for the cost of debt include mixed evidence and contradictory. From the previous literature, it can be noticed that many professional investors have started to use ESG ratings as a corporation performance and valuation measure. El Ghoul et al. (2011) and Reverte (2012) found that corporations with strong CSR ratings have significantly lower cost of equity capital than the lowest-performing corporations. Tencati et al. (2011) and Chava (2014) found evidence that when corporations achieve better CSP they can access various sources of capital and, this way lower the overall cost of funding. They also found that the environmental aspect has the most significant effect.

CSR and public debt market literature also gives mixed results. Menz (2010) was one of the first to study the relationship between CSR and conventional bond yield spread. This study did not find any significant relationship. On the other hand, authors Oikonomou et al. (2014), Stellner et al (2015), Capelle-Blancard et al. (2015), Ge & Liu (2015), and Huang et. al (2018) found significant relationships between CSP and bond yields. Authors Karpf & Mandel (2017), Febi et al. (2018), Hachenberg & Schiereck (2018) Tang & Zhang (2018) & Nanayakkara & Comobage (2019) focused on green bonds and their pricing. Most of the authors found out that issuers ESG ratings can affect the yield of green bonds, however not

all found a significant relationship. All authors argued that they believe that changes in yield could occur in the future when investors become more familiar with the green bonds.

The research considering CSR and private debt has not received as much attention as previous matters. Authors Goss & Roberts (2011), Hopener et al (2014), and Kim et al (2014) found clear evidence that corporations can benefit from high ESG rating with lower interest rates for the bank loan. Authors argue that banks provide modest incentives for corporations to correct their socially responsible behaving by demanding higher interest rates. The results also included some controversiality because some authors highlighted the country's sustainability score. Cheung et al. (2018) also found significant results and highlighted the Nordic countries in Europe, because the relationship could be even stronger in high stakeholder-oriented countries. More recent studies from Bae et al (2018), Sarwar et al (2018), and Eliwa (2018) also strengthened previous studies by finding significant results. They also raised the role of banks and credit institutions in this relationship, because the private debt market plays a very important role in motivating corporations ESG behavior.

3. Theoretical Background

This chapter's purpose is to clarify the development and latest theories of CSR and ESG concepts as these theories become critical to develop a better understanding of the topics in the empirical part. In the first two chapters, the ideas behind CSR and how it has evolved to the current ESG concept is presented. Thereafter, the ESG theories are presented and each dimension of it. The last chapters go through the corporate debt market, green bond market, and bank loans. This chapter will also provide information on the current state of corporate social responsibility in our society.

3.1. Understanding Corporate Social Responsibility (CSR)

According to the European Commission (2001) green paper of promoting a European framework for corporate social responsibility defines CSR as:

> *"A Concept whereby companies integrate social and environmental concerns in their business operations and their interactions with their stakeholders on a voluntary basis. Being socially responsible means not only fulfilling legal expectations but also going beyond compliance and investing "more" into human capital, the environment, and the relations with stakeholders".*

Is it enough for corporations to make money or should they also take responsibility for the environment and people`s well-being? Many economic thinkers are acting skeptical about CSR. Those who are in favor of extreme market freedom believe that the only responsibility of corporations is to act so that the owners get the biggest profit. Market freedom supporters assume that the ethical choices of consumers and investors will gradually steer production to an ethical one and corporations do not need rules or controls to guide their operations. So far, the invisible hand of the market has not proven to work, because the ethics of attitudes seem to be moving very slowly to guide consumers and investors` everyday choices. (Tapanainen 2010: 3.)

The firsts CSR theories articulate that corporations have power and power requires responsibility. These theories also emphasize that society gives permissions for the corporations to operate and, therefore, corporations must serve society by contributing to social needs. This does not only mean wealth creation. Corporations are always part of the social environment, so corporate reputation is also linked to the respect of the social community where it operates. This relationship is the basis for the generalization of CSR theory (Crane, McWilliams, Matten, Moo & Siegel 2008: 49-51.)

CSR is a corporate commitment to take care of the environmental, social, and commercial consequences of their operations in a responsible way and line with community assumptions. CSR is part of corporate governance and every part of the different business units like supply chain, manufacturing, operations, human resources, and safety. Some aspects of CSR are often required by law, however, most of it is voluntary for the corporations. By doing voluntary CSR corporations can make a positive impact on their surrounding society. (Crane et al. 2008: 50-51.)

CSR is widely defined as the practical application of sustainable development in business. The corporation should stand responsible for their environment, or at least their immediate surrounding because the consequences and responsibilities of doing business in one way or another affect the surrounding nature, the immediate environment, and the whole society. The content of CSR varies within countries and from one culture to another, for example, depending on the role society plays in providing basic services such as health care or social security. As a rule, CSR refers to activities that go beyond the requirements of the law. Society expects corporations to at least comply with minimum legal requirements, but more and more, voluntary, transnational social responsibility. (Tapanainen 2010: 3-5.)

According to author Ata Ujan (2019), CSR is behaving like a symbol for corporations. This symbol plays a very essential role in business and implementing CSR to business strategies and processes have the power to make a way for long-run success in business. However, if CSR does not create meaningful impacts on corporate stakeholders the CSR practices can

fail or be not so effective. This means that CSR practices bust be designed to address social problems that are real and are faced by the community and society where the corporation operates. Tapanainen (2010) argued that the biggest and most pressing CSR issues are related to globalization and relocation of production to countries with labor being very cheap and where there are no occupational safety and environmental laws.

As corporations are looking for new ways to boost their performance with CSR, they still face many challenges in integrating CSR into all parts of the organization. Implementing sustainability is fundamentally very different than implementing new business strategies and processes in the organization. These business operational changes are related to increased profit and the link is very clear. For sustainability, the intention is to capture excellence in both financial, environmental, and social performance simultaneously. This creates a paradox because often measuring and managing are very challenging. (Epstein 2018; 23-25.)

For the corporations to implement CSR into their business activities Epstein (2018) argues that sustainability needs to be an essential component of corporate strategy. Corporation performance measurement, management control, and reward systems should support sustainability strategies and the leadership must be devoted to sustainability. Management needs to see sustainability not only as compliance and risk avoidance but also as a possibility for competitive advantage and innovations. Most importantly corporation culture, people, and mission should support sustainability strategies. The motivation for CSR implementation can be diverse because corporations often have different goals. Some corporations try to make the world a better place, however, some can try to achieve a better relationship with stakeholders, improve health and safety standards, or improve their brand image. CSR implementation increases trust and gives a responsible image of the corporation. (Epstein 2018; 24-26.)

3.2. Evolution of CSR

The concept of CSR has a long and impressive history. A challenge is to decide how far back into history to burrow to begin discussing the concept. An acceptable case could be made for about 70 years since the world has changed so much in that time and this has developed the theory, practice, and research. Before the 1950s, there were theories and literature considering social responsibilities, however, the concept of CSR developed and got attention in the 1950s, therefore this evolution chapter starts from here. (Carrol, 1999.)

In the 1950s the modern period of literature on this concept started, when Bowen (1953) wrote a book where he argued that businessmen have social responsibilities because the corporations that they are managing have a central role in the citizens' lives. He argued that businessmen have obligations to pursue policies and to make decisions that are in line with the values and aspirations of society. In the 1960s, the CSR literature expanded, and the most prominent author was Davis (1960 & 1967) who aroused the thought that social responsibility should be seen in an organizational context. Socially responsible business acts can bring economic gain in the long run for the corporation. Also, Davis (1969 & 1967) argued that when one`s acts might affect other interests there are ethical consequences and this arises social responsibility. Another important author in the 1960s was Walton (1967) who wrote a book titled “Corporate Social Responsibilities”. Walton emphasized that if corporations want to implement CSR, this will include voluntarism and corporations need to accept costs that possibly do not give any measurable financial returns.

In 1970, more authors became interested in the CSR concept, and the 1971 Committee for Economic Development (CED) that was composed of business people, professors, and other educators who got into this concept. The CED noted that corporations exist to serve society, their future will depend on the nature of management response to the public changing expectations. The CED also started many social movements within corporations like worker safety and environmental programs (Carrol, 1991). This decade included many important research papers from Steiner (1971), Davis (1973), Sethi (1975), and Carroll (1977), and the

mentions about Corporate Social Performance (CSP) as well as CSR increased. Before this decade the social responsibility was a manager's task but through these authors, the view started to shift towards social responsibility to be corporations' task. In the 1980s, alternative themes and more research surfaced. Authors like Strand (1983), Watrick & Cocharan (1985) Aupperle, Carroll & Hatfield (1985), and Epstein (1987) focused on measuring the CSR and to study the relation to financial performance. Many new models were introduced, and the theme of business ethics became popular. In the 1990s, the CSR concept had become a significant part of business practice and language, but few unique contributions were made to the concept. For the most part, the authors dealt with themes like corporate citizenship, stakeholder theory, and business ethics. (Carroll, 1999.)

The new millennium has shown that CSR is here to stay. According to Carroll (2015), four strong trends can be seen surrounding the CSR concept and these are changing our society and the ways how corporations operate. These trends are increasing academic interest, globalization of CSR practices, strategic harmony with financial goals, and institutionalization of CSR within corporations. This academic interest has increased the number of specific conferences on CSR. Many other fields of studies such as accounting, management, real estate, and marketing have started to accept CSR concepts into their practices. CSR has become the central concept in both developed and developing countries. Today corporations are so visible worldwide through the internet and other media platforms, and the reputational risk has become very important. This reputational risk leads corporations to implement CSR practices in their business. The challenge is that corporations are so multinational nowadays and they must take into consideration the issues of many countries. Because of the institutionalization, the CSR practices, and policies are now deeply integrated into a corporate structure. Besides, when corporations accept the CSR concept this often changes their major business direction and corporations are looking for financial success from this direction. It can be seen that the corporations and society's focuses are changing from the financial success to CSR view. (Carroll, 2015.)

Traditionally CSR was associated with large corporations, however, the concept has begun to spread to small and medium-sized businesses (SMEs) practices (Louche, Idowu & Filho, 2010; 10). Corporations have become aware that many of their stakeholders like, media, non-governmental organizations, and government are observing their socially responsible acts and are ready to hold them accountable for mistakes. Besides, investors have started to consider sustainability factors in their investment decisions and there are many and increasing amounts of organizations that provide sustainability indices. (Louche et al; 10-12.)

In the 2000s and 2010s, CSR has become a very significant and recognizable concept. Many organizations and initiatives started to develop during these decades like, United Nations Global Compact (UNGC) that was launched in July 2000. Today this initiative is the world's largest corporate sustainability initiative and its mission is to call corporations to support the environment, human rights, and anti-corruption. With over 9 500 corporations and 3 000 organizations, signatories based in over 160 countries this initiative has effectively forwarded the CSR concept. UNGC has developed ten principles that guide the behavior of the signatories and this has brought global attention towards CSR. The ten principles of the UNGC are presented in table 1. (UNGC Progress Report, 2019.) Other important initiatives and organizations pushing the CSR concept forward during these decades have been the European Commission (EC), Principles of Responsible Investing (PRI), Paris Agreement, United Nations (UN) Sustainable Development Goals (SDG), and Global Reporting Initiative (GRI). In addition, international certifications like ISO 26000, ISO 9001, and ISO 14001, are developed to address CSR and provides organizations with a standard framework they can adopt to build CSR programs. The most likely scenario is that CSR will continue its upward and onward path and slowly become more and more institutionalized into business practice regardless of the industry sector. As one observes what is taking place around the world, even in developing countries, this continued growth and acceptance globally is a predicted outcome. (Latapi, Johannsdottir & Davidsdottir, 2019.)

Table 1. The ten principles of the United Nations Global Compact. Source UNGC (2019)

Human rights
1. Businesses should support and respect the protection of internationally proclaimed human rights.
2. Make sure that they are not complicit in human rights abuses.
Labour
3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
4. The elimination of all forms of forced and compulsory labor.
5. The effective abolition of child labor.
6. The elimination of discrimination in respect of employment and occupation.
Environment
7. Businesses should support a precautionary approach to environmental challenges.
8. Undertake initiatives to promote greater environmental responsibility.
9. Encourage the development and diffusion of environmentally friendly technologies.
Anti-Corruption
10. Businesses should work against corruption in all its forms, including extortion and bribery.

3.3. CSR reporting

The purpose of CSR reporting is to provide information to corporate financiers, consumers, and credit rating agencies. Financiers such as lenders, investors, and guarantors need to be aware of the business impact on society and the environment, and how these factors will be reflected in business in the future. According to generally published recommendations, CSR reporting should include a description of the corporation, its vision for sustainable development and operations for sustainable development as well as indicators of the corporation operations in a sustainable manner development. (Michelon, Pilonato & Ricceri, 2015.)

In its current form, corporate responsibility reporting is a combination of environmental, social, and economic challenges that the corporation faces in its business operations and

which it can influence with their actions. Reporting can be an independent report or it can be combined with the corporation's annual reporting. Michelon et al. (2015) also found that the content of corporate responsibility reporting has changed over the years. Previously, corporate reports contained numerical information such as how many tons the corporation has succeeded in reducing water and carbon emissions, and how many employees it has sent to training programs. Nowadays instead of numerical information, corporations tell more about the effects of these reductions and training is for their business and the society where they operate.

According to a study by KPMG (2017), more and more corporations are integrating information on corporate responsibility for annual reporting. About 78 percent of the world`s best corporations believe that CSR is important to their investors. The number has risen significantly as in 2011 only 44 percent of corporations included CSR in their financial reports. Besides, all industries have increased their reporting on CSR since reporting is at least 60 percent in each sector. The study also shows that corporations are increasingly aware of human rights and are working to reduce emissions, and thus the corporations are fighting against climate change.

When examining corporation reports and statements, it is discovered that the corporation is trying first to improve its core business, and only thereafter, to function in the society, economy, and with the physical environment. CSR reporting has been expanded and developed previous corporation reports that contained information about the corporation's environmental activities and their impacts, such as energy use and waste recycling, as well as social activities and impacts such as those of worker's health and safety, the effect on local culture and charity. (Michelon et al. 2015.)

3.4. The roots of the ESG concept

During the last decades, a new phenomenon ESG has become a widely used and recognized risk factor for many professional and institutional investors. Responsible investors have

started to use these criteria in addition to conventional financial criteria in investment decisions and strategy. This means that they take into account environmental, social, and governance criteria. This shift to responsible investing has started banks and other investment institutions to develop responsible investment funds and to integrate ESG criteria into their different processes (Jemel, Louche & Bourghelle 2011). Authors Jemel et al. (2011) argued that an increasing number of organizations and initiatives try to generalize the integration of ESG criteria into mainstream valuation and investment practices.

The popularity of incorporating ESG criteria is inspired by many emerging sustainability initiatives. One of the most well-known is the Principles for Responsible Investment (PRI) launched in April 2006 with the ambition to provide a framework to incorporate ESG issues into mainstream investment decision-making and ownership practices (Jemel et al. 2011). These emerging initiatives try to inspire corporations to integrate ESG criteria into investment analysis and to their different processes. In the year 2019, The PRI had more than 2000 signatories globally in over 60 countries. Table 2 presents the six principles of PRI that the signatories must follow. (PRI Annual Report, 2019.)

Table 2. The Principles of Responsible Investment. Source PRI Annual Report (2019)

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

As can be seen from previous, ESG criteria has become very important for investors, banks, and institution, this suggests that corporations ESG performance is related to their valuation, financial performance, and risk (Gerard, 2019). Studies show that higher ESG scores are

related to higher stock values, higher profitability, and lower risk, especially, when a corporation does positive ESG events. From the corporation's point of view, their main goal is to produce profit for their shareholder and reduce risk. Authors Giese, Lee, Melas, Nagy & Nishikawa (2017) study three different transmission channels on how ESG information embedded within corporations is transmitted to the equity market. These channels are cash-flow, idiosyncratic risk, and valuation. They found that high ESG-rated corporations are more competitive and can generate abnormal returns, leading to higher profitability and dividend payment. High ESG-rated corporations are better at managing corporate-specific business and operational risk and therefore have a lower probability of suffering incidents that can impact their share price. This means that their stock prices display lower idiosyncratic tail risk. Besides, high ESG-rated corporations tend to have lower exposure to systematic risk factors. Therefore, their expected cost of capital is lower, leading to higher valuations in a DFC model framework. (Giese et al. 2017.)

Like it can be seen, the ESG movement has created lasting institutional changes and the investment sector has moved toward new values, practices, and norms. At the same time, new ESG rating agencies have emerged due to the high demand for reliable ESG data on corporations. Asset managers, institutional investors, banks, and other stakeholders have started to evaluate a corporation's non-financial performance. This continued demand and the rise of new rating agencies has led to a tedious problem that is currently being addressed at the highest decision-making level. This problem is that there is no standardized ESG methodology. This means that the ESG data vary among the providers and the rating agencies can use many different methods to get their data. The most well-known ESG data providers include MSCI, KLD, Thomson Reuters, and Bloomberg. (Avetsiyan & Hockerts, 2017.) To address this problem the European Commission is developing the project under the name Taxonomy. One goal of this project is to develop frameworks for standardized ESG reporting focused on private corporations. This framework will create a standardized ESG Methodology. (EC Taxonomy Technical Report, 2019.)

In addition to the lack of frameworks, ESG has also faced criticism from other issues. Gerard (2019) argued that there is an issue of materiality. This means that not all dimensions of ESG performance consider all the corporations. The dimensions of importance differ between corporations because of their industry. He also argued that when corporations have a high ESG score, they are more exposed to ESG risk when negative ESG events happen. Corporations with low ESG scores do not seem to exhibit this risk or it is not significant. Besides, it is hard to decide which of the dimensions is the most important and what is valued by the investors. The recent years have also demonstrated that there is no doubt that environmental and social issues become more prominent as a major global risk. (Gerard, 2019.)

The ESG measurement purpose is to capture supplementary dimensions of corporate performance that are not revealed in accounting data. Often the financial statement lacks the information for investors and management about the value of the brand, safety, reputation, quality, workplace culture, know-how, strategies, and other assets. Hence, ESG dimensions catch a broader scope of non-financial data on environmental, social, and corporate governance and this data can be used to evaluate a corporation's management, behavior, and risk. Therefore, the next three sub-chapters deal with the three different dimensions of ESG that are Environment, Social, and Governance. These chapters will provide information about what the different dimensions often consist of and what these represent.

3.4.1. Environmental dimension

Pollution and global warming have recently shifted internal and external stakeholders to show increasing interest in the environmental performance of corporations. This is because both stakeholders tend to suffer if a corporation produces pollution in their environment. Corporations should use best management practices to lessen, waste, air emissions, water discharges, and spills, and take care of the biodiversity surrounding them. According to Thomson Reuters Refinitiv (2019), the most important things that corporations should consider are preventing climate change, using natural resources wisely, reducing pollution

and waste, and finding new environmental opportunities that their industry can provide. The environmental dimension should be higher consider for corporations that operate in environmentally sensitive industries. These are, for example, engineering, mining, transportation, and textile production. The corporations that adopt high environmental standards early on beyond what is legally required will outperform corporations that do not. This environmental performance is likely to have a positive impact on corporate financial performance. (Tarmuji, Maelah & Tarmuji. N. 2016; Sassen & Hinze, 2016.)

The environmental dimension rating purpose is to measure the corporation's impact on its living and non-living environment like land, air, and water, as well as to the complete ecosystem. It represents a corporation's effectiveness and commitment towards reducing environmental emissions, supporting the research and development of eco-efficient products or services, and achieving efficient use of natural resources in its production process (Thomson Reuters Refinitiv 2019). Therefore, it considers many issues like the total amount of waste, C02 emissions, total water withdrawal, amount of environmental R&D expenditures, environmental supply chain monitoring, and use of nuclear energy. (Sassen et al. 2016.)

Strong environmental performance and high score in ESG environmental dimension can improve the value of the corporation and attract new stakeholders like investors. By applying environmental performance to corporate operational activities, they can achieve reasonable cost savings, especially in the long term, and reduce the risk that might arouse from environmental issues. In today’s world, environmental protection, eco-efficiency, and socio-environmental development are necessary for big corporations, and taking care of the environmental dimension is highly important if a corporation wants to operate in the long term. Besides, the financial institutions have started to implement this dimension into their policies, procedures, and standards for financing projects. If a corporation has low environmental scores, the institution might not provide project-related corporate loans or financing is much more expensive. (Tarmuji et al. 2016.)

3.4.2. Social dimension

The next dimension of the ESG rating is social performance. Social responsibility has been for a long time the subject of debates. Corporate social relationships can be very extensive and therefore very difficult to measure. Thomson Reuters Refinitiv (2019) categorizes the social pillar to include workforce, human rights, community, and product responsibility. Corporate social responsibilities can include legal, ethical, and economical aspects, and consumers, environment, employees, and shareholders can suffer from social issues. Corporations need to adapt to a responsiveness philosophy to succeed in this dimension. According to Tarmuji et al. (2016), social performance can also be defined as a construct that emphasizes a corporation's responsibilities to multiple stakeholders, such as employees and the community, in addition to its traditional responsibilities to economic shareholders.

The social dimension score's purpose is to measure the corporation's ability to generate loyalty and trust with its employees, customers, and society. Sassen et al. (2016) argued that it is a reflection of the corporation's reputation and the health of its license to operate. The social score measures a corporation's operations and management effectiveness and commitment towards building excellent products and services that are safe for the customers, maintaining diversity, taking care of human rights, maintaining reputation within the community, and providing equal opportunities for their employees. Also, a corporation needs to provide a high-quality, healthy, and safe workplace for its employees. To achieve a high social score, corporations can't be a part of sinful industries like tobacco, gambling, and weapon. Corporations can boost their score with donations, doing fair-trade, flexible working schemes, dropping down injury rates, and supporting human rights for example. (Sassen et al. 2016; Thomson Reuters Refinitiv 2019.)

Strong social performance and high ESG score in the social dimension can improve the value of a corporation and attract new investors that appreciate social contributions. In addition, corporations with high social scores have an easier time attracting new employees because the corporation invests in employees. According to Tarmuji et al (2016), corporations with

low social scores have higher financial performance than corporations with a moderate score, however, firms with high scores have the highest financial performance. This supports the theoretical argument that stakeholders can transform social responsibility into profit and for example, Walmart became more attractive for socially responsible investors when Walmart announced that they will restrict the types of firearm ammunition.

3.4.3. Governance dimension

The last dimension of ESG rating is corporate governance. A good corporate governance system is an essential element in optimizing the performance of a business in the best interests of shareholders, limiting agency costs, and favoring the survival of corporations (Tarmuji et al. 2016). Thomson Reuter Refinitiv (2019) categorizes governance to include management, board independence, compensation, and corporate behavior. The corporation follows these frameworks to ensure good governance and to be responsible. Therefore, if a corporation wants to succeed in the governance dimension, they need to have sustainability management. Because corporate governance is closely related to management it has a strong influence on corporation performance. The corporate governance dimension sees the board of directors as one of the most important elements in the corporation and organization executives needs to support the board's performance. (Tarmuji et al. 2016.)

The corporate governance dimension purpose is to measure corporations' processes and systems that aim to ensure that their executives and board members act in the best interests of corporate shareholders. It measures how effective and committed a corporation's management is and do they follow the best practices. Therefore, the score measures balance in the board structure, the establishment of necessary board committees, compensation policies, shareholder rights, and how management adds financial and non-financial aspects into corporate strategy and vision. Besides, international governance standards and data transparency regulations guide the corporation's governance behavior. (Tarmuji et al. 2016; Thomson Reuters Refinitiv 2019.)

A strong corporate governance score shows that corporation has transparency and acts ethically. Besides, these corporations have better self-regulation and their boards are the right size and diverse. Sassen et al. (2016) argue that corporations with high governance score has often lower risk and corporations that suffer from higher risk have incentives to strengthen their corporate governance to avoid potential damage to the corporation. Simplified corporate governance refers to the system by which the corporation is managed and controlled. If this system is great, their governance score will be increasing, and corporations can dodge scandals like Volkswagen`s emission test and Facebook´s misuse of data scandals.

3.5. The market for corporate debt

The volume of corporate debt has rapidly expanded worldwide since the early 1990s, growing faster than equity financing and gross domestic product (GDP) (Cortina, Didier & Schumkler, 2020). Corporations obtain financing from different sources but most of the financing is the form of bank loans and bonds. According to Cortina et al. (2020), in the US the bank loans account for 37 percent and conventional bonds 63 percent of the total domestic debt. The global debt market exceeded $255 trillion in 2019. From this global debt, the global bond market accounts for over $100 trillion. The global equity market only accounts for $75 trillion and it can be noticed that the global bond market is even bigger than the global equity market. Even though the corporate debt market is a far bigger and more important source of financing for the corporations, still, the equity markets get more presence in media and academics. (Institute of International Finance, 2019.)

The fact that firms obtain financing from different sources highlights the importance of analyzing the different types of financing to capture the amount and terms of financing at the country and corporate levels. Some authors have already started to focus on the idea that corporations borrow in both bond and loan markets and switch between them (Cortina et al. 2020). Authors De Fiore & Uhlig (2011) studied the differences between the US and Europe corporate debt markets. Authors found strong empirical evidence, that in the US the share of bank finance in total finance is lower relative to Europe. Besides, corporations in the US often finance their projects with equity. From this, it can be concluded that European

corporations are more willing to finance their projects with bank loans and bonds. Because the corporate debt market can be separated into private and the public debt market, this thesis handles separately the bank loans as private debt and corporate bonds as public debt. The corporate bond market also includes green bonds because research on these is a very current topic. The similarities and differences between these two different debt markets are presented in the next three sub-chapters.

Many findings suggest that reporting of ESG information provides value-relevant information for banks and investors that minimizes information asymmetry concerns. This results in lower interest rates charged on corporate loans. When corporations minimize the amount of interest paid on business debt, this improves their overall economic position and enabling them to focus on growth (Dunne & Mc Brayer, 2019). This idea is the basis of this thesis and that is why we also need to understand the different features of the debt market. The following sub-chapters will help us to better understand the empirical chapter.

3.5.1. Bank loans

This thesis focuses on corporate bank loans for two primary reasons. First, bank loans are an important source of corporate financing. The flows of funds data from the European Commission Final Report (2019) indicate that in 2017, there have been $800 billion in net debt security issuances and only $211 billion for equities in Europe. Given the significance of private bank debt as well as the growing number of this kind of financing, it is important to understand how the structure and pricing of private debt works. The second reason is that since bank loans are so prevalent and according to several studies, banks have started to use ESG rating for loan pricing, this way it is possible to find interesting results in the empirical part.

Bank loans are used by corporations not only to finance investments like real estate, intangible assets, or financial investments in stocks but also to maintain liquidity or rollover of debt. Bank loans are easier to renegotiate than corporate bonds and often corporations with

lower credit quality choose to finance through bank loans (De Fiore et al. 2011). De Fiore et al. (2011) study reveals that the interest rate spreads on bank loans are higher in the US than in Europe, while there are no significant differences in spreads on bond finance. The ratio of bank loans to debt securities is approximately eight times larger in Europe than in the US, reflecting a larger reliance of US corporations on financing through equity rather than debt. This is the reason why this thesis considers European Nordic countries.

The lending process is complex and involves many different factors that determine the cost of the loan. Lending is not just a matter of making a loan and waiting for payments. Especially, for large corporations, it includes monitoring and close supervising. According to Koch & MacDonald (2015), there are two important parts to good lending. The bank needs to assess the borrowers' commitment to repay loans and their ability to pay the loan. The commitment to repay the loan is more important because if the repayments fail, the bank will have to take over the collateral and this can be a bad alternative for the bank. The commitment can be measured with a good evaluation of the borrower character, clarifying the purpose of the loan, and researching the borrowers' history in paying prior debts. The ability to pay the loan can be measured by assessing factors such as gains, losses, non-operation income, and total assets. Normally, the fundamental objective of corporate lending is to make profitable loans with minimal risk. Banks also have different capital constraints, liquidity requirements, and rate of return objectives. (Koch & MacDonald; 497, 2015.)

Other important factors affecting the cost of the loan are loan-specific factors. These include, for example, loan amount, maturity, collateral, and covenants. Corporate loans are made to businesses to assist in financing working capital needs. The need for the loan can be seasonal or permanent. These factors affect the loan interest rate. For a higher amount of loan the interest rate often decreases, if the risk seems reasonable. Of course, in the event of bankruptcy, the bank will lose more and banks need to consider this risk. In terms of maturity, the interest rate increases when the time period is longer. This is reasonable because there is a stronger probability for the corporation to fail. Maturities of bank loans are shorter than debt capital markets and typically do not extend beyond 5 years and eventually 7 years, on

an unsecured basis (European Commission Report, 2019). The collaterals and covenants often decrease the interest rates because the loans are secured and banks will lose less in the case of bankruptcy of their corporate customer. (Koch & MacDonald; 512-517, 2015.)

The last factor that affects the loan price in addition to the corporate and loan-specific factors are condition factors. These factors can be the current economic condition, local demographic trends, industry competition, and business cycles. Inflation and GDP can be great measures of the current state of the economy. Also, changes in currencies can affect pricing. Because the risk of economic condition affects the spread of the interest rates, this has to be controlled in the empirical part of this thesis. That's why Euro Interbank Offered Rate Euribor is used. Euribor measures the interest rate that each European banks are willing to lend to each other. (Koch & MacDonald; 518-520, 2015.)

The bank loan can be provided by only one or by several banks. When many banks are connected to one loan that is called a syndicated loan. Syndicated loans represent an important part of corporate financing. A syndicated loan is financing offered by a group of lenders and is developed because often a single bank cannot manage alone when a large loan is needed. When the loan is divided with a group of banks the credit risk is spread between them. The reason for syndicate loans is often merger acquisition, buyout, and initial public offerings (IPOs). (European Commission Final Report, 2019.)

According to European Commission Final Report (2019), the demand for green bonds has increased in recent years and interest in other types of green loans has grown. To meet this demand, banks have taken initiatives to publish green corporate loans. These green loans are used to finance specific investments with environmental benefits. Therefore, green loans are provided for borrowers that have a positive impact on sustainable development. These loans are connected with different interest rates depending on the sustainability performance of the debtor. (Weber & Remer; 100, 2011.) Green loans can be provided for corporations connected to renewable energy, fair trade, environment, organics, health sector, green housing projects for example. (European Commission Final Report, 2019.)

The three distinct areas of corporate risk analysis can be conducted into three questions according to Koch and MacDonald (2015):

1. What risks are inherent in the operations of the business?
2. What have managers done or failed to do to mitigate those risks?
3. How can a lender structure and control its risks in supplying funds?

When evaluating these three questions it is easy to notice that the ESG factors are closely connected to these, because it has a close relationship with risk. In summary, banks evaluate corporate management, operations, industry, size, financial ratios, cash flows, and corporate financial conditions.

3.5.2. Bonds for corporations

Corporate issuers have increasingly relied on primary corporate bond markets in recent years as a permanent source of funding, to the detriment of the loan market (European Commission, 2017). US and European corporations are the major actors in primary corporate bond markets. In 2018, US Corporations made up 35% of global issuance, while European corporations made up to 20%. The total amount of issuances in Europe was $400 billion. Because corporate bonds are very significant and increasing in the European corporate debt market, studying these in the empirical part can also give very interesting results. (OECD, 2019.)

A bond is a large loan that is issued by a corporation and sold to investors. The bonds are traded both on and off the stock exchange. It is important to know that bonds are debentures, so they can be bought and sold between the issue and the repayment of the loan. The issuer corporation seeks the best possible secondary market for the bond because it increases investor interest in the bond and usually also reduced the cost of the bond. When the corporation issues bond it commit to pay interest payment to the investors and at the end of the loan period a pre-agreed amount. The loan period is called maturity. Interest payments

are called coupon payments. The loan amount that is paid at the maturity is called the nominal value of the bond. (Knupfer & Puttonen; 54-55, 2018.)

The pricing of the bonds is subject to the same rule as any other expected cash flow. Investors expect to receive certain coupon payments and a nominal amount at the time of maturity. In exchange for these cash flows, the investors pay the issuer the current value of the bond. The price of a bond that is paying a coupon can be calculated with some of the discounted cash flows:

$$1)\quad P_0 = \frac{C}{1+r} + \frac{C}{(1+r)^2} + \cdots \frac{C}{(1+r)^n} + \frac{PV}{(1+r)^n},$$

Where P_0 is the current price of the bond, C are the coupon payments, PV is the pair value of the bond, r is the discount rate and n is the number of periods. The amount obtained by this formula is that which the investors are prepared to pay to the corporation in return for a promise to get interest and nominal value. (Knupfer & Puttonen; 82-84, 2018.)

For bond investors usually, the most important indicator is bond yield. Yield presents the return of the bond by comparing the interest paid on the bond with the price paid on the bond. This means that when an investor buys a bond at its pair value, then the coupon interest is the same as the yield. Bond yield and price goes to different directions, when the bond price rises, yields fall, and vice versa. Often it is measured as yield to maturity (YTM). YTM is the best measure of the bond return because it gives a holistic view of the bond`s returns. (Ge et al. 2015.)

There can be different types of bonds and extreme examples are the so-called zero coupon loans, where the investor`s return is determined solely by the difference between the nominal value and the market price. Therefore, no coupon payments will be made. (Knupfer & Puttonen; 82-83, 2018.) Bond issuers can also be governments and investors use these as safer investments because there is no significant change that the government cannot pay back their debts. When comparing debt instruments, bonds have typically smaller issuance sizes

but are issued at longer maturities than syndicated loans. In advanced economies, bond issuances are on average 42 percent smaller and 5.3 years longer term than syndicated loan issuances (Cortina et al. 2020). Raising capital through corporate bonds is often a cheaper and more flexible option and the corporation does not need to give collaterals for banks. Besides, the corporation can choose where they will use the money raised with bonds and they don't have to declare the funds. By choosing bonds, corporations can diversify their financing and they are not dependent on one bank. (Ge et al. 2015.)

Factors that affect bond pricing and yields are diverse. Determining factors are current and expected macroeconomic factors and bond-specific factors. The macroeconomic factors include, for example, central bank monetary policy, market conditions, inflation, employment, economic growth, and exchange rates. The bond-specific factors include credit quality of the issuer, coupon, and spread to the relevant benchmark security, bond terms and covenants, and business prospects. The effect of ESG rating on yield is studied in the empirical chapter. Recent literature shows that ESG rating has a strong impact on the issuer`s credit quality so this can reveal some interesting results. (European Commission, 2017.)

3.5.3. Green bonds

According to Gerard (2019) Green bond are a special class of fixed-income instruments that satisfies ESG criteria. Green bonds are designed to address key areas of environmental concern such as air and water pollution, climate change, and loss of natural resources and biodiversity. This means that often issuing corporations are operating in an industry that is connected to renewable energy, transportation, sustainable waste management, clean water, and biodiversity conservation. The first green bond was issued in 2007 by the European Investment Bank (EIB) and by June 2019 the total outstanding amount was $628 billion. Europe is leading in the issuance of green bonds with 40% of the global issuance. This is an important factor for this thesis, as the research focuses on the Nordic countries in Europe. (EU TEG Report, 2019.)

The debt financing markets are constantly evolving, and the last couple of years have been considerable growth in sustainable financing and green bond issuances. The global interest has shifted towards ESG issues and it was fitting that this asset class emerged more strongly in 2019. The green bonds can be issued by banks, governments, or corporations. When a green bond is issued it needs to be certified by third parties. This can become heavy and costly for the corporation. Therefore, the corporation needs to do research that will they benefit from the issuance of their green bond. Otherwise, the pricing of green bonds works the same as a conventional bond. (Tang et al. 2018.)

Because of the higher costs involved in issuing a green bond, it is harder to determine which factors affect its yield. Tang et al (2018) argued that positive green bond announcement returns might occur. First, corporations can achieve cheaper financing costs, because investors with green mandates may seek to hold green bonds to boost their ESG rating. This interest can push up the green bond price and true this mechanism lower the cost of debt for the corporation. Besides, corporations can get good media coverage from their green act and this can attract potential investors and give a valuable long-run picture of the corporation. This green bond pricing effect is studied in the empirical chapter.

Flammer (2018) examined corporate green bonds and the industries where the issuers operate. She found out that green bond issuers are on average larger than other bond issuing public corporations. Furthermore, green bond issuers tend to be industry leaders in ESG performance. She also found out that issuers are more likely to operate in industries where the environment is financially material to their operations and green bonds are more prevalent in Europe compared to the US. According to the Climate Bonds Initiative Report (2018), the Nordic countries are at the forefront of defining “green”. There has been a huge growth of the Nordic green bond market and Nordic countries seem to adopt green bond financing. In Sweden the outstanding amount issued in 2018 was €10.2 billion, Norway €2.7 billion, Denmark €2.3 billion, and Finland €1 billion.

3.6. Credit rating

A credit rating is needed when defining corporate debt risk premium. Generally, corporations that own the same credit rating, pay a similar risk premium on their loan. Corporations get their ratings from credit rating agencies that operate in international markets. The credit rating also considers country risk where the corporation operates which means that countries are also rated. The most known international credit rating agencies include Standard & Poor`s (S&P), Moody`s, and Fitch. The credit rating generally describes the agency estimate of a corporation's ability to repay the loan granted to them and the likelihood of default. Evaluation is based on qualitative and quantitative information. Besides, credit ratings are made for investors who make their investment decisions based on these. Sometimes giving the estimate can be hard for agencies because of the availability of information, but still, their ratings offer a guideline for the investors. (Knupfer & Puttonen; 151-154, 2018.)

In the international market, corporate loan margins depend on credit ratings. The difference between the highest credit rating and the worst investment grade BBB loans has around 40-90 basis points difference, which is 0.4-0.9 percentages. For junk bonds, the corporation must pay 450-570 basis points or 4.5 to 5.7 percentages of premiums. The risk premiums required by the market naturally vary from year to year (Knupfer & Puttonen; 153, 2018). To control credit risk in the empirical part, the Standard & Poor`s ratings are used. Therefore, the following table explains the S&P credit rating system. According to Attig, El Ghoul, Guedhami & Suh (2013) S&P credit ratings criteria specifically incorporate CSR-related criteria into their rating assessments, hence, using their criteria in the empirical part might give interesting results. The following table also illustrates how the credit rating transformation is done for the empirical part.

Table 3. S&P credit rating and transformed rating. Source Knupfer & Puttonen et al (2015)

S&P Rating	Description	Transformed rating
AAA	Debt rated AAA has the highest rating. The capacity to pay interest and principal is extremely strong.	20
AA+ AA AA-	Debt rated AA has a very strong capacity to pay interest and repay principal. Together with the highest rating, this group comprises the high-grade class.	19 18 17
A+ A A-	Debt rated A has a strong capacity to pay interest and repay principal. However, it is somewhat more susceptible to adverse changes in circumstances and economic conditions.	16 15 14
BBB+ BBB BBB- BB+ BB BB-	Debt rated BBB is regarded as having adequate capacity to pay interest and repay principal. Whereas it normally exhibits adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity for pay interest and repay the principal for debt in this category than in higher-rated categories. Those bonds are medium grade obligations. BB indicates the lowest degree of speculation	13 12 11 10 9 8
B+ B B- CCC+ CCC CCC-	B indicates the highly speculative and CCC the highest. Although such debt is likely to have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions.	7 6 5 4 3 2
CC D No Rating	CC indicates very high levels of credit risk and debt rated D is in default, and payment of interest and/or repayment is in arrears.	1 0 0

The financial crisis of 2007 highlighted the importance of credit ratings and their management. This not only applies to mortgages only but including loans taken by small and medium-sized corporations, that are difficult to classify. For this reason, new practices have been incorporated into the credit rating process and one of them is corporate responsibility. The researchers want to know if the credit risk will go up when the corporation is facing environmental and social challenges (Weber & Remer; 98, 2011). Weber & Remer (2011)

demonstrated that the rate of correct credit default predictions improves about 7.7 percent if sustainability criteria are added to conventional credit risk indicators. The results suggest that the incorporation of sustainability indicators in the credit risk rating process has some positive impacts on the lender, especially by reducing the costs of credit defaults.

Authors Attig et al. (2013) studied the relationship between CSR and credit ratings. They documented a significant positive impact of CSR on corporate credit ratings in terms of both an aggregate CSR score and the scores on the individual components of CSR. These results recommend that corporations should invest in their CSR activities, which increase a corporate credit rating, and this will lead to a decrease in the corporate financing costs. This will also lead to an increase in corporate value and hence shareholders` value. Attig et al. (2013) also suggested that the CSR investments that matter most for corporate credit ratings that are socially desired and directly related to a corporation's primary stakeholders.

3.7. Sustainable Banking

Many sectors in our economy produce pollution. However, the banks do not pollute. Banks are a relatively clean sector and the only pollution comes from paper, water, energy, and employee travel usage. The way how banks can act sustainable manner is to consider their products. The users of these products have an impact on the environment and to be sustainable, banks must interference with their clients` activities. Banks could suffer from a negative reputation if they were connected to debtors that had a negative environmental image or were known to have a negative environmental impact (Weber & Remer; 97, 2011). All the pollution caused by corporations who are financed by banks is the responsibility of banks. (Bouma, Jeucken & Klinkers; 90-92, 2001.)

The sustainable banks do not look for the highest financial rate of return, but the highest sustainable rate of return. By following this guideline, they will be profitable in the long run. Banks also need their shareholders to share this same vision. Still following this guideline can be hard, especially for the large banks, because this means that they should stop the bulk

of their current activities. Ending the financing of their clients will lead to a loss of profit. However, when other shareholders start to recognize the importance of CSR, this sustainable bank view can be achieved. (Bouma et al; 90-95, 2001.)

The term sustainable development means meeting the needs of today`s generation without compromising the ability of future generations to meet theirs. Sustainable banking, therefore, should be interpreted as the decision by banks to provide products and services only to customers who take into consideration the environmental and social impact of their actions (Bouma et al; 101, 2001). Banks have a significant indirect impact on this matter because they lend money to corporations that can harm future generations. This is why banks should incorporate and apply environmental, social, and governance criteria's to their corporation evaluations and loan policies. This means that responsible lending is the key to be a sustainable bank. This idea is the whole purpose of this thesis. The next chapters will show that have corporations gain the advantage of having excellent ESG ratings with better financing costs. This thesis also should show that corporations management should incorporate ESG factors into their processes and both banks and corporations can be finally fully sustainable.

4. Data and Methodology

This chapter purpose is to describe the sources of data as well as the methodology used in this thesis. The first chapter address to describe the sample data consisting of ESG, financial, bond, green bond, and corporate loan data that are used as dependent and independent variables. In addition, this chapter presents descriptive statistics. After the data has been introduced, the conversation shifts to methodology and regression models. This section includes the theoretical framework of OLS regression and other necessary methods that are implemented into regression models. These methods are used to retrieve as accurate results as possible. In the last chapters, the regression variables are introduced, and the development of hypotheses is presented.

Because this thesis's main focus is to find evidence from Nordic countries, I use publicly listed corporations in Finland, Denmark, Norway, and Sweden as a proximate for the Nordics. In line with previous studies, financial corporations are excluded because they are facing accounting regulations, specific disclosure, and financing policies. (Goss & Roberts 2011; Kim et al. 2014; Sassen et al. 2016; Hamrouni, Uyar & Boussada 2019 & Eliwa et al. 2019.) Therefore, the data consists of non-financial listed stock indices of Helsinki, Copenhagen, Oslo, and Stockholm. The data is annual and it covers the period from 2002 to 2019. This period is the sample period of this study. From this sample, an unbalanced panel data is created.

The main research question of this master`s thesis is to find out, that have corporations with excellent ESG ratings benefitted from better financing costs in Nordic countries. Corporations have many ways to get financing and hence this thesis use many different proximates. To find data for different proximates, many databases have been used. Most of the ESG and corporate-level financial data are obtained from the Thomson Reuters Asset4 - database and Thomson Reuters Worldscope database. In addition to these, the bond data is also obtained from the same data source. The green bond data is obtained from Dealogic database platform. This database is used by many investment banking professionals. The

latest ESG and corporate loan data is obtained from the case company. The name of the case company is not published in this thesis and hence some parts of the data is hidden from publicity. Other studies have collected their corporate loan data from the Thomson Reuters LPC DealScan database. Unfortunately, this data source was not available, however, using the case company data will solve this problem.

As most of the ESG matters have just come to the surface during the last decade the data includes data points that have no available observations. The data have been imported into the Eviews econometric analysis tool and Eviews excludes the missing data from the panel data regression. This way more proper results can be obtained.

4.1. Data

To test the hypothesis of this thesis, a few requirements are needed considering the sample data. The corporations need to be large publicly traded corporations because this able to approximate the financing costs better. Furthermore, when corporations are publicly traded their operations and information are more transparent.

Environmental, social, and governance data

The ESG dataset is obtained from two different databases as explained previously. The ESG ratings are combined to fulfill the years without the rating. This is acceptable because the ratings are created the same way in the Thomson Reuters Asset4 -database and the case company database. The rating measures are collected by their analysts from annual reports, CSR reports, sustainability reports, corporation websites, news sources, and other publicly available sources. The level of corporations' environmental, social, and governance pillars are rated on a scale from 0 to 100, where the lowest rating is 0, and the highest rating is 100. The databases also produced the economic rating pilar, but it is excluded as the economic perspective has secondary importance in the ESG academics and therefore it is omitted. The databases compute the overall ESG rating by weighing the environmental, social, governance, and economic component based on their weights. This has the same scale as the

previous pillars. This overall weighted score is kept because banks and investors see this rating as a good estimate of corporate social responsibility.

Initially, the data set consists of 762 corporations, however, most of them have not been evaluated for their ESG performance and they lack an ESG rating. Therefore, these corporations have not been considered in the research. To ensure that the data includes each corporation only once, all of the indices have been checked for duplicates. For example, all of the duplicate corporations that are listed both in Nasdaq Helsinki and Nasdaq Stockholm have been removed. Because of the data limitations, all the corporations with at least one year of ESG data are selected for the final sample. This final sample includes altogether 303 unique corporations. The final sample is an unbalanced panel dataset. The following Table 4 presents the description of the sample with information about the initial and final sample.

Table 4. Description of the sample.

	Number of listed firms	**Number of firms with ESG rating**
Nasdaq Copenhagen	84	44
Nasdaq Helsinki	103	47
Nasdaq Stockholm	472	145
Oslo Stock Exchange	103	64
Total	762	300

Table 5 presents the descriptive statistics for the four ESG ratings by indices and industry. In Panel A, the countries with the highest average rating are Nasdaq Helsinki and Nasdaq Stockholm, and with the lowest rating Nasdaq Copenhagen and Oslo Stock Exchange. Panel B presents the rating for industries. Industries with high average ratings are Agriculture, Oil, and Gas, and Technology whereas low ones are Aerospace, Defence, Automotive, and Mining. By taking a closer look at the environmental aspect, the same pattern for high and low can be noticed. This is surprising because normally the Oil and Gas industry is often

recognized as an industry where the environmental aspect is not the strongest. This may come from the fact that Oil and Gas corporations in Nordics are taking care of their environmental matters. It can be also noticed that Agriculture is the top, suggesting that in this industry corporations have an interest in applying strong environmental standards. By examining the governance rating, it shows that it has the lowest values in both Panels. Low governance ratings are widely recognized in the literature and one possible reason for that is that corporations do not recognize this rating as important as the other two.

Table 5. Descriptive statistics for ESG dimensions by indices and industry

	Environmental Rating	**Social Rating**	**Governance Rating**	**ESG Rating**
Panel A: Indice				
Nasdaq Copenhagen	62.54	61.01	45.62	58.15
Nasdaq Helsinki	78.95	73.44	57.07	76.32
Nasdaq Stockholm	68.09	63.33	51.06	63.37
Oslo Stock Exchange	51.28	53.28	49.71	52.47
Total	65.89	62.85	50.89	62.86
Panel B: Industry				
Aerospace and Defence	51.86	66.94	23.51	36.85
Agriculture	65.39	63.23	49.70	63.08
Automotive	62.95	59.70	48.49	58.85
Beverage, Food, and Tobacco	61.59	59.20	47.24	58.16
Chemicals and Plastics	63.89	60.98	48.67	60.81
Construction	63.32	60.97	48.33	60.58
General Manufacturing	64.53	61.54	49.86	61.54
Healthcare	62.91	60.42	49.33	60.26
Entertainment and Leisure	62.83	60.17	48.53	59.92
Mining	62.07	59.52	49.13	59.02
Oil and Gas	65.35	62.36	50.59	62.39
REITs	62.76	60.19	49.34	60.04
Retail and Supermarkets	64.26	62.28	48.51	61.86
Services	65.14	62.15	49.39	62.11
Technology	65.29	62.27	50.85	62.35
Transportation	63.80	61.09	49.86	60.89
Wholesale	62.05	59.62	49.27	59.09
Total	65.89	62.85	50.89	62.86

This table presents the summary statistics for the ESG data sample. Panel A presents data sample by country and Panel B by industry.

Table 6 represents the distribution of ESG ratings across the years. From the table, it can be noticed that the number of ESG ratings increases pretty steadily over the sample period. In the year 2018, the number of corporations rated tripled compared to the year 2002. The reason for this is that the ESG ratings have properly begun to become more widespread after the 2007–2009 financial crisis and in the last years especially the environmental aspect has started to raise its head. In addition, the data from recent years have been supplemented with case company data because Thomson Reuters were not available to provide much data for the years 2018 and especially year 2019. From the table, it can be concluded that the importance of ESG ratings has increased and corporations have started to give more value to corporate social responsibility.

Table 6. ESG ratings distribution across the sample period

Year	N
2002	81
2003	82
2004	103
2005	123
2006	122
2007	126
2008	128
2009	129
2010	135
2011	137
2012	138
2013	139
2014	143
2015	162
2016	167
2017	185
2018	266
2019	110
Total	2476

Corporate Financial data

Information for corporate-specific variables is obtained from Thomson Reuters Worldscope database. This database provides one of the largest datasets about corporation financial information in the world. This financial information has adjusted only for the corporations that have an ESG rating between the years 2002-2019. This dataset was the largest and it contains 7 different variables and the data is annual. This data also includes the cost of debt (CoD) dependent variable that serves as the main variable of this thesis and it is calculated for 236 corporations.

Bond data

Information on conventional bonds is also obtained from Thomson Reuters but from the Datastream database. The initial dataset consists of 857 corporations with new bond issuances in the period 01.01.2002 and 31.12.2019, and after matching the bonds with a corporation with available ESG rating 76 corporations with bond issuances remain. To calculate conventional bond yield spread a treasury bond yields are needed to make the difference. Therefore, the German Treasury bond is chosen because it can be considered the safest sovereign bond in Europe. The data is derived from the Deutsche Bank Eurosystem. Table 7 represents the final sample splitting it by indices and industry. (Ge & Liu 2015.)

Green bond data

As the Green bond data is very recent, and its adequacy and quality are very substantial the data sample remains low. The initial data sample included 444 new green bond issuances and the data is obtained from Dealogic database platform. Although there is great interest in the Nordic towards green bonds the amount remains low and most of the new issuances are for Nordic country cities or government projects. Therefore, after matching the green bonds with corporations with available ESG ratings, only 16 corporations can get a match. This amount

cannot be considered as a significant sample and therefore, the green bond research focuses mainly on literature and on supplementing statistics. Table 7 represents the final sample splitting it by indices and industry.

Corporate loan data

The data selection for bank loans is retrieved from the case corporation and it is classified. Other studies have collected their bank loan data from the Thomson Reuters LPC DealScan database which is widely recognized as a good data source (Bae et al. 2018). The initial dataset from the sample indices in period 01.01.2002 to 31.12.2019 consists of 30 474 loans, and after correcting for the corporations with an ESG rating 102 corporations are matched. This data mainly considers the years 2017-2019. The case company was not able to provide earlier data. This data limitation significantly affects the interpretation of the results, but through this data, it might be possible to find interesting findings. Table 7 provides a detailed composition of the final sample by indices and industry.

When looking at table 7 summary statistics it can be noticed that most of the data is from corporations that are located in Sweden. Therefore, it can be concluded that Swedish corporations are the most active in using public and private debt. This may also be due to the fact that Sweden has the largest population. When comparing the industries, it can be concluded that Beverage, food and tobacco, general manufacturing, services, and technology corporations prefer to finance their activities more with private debt. Agriculture and automotive industries mostly prefer public debt. Real estate investment trust (REITs) prefer to use green bonds.

Table 7. Data sample for variables by country and industry

	Bank Loans	Corporate Bonds	Green Bonds	Cost of Debt Ratios
Panel A: Country				
Denmark	17	1	2	41
Finland	29	20	3	45
Norway	13	26	2	62
Sweden	43	29	9	144
Total	102	76	16	292
Panel B: Industry				
Aerospace and Defense	1	1	0	1
Agriculture	2	7	1	9
Automotive	2	6	1	11
Beverage, Food, and Tobacco	10	5	1	17
Chemicals and Plastics	1	3	0	5
Construction	7	4	1	23
General Manufacturing	15	9	0	38
Healthcare	6	2	0	31
Entertainment and Leisure	5	3	0	11
Mining	1	2	0	5
Oil and Gas	5	8	3	23
REITs	9	6	6	35
Retail and Supermarkets	2	1	0	4
Services	11	6	0	22
Technology	14	4	2	32
Transportation	4	6	1	14
Wholesale	7	3	0	11
Total	102	76	16	292

This table presents the summary statistics for the data sample. Panel A presents data sample by country and Panel B by industry.

4.2. Methodology

The purpose of this thesis is to examine the relationship between ESG rating and corporation financing costs in publicly listed corporations in the Nordic countries during the sample period 2002-2019. To study this relationship six models are created. One model for both public and private debt as a combined, two models for the public debt market considering conventional bonds and green bonds, and one for the private debt market as the bank loans. Lastly, two models to study top and bottom performers. By studying all three different corporate financing possibilities and combined versions at the same time should give answers to the research questions. As this thesis follows Goss and Roberts (2011), Oikonomou et al. (2014), Hoepner et al. (2016), and Erragragui (2017) in the sense of researching the relationship of ESG rating and corporation financing costs, the methodologies are similar. Hence, the main methodology of this thesis is ground on the pooled Ordinary Least Square (OLS) method. According to the previous authors this method can be used for each model to get the best comparability. This method is also preferable if observations are independent, which is the case considering bond issuances and bank loans, as these are issued irregularly. Also, all the regression models are controlled for heteroscedasticity in the error terms by using White-Hinkley robust standard errors and all continuous variables are winsorized at the 1% and 99% level to control for outliers. Without the winsorizing, the outliers could affect the estimation results significantly. (Goss and Roberts 2011; Oikonomou et al. 2014 & Hoepner et al. 2016.)

The OLS is a statistical method for estimating the different parameters of a multiple linear regression model. The OLS estimates are retrieved by minimizing the sum of squared residuals and for OLS to be as specific as possible, it has five Gauss-Markov Theorem assumptions (Wooldridge 2016: 764-765). To get unbiased regression estimators the following first four assumptions need to be fulfilled. The fifth assumption fulfills the regression model variables to be the best linear unbiased estimators (BLUE). It needs to clarify that the following underlying assumptions are not violated, hence, this thesis tries to follow this Theorem as well as possible. (Woolridfe 2016: 764-766.)

The first assumption is that the multiple linear regression model (MLR) is linear in parameters (Woolridge 2016: 93). To get this assumption to hold there needs to be a relationship between the independent and dependent variables. Therefore, this assumption is handled with a good selection of variables. The second assumption is that the observations are randomly selected from the population (Woolridge 2016: 93). Because this thesis uses unbalanced panel data this assumption will hold. The third assumption states that no perfect collinearity should exist among independent variables (Wooldridge 2016: 93). This multicollinearity would exist if an independent variable is a perfect linear function of another independent explanatory variable. Hence, a test for showing the correlation between the variables is implemented. The fourth assumption states that the error terms and independent variables should not exhibit correlation. (Wooldridge 2016: 93.) For this assumption, a random effect test is implemented and the expected value of the error term is zero. This thesis also utilized Fixed Effects to control for the potential endogeneity issue. The fifth assumption concentrates on homoscedasticity of the error terms, stating that the variance of the error terms should be constant (Wooldridge 2016: 93). For this assumption, this thesis implements the coefficient covariance method of the White cross-section.

4.3. Regression models

The following chapter includes all the regression models used in this thesis. The first model serves as the basis for this thesis because it investigates the financing costs as a whole. Following models 3, 4, and 5 divide the financial costs into different parts and investigate their effects and relationships. These first four models serve as the first stage of regression models and their methods follow the same pattern, the only differences are in the dependent and added explanatory variables. In the second stage regression models, 6 and 7 are presented.

The first regression model of the first stage investigates whether the ESG rating or any of its dimensions explains the cost of debt. This model includes both public and private debt and it is a more simple model compared to the following ones because it does not include other

explanatory variables than the corporate-specific ones. The following regression model follows Erragragui (2017) model as:

(2) $\text{CoD } i,t = \alpha + \beta 1 \text{ E}SG\ i,t + \beta 2\ Env\ i,t + \beta 3\ Soc\ i,t + \beta 4\ Gov\ i,t + \beta 5\ (\text{CV } i,t) + \text{Fixed effects} + \varepsilon\ i,t$,

here the dependent variable is the CoD, which is the cost of debt issued at time *t* by corporation *i*. CoD include all interest-bearing and capitalized lease obligations both short and long-term debt and it is calculated as the logarithmic ratio between financial expenses and the total amount of financial debt (Erragragui 2017). According to Erragragui (2017) and Hamrouni et al. 2019 many corporate accounting variables are highly skewed and therefore, it is important to conduct a natural logarithmic transformation on some of them. Coefficient $\beta 1$ represent the main explanatory variable and coefficients $\beta 2$, $\beta 3$, and $\beta 4$ each of its dimension in models 2-5. The coefficient $\beta 5$ represents the control variables (CV) for a corporation *i* at time *t* for each model. Furthermore, all the models include Fixed Effects to control for year and industry and coefficient μ represents error term. This model use data only from the same source, hence, there should be no significant data limitations. ESG and corporate-specific explanatory control variables are explained in the following chapter.

The second regression model investigates whether *ESG* rating or any of its dimensions explains the conventional bonds yield spreads. Especially, it is used to investigate what kind of relationship ESG rating and conventional bond financing costs have. The following model, based on previous literature (Oikonomou et al. 2014; Ge & Liu 2015; Stellner et al. 2015 and Huang et al. 2018), is applied:

(3) $Yieldspread\ i,j,t = \alpha + \beta 1 \text{ E}SGi,t + \beta 2\ Env\ i,t + \beta 3\ Soc\ i,t + \beta 4\ Gov\ i,t + \beta 5\ (\text{CV } i,t) + \beta 6\ (\text{Bond-specific CV } i,j,t) + \text{Fixed effects} + \varepsilon\ i,t$,

where the dependent variable *Yieldspread i,j,t* is the natural logarithm between the conventional bond yield and the German Treasury bond yield with the same maturity at time

t for bond j by corporation i (Oikonomou et al. 2014). Coefficient $\beta 6$ represents the conventional bond-specific variables. Since yield spreads might be affected by positive skewness the yield spreads are log transformed. Bond-specific explanatory control variables are explained in the following chapter. (Oikonomou et al. 2014; Ge & Liu 2015 and Stellner et al. 2015.)

The third regression model investigates whether the ESG rating or any of its dimensions explains the green bond yield spreads. This model follows the previous one and the only difference are the Green Bond-specific control variables.

(4) $$\textit{Green Bond yieldspread } i,j,t = \alpha + \beta 1 \text{ E}SG\ i,t + \beta 2\ Env\ i,t + \beta 3\ Soc\ i,t + \beta 4\ Gov\ i,t + \beta 5 \text{ (CV } i,t) + \beta 6 \text{ (Green Bond-specific CV } i,j,t) + \text{Fixed effects} + \varepsilon\ i,t\ ,$$

In this model, the dependent variable is the *Green bond* y*ieldspread i,j,t.* and the natural logarithm between German treasury bond yield is also applied. The green bond-specific control variables are explained in the following chapter.

The last regression model of the first stage investigates the relationship between ESG rating and its dimension with the cost of bank loans. This means that the focus has shifted towards the private debt market. To investigate this relationship the following model from (Kim et al. 2014; Erragragui 2017 and Bae et al. 2018) is used:

(5) $$\text{Margin}spread\ i,j,t = \alpha + \beta 1 \text{ ESG } i,t + \beta 2\ Env\ i,t + \beta 3\ Soc\ i,t + \beta 4\ Gov\ i,t + \beta 5 \text{ (CV } i,t) + \beta 6 \text{ (Bank loan-specific CV } i,t) + \text{Fixed effects} + \varepsilon\ i,t\ ,$$

where *Marginspread i,j,t* is the natural logarithm at time *t* for loan *j* by corporation *i*. Since margin spreads might be affected by positive skewness the spreads are log transformed. The margin spread is quoted in bps (Bae et al. 2018). The bank loan-specific control variables are explained in the following chapter. All these variables of the first stage affect corporation financing costs and combining the results should give us a whole picture of the possible financing benefits from ESG ratings. (Erragragui 2017 and Hamrouni et al. 2019.)

In the second stage of the regression models, this thesis tries to find whether low and high ESG ratings reflect the cost of debt. As the CoD data sample is the widest and it combines public and private debt, this regression is only done for this dependent variable. The independent variables used in the model are high and low overall ESG ratings and its dimensions, which expresses whether the ESG rating is in the top 25% or bottom 25% of the sample. The regression models are constructed as follows:

(6) $\text{CoD}_{i,t} = \alpha + \beta 1\ \text{ESG High}_{i,t} + \beta 2\ \text{CV}_{i,t} + \text{Fixed effects} + \varepsilon_{i,t}$

(7) $\text{CoD}_{i,t} = \alpha + \beta 1\ \text{ESG Low}_{i,t} + \beta 2\ \text{CV}_{i,t} + \text{Fixed effects} + \varepsilon_{i,t}$

Similarly to model 2, CoD is the cost of debt issued for corporation *i* at time *t*. Coefficient $\beta 1$ in model 7 represents the high performers of ESG that belong to the top quarter of each ESG variable Environmental, Social, and Governance. Likewise in model 8, the $\beta 1$ coefficient represents low performers of ESG that belong to the bottom quarter of each ESG variable. Coefficient $\beta 2$ represents the control variables in both models. Furthermore, both models include Fixed Effects to control for year and industry and coefficient μ represents error term.

Chapter 5 presents the results and analysis of the findings.

4.4. Regression variables

This chapters describe the regression variables used in this thesis. From the regression model chapter, it can be recognized that this thesis use four different dependent variables, and the single most important explanatory variable is ESG rating. All the other variables are used as controls.

4.4.1 Control variables

ESG control variables

Like mentioned in chapter 4.1 the ESG ratings are based on a scale from 0-100. 0 indicates the lowest score and 100 the highest. This thesis also includes a model where the ESG ratings are transformed into percentile ranks. When investigating the lowest and highest ESG rating relationship should give more significant results according to the literature. Also, investigating each dimension separately might give interesting results on how banks and investors might appreciate one dimension compared to another. Figure 1 shows a recap of how the different dimensions are built.

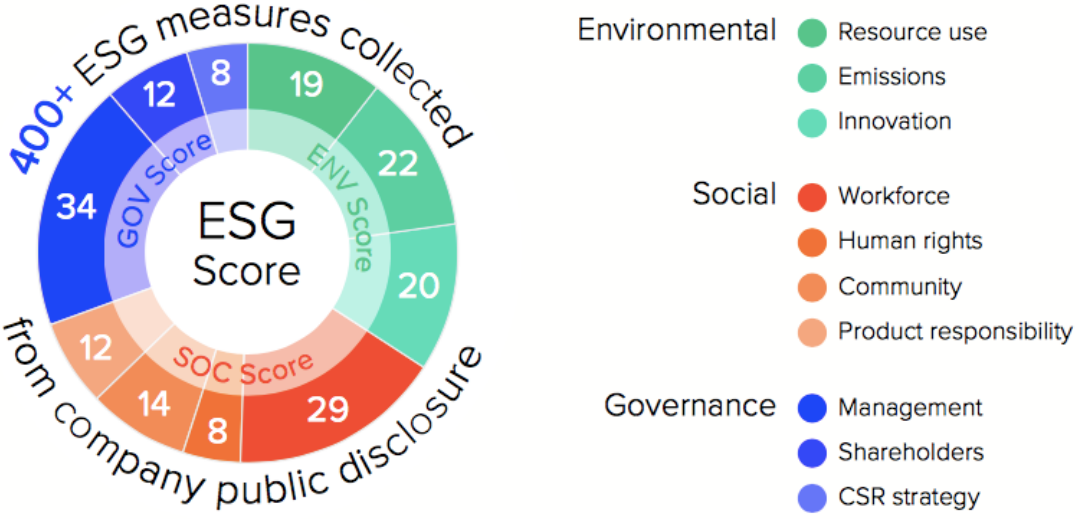

Figure 1. ESG rating dimensions. (Thomson Reuters 2020.)

The ESG control variables presented in the methodologies chapter are *ESG i,t, Env i,t, Soc i,t, and Gov i,t*. The first one is the proxy for the whole level of corporate social responsibility. The ESG rating combines all of these three dimensions. The second one is an Environmental rating that measures a corporation's sentiment towards the environment. The main categories affecting the rating are resource use, emissions, and innovation that the corporation is creating. The third one is the Social rating which assesses the effect that a corporation has between its customers, employees, and society. The main categories affecting are the workforce, human rights, community, and product responsibility. The last one is the

Corporate Governance rating that evaluates a corporation's performance in matters related to management, shareholders, and CSR strategy. (Thomson Reuters 2019.)

Corporate-specific variables

Based on the previous studies by Oikonomou et al. (2014) and Ge and Liu (2015) following control variables for corporations are included in the regression models. These different corporate characteristics are expected to have an impact on the cost of debt and adding these to the methodology gives us a more reliable picture of cost formation. The following variables are *Leverage i,t* calculated by dividing total debt with common equity capital and it indicates the leverage level of the corporation. *Size i,t* calculated as the natural logarithm of total assets and it indicates how big the corporation is. *MTB i,t* calculated by dividing common shareholders equity with market capitalization and it indicates the market-to-book ratio. *Profitability i,t* that is measured by the return on total assets. *Sales_growth i,t* measures sales growth over the financial year. *Int_cov i,t* indicating the interest coverage ratio calculated by dividing EBIT with interest expenses.

Following Magnanelli et al. (2017) the models have to be controlled for industry and year fixed effects. Because the markets consider Nordic countries the institutional pressure on the ESG reporting is closely the same. Therefore, the market fixed effects are not taken into account. To control the industry fixed effects, dummies are constructed for different sectors. This needs to be controlled because there is evidence that banks could impose higher interest expenses for the corporations that operate in industries with high risk. (Magananelli et al. 2017.)

Conventional bond-specific variables

The conventional bond-specific variables are included to control the different bond features that might affect the yield spreads. These are *Issuesize i,j,t* which is the natural logarithmic of a par value of an issued corporate bond in Euro. *Rating i,j,t* the long-term S&P rating at the time of issue and it is scaled from 0 indicating default or no rating to 20 AAA rating. The

rating transformation is presented in table 3. Lastly, *Maturity i,j,t* which is the number of the year until bond maturity.

Green bond-specific variables

The green bond-specific variables are the same as conventional bond-specific variables but in this case for the green bonds.

Bank loan-specific variables

Bank loans also include features that need to be controlled, otherwise, these can affect the interest spreads. These control variables are *Loansize i,j,t* which is the natural logarithm of the loan amount in Euro. *Maturity i,j,t* that indicates the loan maturity in months. Other studies have also included such variables as loan type, loan purpose, and S&P rating. This thesis does not include these variables due to data limitations. Also, most of the loans studied have the same type and purpose, so their breakdown does not add extra value to this thesis.

4.5. Hypothesis development

As Goss & Roberts (2011), Oikonomou et al. (2014), Ge & Liu (2015), Erragragui (2017), and Bae et al. (2018) studies suggest, corporations higher social responsibility could lead to lower financing costs for bonds and bank loans. As I see it Nordic countries tend to be frontrunners in corporate social responsibility and especially environmental matters are raising their importance. Corporations are behaving more sustainably and Nordic banks are taking big actions in green financing (Eliwa et al. 2019). Therefore, as the ESG performance is prone to be at good levels in the Nordic countries it is very interesting to study the possible relationship that may have occurred. This thesis tries to contribute to the existing literature first by examining the possible relationship of ESG rating to public and private debt financing in Nordic countries. Secondly, this thesis seeks to find whether a high or low ESG rating makes the findings even more significant. (Ghoul et al. 2011.)

From the previous chapters, it is reasonable to argue that ESG has become an important element in today`s economy and it affects all the corporations to some degree. This why the following hypothesis is created. The aim is to test whether there is a relationship between variables. The first hypothesis considers the ESG rating relationship between corporation debt financing:

H_1: The ESG rating and the individual dimensions of ESG are negatively associated with the corporation financing costs in the Nordic countries.

The first hypothesis is associated with regression models 2-5. If the results from the regressions are shown to be insignificant, it could be assumed that corporate social responsibility has not yet been taken into account in these small Northern debt markets. (Eliwa et al. 2019.) Many previous findings suggest that better ESG rating leads to lower lending costs in the U.S and developing countries. However, Bae et al. (2018) found evidence that this possible relationship does not necessarily hold in the extreme values of ESG. According to their study, they found that there is an optimal level and after it, the financing costs start to rise again. This ideology and reasoning lead to the second hypothesis of this thesis:

H_2: Corporations with the high (low) 25% of overall ESG rating and individual dimensions of ESG will obtain lower (higher) financing costs for their debt.

Even though previous literature has found this optimal level affecting the financing cost, studying it might give interesting results. The negative linear relationship is assumed to hold and especially in the Nordic countries where the information availability is more limited when compared to the U.S market this hypothesis might be supported. There is also mixed evidence on the relationship so evaluating it is important.

When studying the previous literature, it can be easily seen that there are not many or at all research where the difference of both public and private debt financing regards to ESG ratings is studied. It is known that banks may have preferable information knowledge

compared to public or professional investors, therefore, the negative linear relationship might be different for private and public debt. From this, the third hypothesis regarding asymmetry is created:

H_3: The ESG rating has a different relationship between public and private debt financing costs.

The last hypothesis is associated with debt maturity. Oikonomou et al. (2014) found evidence that the negative effect is even stronger with bonds with longer maturities. This comes from the conclusion that the financial benefits produced from corporate social performance accrue mainly in the long run. If this hypothesis hold, corporations with high ESG rating should finance their project with longer maturity debt. The last hypothesis goes as follows:

H_4: The ESG rating negative relationship is stronger for longer-maturity debt costs.

5. Empirical results

In this chapter, the empirical results of the regression models are presented and discussed comprehensively. At first, the results regarding model 2 are presented in section 5.1, models 3-4 in 5.2, and model 5 in 5.3. All these three chapters follow the same pattern. Secondly, with models 6–7, the low and high performers of ESG and their effect on financing costs in the Nordic counties are tested and discussed in section 5.4. The following subchapters 5.5 and 5.6 tests the causality between public and private debt and their maturity effects. Lastly, section 5.7 presents the findings of the robustness test.

5.1. Model for a cost of debt

The dependent variable CoD expresses the annual percentage ratio between the interest expense of debt and the total debt. Therefore, CoD does not only include private debt. It includes all interest-bearing short and long-term debt obligations so it is a mix of public and private debt. Investigating the ESG ratings and CoD relationship serves as a basis for this thesis because from these results it can be concluded whether it is worth to investigate the different aspects of financing costs. (Oikonomou et al.2014 and Erragragui 2018.)

Table 8. presents the summary statistics for the variables used in model 2. In Panel D the findings for the cost of debt are presented. The average CoD is 256.78 bps, which can be transformed into 2.57%. This result is lower than Erragragui's (2018) findings but a possible reason for this can be because there are differences in periods and countries. This can also be proof that in the Nordic countries the interest expenses on the loan could be lower compared to the U.S market or the corporate loan ratios have declined. From the upcoming tables, it can be noticed that the average CoD is also twice higher compared to bank loans and bond yields and the reason for this might be that CoD combines both. Because the CoD variable includes over 4000 observations the size and heterogeneity of this sample are both desirable and uncommon features in the literature. (Oikonomou et al. 2014.)

Table 8. Summary Statistics for the cost of debt

Variable	Obs.	Mean	Median	Min	Max	S.D
Panel A: ESG Characteristics						
ESG Rating	2442	62.54	73.41	3.08	98.06	29.25
Environmental Rating	2319	65.63	78.25	8.45	97.42	29.35
Social Rating	2319	62.55	69.65	4.06	99.33	28.2
Governance Rating	2319	50.90	52.47	1.57	97.69	25.79
Panel B: Corporate Characteristics						
Leverage	4199	37.65	38.36	-1338.6	270.00	38.05
Size	4489	15.72	15.84	4.69	25.56	2.01
Market to Book	3785	3.40	2.17	-273.50	314.62	11.07
Profitability (%)	3903	2.30	2.33	-3.21	7.30	1.01
Interest Coverage (%)	3798	2.34	2.17	-3.32	12.09	1.60
Sales Growth (%)	4264	19.81	6.66	-100	3979.86	124.33
Panel C: Cost of Debt Characteristics						
CoD (bps)	4257	256.78	192.62	0.00	10385.3	4.14

This table presents the summary statistics for variables in model 2, respectively. Panel A presents ESG and its dimension characteristics, Panel B presents a summary of corporate characteristics, and Panel C the main dependent variable characteristics.

Table 9 presents the correlation matrix for the CoD and other variables. According to Erragragui (2018) CoD is expected to have a negative relationship with ESG ratings. This negative correlation can be found for all ESG dimensions except for governance rating, implying that higher ESG rating decreases the corporation financing costs. The negative correlation can also be found between CoD and corporation size, market to book, and interest coverage ratio. This finding implies that larger corporations with the higher market to book and interest coverage ratios should pay less interest for their loans. Also, the positive correlation with the leverage ratio is in line with the previous literature. When corporations leverage ratio gets higher the banks and investors start to fear possible default and the financing costs increase.

Table 9. Correlation matrix for the cost of debt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ESG Rating (1)	1.00										
Environmental Rating (2)	0.86	1.00									
Social Rating (3)	0.89	0.76	1.00								
Governance Rating (4)	0.70	0.47	0.54	1.00							
Leverage (5)	-0.11	-0.08	-0.09	-0.02	1.00						
Size (6)	0.22	0.22	0.24	0.15	0.05	1.00					
Market to Book (7)	-0.01	-0.02	0.01	-0.03	-0.01	-0.07	1.00				
Profitability (8)	0.04	0.03	0.03	0.02	0.04	0.07	-0.02	1.00			
Interest Coverage (9)	-0.03	-0.06	-0.03	0.04	-0.18	-0.05	0.06	0.03	1.00		
Sales Growth (10)	-0.10	-0.10	-0.09	-0.07	0.01	-0.02	0.00	0.00	0.00	1.00	
CoD (11)	-0.20	-0.22	-0.20	0.01	0.35	-0.06	-0.04	0.01	-0.03	0.00	1.00

This table presents the correlation coefficients for all variables in regression models 3 and 4.

Table 9 also provides important information considering the accuracy and possible issues that might be connected to the regression model 2. The correlation results for ESG and each of its dimensions shows highly significant multicollinearity. This multicollinearity could bias the regression results and therefore the regression is not used as it is shown. This issue is avoided by creating separate regression models. One model for overall ESG rating and one for the three dimensions. The multicollinearity is significantly lower between every three dimensions so conducting regression that includes all three together should not bias the results. Even though this does not bias the results it creates a near singular matrix and using fixed-effects for industries is not possible anymore. (Woolridge 2016: 93 and Erragragui 2018.)

Table 10 presents the empirical results of the regression for the CoD. Model (1) shows that ESG rating has a negative effect on CoD in the Nordic countries and this finding is statistically significant at the 1% level. This means that when corporations have stronger ESG ratings this lowers the corporation financing costs. An increase of one point in ESG rating will lead to an expected decrease of 0.23% in the cost of debt. The same effect can be seen in model 2 where the ESG dimensions are studied together except for governance rating

where the effect seems to be positive on CoD. Also, the significance level drops at 5% for social and governance ratings. The results are in line with prior findings suggesting that corporations that favor environmental management can reduce their financing costs. Accordingly, we accept the first hypothesis that the overall ESG rating and the individual dimensions of ESG are negatively associated with the public and private debt financing in the Nordic countries.

Table 10. ESG ratings and cost of debt

Independent variables	(1)	(2)
ESG Characteristics:		
ESG Rating	-0.0023***	
	(-7.0739)	
Environmental Rating		-0.0029***
		(-5.5742)
Social Rating		-0.0014**
		(-2.3019)
Governance Rating		0.0031**
		(5.8391)
Corporate Characteristics		
Size	-0.0129***	-0.0130***
	(-2.6210)	(-4.1258)
Leverage	0.0085***	0.0081***
	(17.8145)	(21.9868)
Operating Profitability	-0.0001	-0.0002
	(-0.3490)	(-0.3682)
Market to Book	-0.0019*	-0.0020**
	(-1.8401)	(-2.0641)
Sales Growth (%)	-0.0001	-0.0003
	(-1.4100)	(-1.3506)
Interest Coverage (%)	0.0001	0.0002
	(0.4365)	(0.3186)
Fixed Effects:		
Year	Yes	Yes
Industry dummies	Yes	No
Intercept	1.1553***	1.1003***
	(12.1042)	(16.9169)
R-squared	0.2560	0.2493
F-statistic	16.4706	24.2044
Observations	1955	1848

The table introduces the results of regression model 2 for the cost of debt. Model (1) uses the overall ESG rating as an independent variable. Model (2) uses three dimensions environmental, social, and governance combined. The t-statistics for each coefficient are reported in parentheses. ***, **, and * represents 1 %, 5 % and 10 % significance levels.

Table 10 also provides interesting findings for the control variables. Corporation size and market to book ratio have a negative effect on CoD and leverage positive effect. Based on the previous literature this outcome was expected because larger corporations, with the high market-to-book ratio and lower leverage, have lower financing costs. The operating profitability and sales growth also show a negative coefficient but this finding is not statistically significant. The expectation was that more profitable corporations pay less for their debt. The R-squares for the models are 25% and 24%. The first model uses industry fixed effects and the second one doesn't due to the near singular matrix problem. This can affect the interpretation of the results because in some industries the cost of debt is likely to be lower. (Goss and Roberts 2011, Oikonomou et al. 2014 and Erragragui 2018.)

5.2. Model for public debt

Table 11 presents the summary statistics for the public debt. The final data sample included 304 observations for the conventional bonds and 61 for green bonds. The mean spread for conventional bonds is 102.51 basic points (bps) and 41.46 bps for green bonds. This finding is different compared to Karpf and Mandel (2017), and Nanayakkara & Colombage (2019) results as they found that green bonds trade on average at a 5 to 7 basis points higher yield to conventional bonds, and investors are willing to pay at least 63 bps to yield premium for green bonds. The reason for green bonds spreads to be lower could come from the data limitations as there are many more observations for conventional bonds and the bonds do not have comparable characteristics. On the other hand, Febi et al. (2018) findings support this difference as they stated that green bonds issuers can offer bonds at a lower yield because green bonds are on average more liquid. Karpf and Mandel (2017) also stated that they believe that changes in yield could occur in the future when investors become more familiar with the green bonds. On average, conventional and green bonds issue sizes are very similar for the observations, but it can be noticed that green bonds have lower maturity and better rating from S&P compared to conventional ones, which is consistent with prior literature. (Hachenberg and Schiereck 2018). From this summary, it can be concluded that two

dependent variables differ and this recommends examining both separately in the empirical research.

Table 11. Summary statistics for public debt

Variable	*Obs.*	Mean	Median	Min	Max	S.D
Panel A: ESG Characteristics						
ESG Rating	*2476*	62.73	73.49	3.08	98.06	29.19
Environmental Rating	*2353*	65.90	78.53	8.45	97.42	29.29
Social Rating	*2353*	62.79	70.12	4.06	99.33	28.19
Governance Rating	*2352*	50.87	52.42	1.57	97.69	25.74
Panel B: Corporate Characteristics						
Leverage	*4199*	37.60	38.27	1338.58	270.00	37.90
Size	*4489*	15.75	15.85	4.69	25.56	2.02
Market to Book	*3785*	3.40	2.17	-273.50	314.62	11.01
Profitability (%)	*3903*	2.30	2.33	-3.21	7.30	1.01
Interest Coverage (%)	*3798*	2.34	2.17	-3.32	12.09	1.60
Sales Growth (%)	*4264*	19.7	6.65	-100	3979.86	123.81
Panel C: Bond Characteristics						
Yield Spread (bps)	*304*	102.51	94.40	-183.20	429.38	0.99
Issue Size	*306*	18.33	18.36	16.52	20.08	0.76
Maturity	*307*	79.11	72.00	24.00	180.00	35.64
S&P Rating	*307*	5.84	0.00	0.00	20.00	6.45
Panel D: Green Bond Characteristics						
Yield Spread (bps)	*61*	41.46	47.79	254.00	150.69	0.70
Issue Size	*61*	18.56	18.47	17.41	20.03	0.75
Maturity	*61*	67.27	60.00	36.00	288.00	42.72
S&P Rating	*61*	8.34	11.00	0.00	16.00	5.88

This table presents the summary statistics for variables in models 3 and 4, respectively. Panel A presents ESG and its dimension characteristics, Panel B corporate-specific characteristics, Panel C presents a summary of conventional bond characteristics, and Panel D green bond characteristics.

The next table 12 presents the correlation matrix for conventional and green bonds. The correlation between conventional and green bonds is not calculated due to observation amounts. This matrix is conducted likewise for the CoD because of the multicollinearity issue. From the table, it can easily spot that there is a high correlation between the ESG rating and all three dimensions. This high correlation could bias the regression results and therefore,

some changes need to be made for the regressions. Thus, even though chapter 4.3 presents that each ESG dimensions are in the same regression with ESG rating, separate regressions will be conducted for all. The results are presented in Table 13.

The correlation matrix also provides other interesting findings. The table shows that ESG rating and each of its dimensions have a negative correlation between the conventional bond yield spread. This negative correlation also seems strong, especially for environmental rating.

Table 12. Correlation matrix for public debt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ESG Rating (1)	1.00																	
Environmental Rating (2)	0.81	1.00																
Social Rating (3)	0.91	0.78	1.00															
Governance Rating (4)	0.79	0.49	0.64	1.00														
Leverage (5)	-0.27	-0.04	-0.24	-0.32	1.00													
Size (6)	-0.01	0.05	0.05	-0.13	-0.33	1.00												
Market to Book (7)	0.14	0.17	0.18	0.18	0.04	0.06	1.00											
Profitability (8)	-0.16	-0.23	-0.24	-0.07	-0.24	0.33	0.02	1.00										
Interest Coverage (9)	0.19	0.11	0.19	0.15	-0.65	0.28	0.16	0.49	1.00									
Sales Growth (10)	-0.21	-0.17	-0.19	-0.10	0.01	0.19	-0.05	0.26	0.13	1.00								
Yield Spread (11)	-0.37	-0.51	-0.40	-0.20	0.06	-0.20	-0.41	-0.05	-0.41	0.05	1.00							
Issue Size (12)	0.27	0.23	0.26	0.33	0.11	-0.41	0.07	-0.14	-0.02	-0.07	-0.06	1.00						
Maturity (13)	0.04	-0.01	0.06	0.14	0.09	0.14	0.16	-0.01	-0.23	-0.18	-0.07	-0.06	1.00					
S&P Rating (14)	0.06	0.11	0.13	0.02	0.05	0.20	0.28	-0.07	-0.06	-0.08	-0.15	-0.18	0.27	1.00				
Green Bond Yield Spread (15)	0.35	0.39	0.14	0.42	-0.19	-0.12	-0.10	-0.03	-0.16	-0.11	-	-	-	-	1.00			
Green Bond Issue Size (16)	0.24	0.09	0.29	0.20	-0.64	-0.11	0.33	-0.31	0.15	-0.15	-	-	-	-	0.47	1.00		
Green Bond Maturity (17)	0.23	0.23	0.12	0.17	-0.21	0.23	0.14	-0.17	0.12	0.11	-	-	-	-	0.35	0.41	1.00	
Green Bond S&P Rating (18)	-0.01	0.24	-0.15	0.02	0.43	-0.01	-0.32	0.20	-0.27	0.13	-	-	-	-	-0.26	-0.52	0.12	1.00

This table presents the correlation coefficients for all variables in regression models 3 and 4.

This finding suggests that a higher ESG rating may decrease the yield spread of a conventional bond. The prior empirical findings from Oikonomou et al. (2014), Ge and Liu (2015), and Stellner et al. (2015) also shows that the yield spread should correlate negatively with issue size, maturity, S&P rating, corporation size, profitability, interest coverage ratio, and positively with the leverage ratio. This means that when larger corporations issue larger

bonds with higher ratings and longer maturity the yield spread should be lower. This same pattern can be seen from the table results.

When investigating the correlations between green bonds and other variables the results are opposite for many variables when comparing conventional bonds correlations. The findings suggest that ESG rating and green bonds correlation is positive. This means that a higher ESG rating may increase the yield spread of a green bond. Also, only variables that follow the previous literature findings are corporation size and green bond credit rating because these have a negative correlation. However, this finding does not support the negative correlation and it is in line with Karpf and Mandel (2017) and Nanayakkara & Colombage (2019) findings. In addition, the data limitation can affect the correlation because there are not enough observations.

Table 13 presents the empirical results of the regressions for the conventional bond and green bond yield spreads. Model (1) shows that ESG rating has a negative effect on conventional bond yield spreads in the Nordic countries and this finding is statistically significant at the 1% level. This applies that corporations with strong ESG ratings can benefit from lower yield spreads for their bonds. When studying each dimension together in the model (2) the only significant result can be obtained for environmental rating. This implies that the most important ESG dimension for Nordic corporations planning to issue bonds is the environmental dimension. Sametime both models imply that public lenders seem to value ESG rating and environmental dimension. Furthermore, larger issue size and corporation size and smaller leverage lower significantly the yield spreads. The maturity and S&P ratings also show negative coefficients but the results are not statistically significant. The R-squares for the models are 47% and 57%, which implies that these models can explain the effect very well. Although the results seem clear, it is good to note that the observation amounts are quite low and some researchers could therefore say that the results are biased. This is still not a bad thing because these models were only intended to mainly support CoD research and results give good direction on the effect of public debt. (Ge and Liu 2015 and Bae et al. 2018.)

Table 13. ESG ratings and public debt

Independent variables	(1)	(2)	(3)	(4)
ESG Characteristics:				
ESG Rating	-0.0060***		0.0106***	
	(-3.9175)		(9.0651)	
Environmental Rating		-0.0109***		0.0069***
		(-5.5623)		(2.9208)
Social Rating		0.0005		-0.002904
		(0.3144)		(-1.3535)
Governance Rating		0.0004		0.0068***
		(0.1490)		(6.9347)
Bond / Green Bond Characteristics:				
Issue Size	-0.1706***	-0.0410***	0.3360***	0.2078***
	(-4.8605)	(-3.6141)	(8.0720)	(3.0559)
Maturity	-0.0020	-0.0012	0.000263	0.0008
	(-1.6038)	(-0.8782)	(0.6834)	(1.5174)
S&P Rating	-0.0035	-0.0010	-0.01588**	-0.0224***
	(-0.2682)	(-0.1974)	(-2.2247)	(-5.0838)
Corporate Characteristics				
Size	-0.1700***	-0.0656***	0.0507**	0.0392
	(-3.4517)	(-5.6045)	(2.4015)	(0.7900)
Leverage	0.0056**	0.0037	0.0226***	0.0111**
	(2.0749)	(1.4271)	(9.6057)	(2.5591)
Operating Profitability	0.0003	0.0005	-0.0025	-0.0018
	(0.2823)	(0.3363)	(-0.7932)	(-0.6036)
Market to Book	-0.0004	-0.1299***	-0.1571***	-0.0775
	(-0.0795)	(-4.9016)	(-5.0243)	(-1.4681)
Sales Growth (%)	-0.0230	-0.0441**	0.0003	-0.0033
	(-0.7342)	(-2.4803)	(0.0021)	(-0.2703)
Interest Coverage (%)	-0.0005	-0.0004	0.0060***	-0.0001
	(-0.0005)	(-0.2497)	(3.7146)	(-0.0409)
Fixed Effects:				
Year	Yes	Yes	Yes	Yes
Industry dummies	Yes	No	No	No
Intercept	7.8459***	4.1142***	-7.47139***	-4.403**
	(5.7408)	(15.0991)	(-7.4752)	(-2.3295)
R-squared	0.4727	0.5707	0.8472	0.8422
F-statistic	4.3718	9.9321	11.4874	7,4721
Observations	189	145	44	37

The table introduces the results of regression models 3 and 4 for conventional bond yield spreads and green bond yield spreads. Models (1) & (3) uses the overall ESG rating as an independent variable. Models (2) & (4) uses three dimensions environmental, social, and governance combined. The t-statistics for each coefficient are reported in parentheses. ***, **, and * represents 1 %, 5 % and 10 % significance levels.

When examining the results for green bonds in the model (3) and (4) it may be noted that the results are opposite compared to conventional bonds. When ESG, environmental, or governance rating increases the green bond yield spread also increases. These results might be due to small observation amounts and therefore no conclusions should be drawn from the results. If the results of a positive relationship should be explained, according to MSCI (2020) this can be due to the relationship between the greenness of a green bond and the issuer`s environmental rating. Investors might screen issuers using ESG criteria, which may tilt demand toward issuers with high ESG metrics and this makes the dispersion much tighter and makes yield spreads more positive. Besides, the demand for green assets is increasing as investors wish to burnish their ESG credentials and this may increase the spreads. Although the results are not accurate, these can be used to draw future directions. (MSCI 2020.)

5.3. Model for private debt

This private debt chapter investigates bank loans. The summary statistics for private debt are shown in table 14. The ESG ratings and each of its dimensions are almost at the same level as in tables 8 and 11. This is because the observation amounts are quite the same. As this thesis includes many different dependent and independent variables the observations are used as an individual sample. With a common sample, the observation amounts would not fulfill the requirements. In addition, corporate characteristics are almost the same for this reason.

Text from here can be found in the file: **Tausta-aineisto**

Table 14. Summary Statistics for private debt

Results from here can be found in the file: **Tausta-aineisto**

Table 15 presents the correlation matrix for the bank loans. The same multicollinearity exists among these ESG variables and therefore the regression model 5 has to be adjusted like the previous ones. Contrary to studies from Goss and Roberts (2011) and Hamrouni et al. (2019) the correlation between the ESG rating and margin spread is positive except for governance rating. This finding is not in line with the previous literature because most studies have found a negative correlation (Hamrouni et al. 2019). This also suggests that a higher ESG rating increases the cost of bank loans. The only dimension that seems to have a negative correlation is the governance rating, which could mean that the case company that provided data for the bank loans might give the strongest value for this rating when they finance their customers. Even though the correlations for other dimensions are not negative, these are close to zero and therefore this correlation should be investigated more. From the matrix, it can also be

seen that the relationship between spread and loan size, market to book ratio, profitability, and interest coverage ratio is negative. This means that larger loans for corporations that have a higher market to book ratio, better profitability, and higher interest coverage ratio should lead to cheaper private debt financing.

Table 15. Correlation matrix for private debt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
ESG Rating (1)	1.00												
Environmental Rating (2)	0.86	1.00											
Social Rating (3)	0.90	0.78	1.00										
Governance Rating (4)	0.72	0.55	0.58	1.00									
Leverage (5)	-0.19	-0.25	-0.20	0.00	1.00								
Size (6)	0.16	0.08	0.16	0.15	0.05	1.00							
Market to Book (7)	0.00	-0.01	0.08	-0.04	-0.16	-0.18	1.00						
Profitability (8)	-0.03	-0.03	-0.02	-0.09	0.18	0.30	0.21	1.00					
Interest Coverage (9)	-0.03	0.02	-0.02	-0.06	-0.31	-0.08	0.62	0.13	1.00				
Sales Growth (10)	-0.12	-0.05	-0.15	-0.10	0.18	0.40	-0.06	0.26	-0.04	1.00			
Marginspread (11)	0.09	0.06	0.10	-0.04	-0.03	0.07	-0.06	-0.07	-0.03	0.11	1.00		
Loan Size (12)	-0.14	-0.13	-0.12	-0.13	0.22	0.03	-0.03	0.27	0.02	0.16	-0.05	1.00	
Maturity (13)	-0.05	-0.03	-0.13	-0.01	-0.15	-0.27	0.03	-0.04	-0.07	-0.18	0.01	-0.03	1.00

This table presents the correlation coefficients for all variables in regression model 5.

The last regression model results of the first stage are presented in table 16. Model (1) shows that a higher ESG rating decreases the bank loan margin spread. This means that corporations with high ESG ratings should also finance their projects through private debt. The effect is not as strong as for the conventional bonds but when corporation ESG rating increases by one point the margin spread decreases by 0.09%. This finding is significant at the 5% level. Model (1) also shows that loan size and sales growth have a negative relationship with the spread. Also, loans with shorter maturity and corporations with lower leverage decrease the

financing cost. These findings are similar to Goss and Roberts (2011), Erragragui (2017), Bae et al. (2018), and Hamrouni et al. (2019).

Table 16. ESG ratings and private debt

Independent variables	(1)	(2)
ESG Characteristics:		
ESG Rating	-0.0009**	
	(-2.5763)	
Environmental Rating		-0.0010***
		(-4.6267)
Social Rating		0.0050***
		(4.6265)
Governance Rating		-0.0029***
		(-2.6958)
Corporate Loan Characteristics:		
Loan Size	-0.0067*	-0.0049***
	(-1.6427)	(-3.2831)
Maturity	0.0032***	0.0020**
	(4.4161)	(2.4899)
Corporate Characteristics		
Size	0.0173	0.0106
	(1.3615)	(1.0431)
Leverage	0.0046***	0.0007***
	(4.3238)	(49.0003)
Operating Profitability	0.0002	-0.0030***
	(0.1581)	(-16.3537)
Market to Book	-0.0006	-0.0100
	(-0.4632)	(-0.9174)
Sales Growth (%)	-0.0027**	0.0047***
	(-2.2651)	(7.1464)
Interest Coverage (%)	0.0001***	0.0001**
	(6.4065)	(1.9919)
Fixed Effects:		
Year	Yes	Yes
Industry dummies	Yes	No
Intercept	0.6729**	0.4751**
	(2.0739)	(2.8736)
R-squared	0.2970	0.2650
F-statistic	2.6456	2.6612
Observations	197	127

The table introduces the results of regression model 5 for margin spreads. Model (1) uses the overall ESG rating as an independent variable. Model (2) uses three dimensions environmental, social, and governance combined. The t-statistics for each coefficient are reported in parentheses. ***, **, and * represents 1 %, 5 % and 10 % significance levels.

Model (2) presents the results for each dimension, which shows that each dimension has a significant relationship at the 1% level. For environmental and governance the relationship is negative and for the social positive. This implies that higher environmental and governance ratings decrease the spread and higher social rating increases. The results are exactly similar to Hamrouni et al. (2019) findings and according to them the positive relationship of social rating might be because shareholders can think that management social engagements are excessive, wasteful, and costly consumption of scarce corporation resources. All the other variables show the same kind of results as in the model (1) except here operating profitability have also negative and significant relationship. The R-squares for the models are 29% and 26%, which implies that these models can explain the spread variance quite well.

Overall, as tables 10, 13, and 16 suggest, ESG ratings and its dimensions seem to have a decreasing impact on corporation financing costs in the Nordic countries. By increasing their especially overall ESG rating corporations can benefit from lower yield and margin spreads. The results also indicate that the same decreasing effect can be obtained no matter if the financing is from the public or private debt market. The green bond market is the only exception but the effect in this market can change in the future. All in all, in the light of these findings it can be said that the first hypothesis is accepted. The level of overall ESG rating and the individual dimensions of ESG ratings are negatively associated with the public and private debt financing in the Nordic countries.

5.4. Low and high performers

Motivated by the findings of models 2-5, this chapter shifts to stage two models and focuses on investigating the relationship between CoD and high and low performers of ESG rating and its dimensions. The CoD dependent variable is used as it serves as the base variable of this thesis and because it combines both public and private debt markets. Besides, this variable has the most observations and therefore the data limitations would not bias the regression results.

To investigate the high and low performers the following method is implemented to create valid variables. The high (low) performers of ESG and its dimensions are considered to be the corporations that fit the highest (lowest) quarter. This means that the highest quarter includes observations above 75% and the lowest quarter below 25% of observation ratings. To implement this into the regression variables dummies are created. Dummy variable results in 1 if the corporation belongs to the highest quarter in respect of ESG rating and 0 otherwise. After this, the ESG rating is multiplied with the corresponding dummy variable. This method is used for all ESG variables and also for low quartiles. Table 17 presents the results of this dummy variable method.

Table 17. Descriptive statistics for high and low ESG dimensions

	Mean	Median	Max	Min	S.D.	Obs.
ESG low	18.74	17.49	39.21	3.08	10.32	610
ESG high	92.37	92.57	98.06	87.95	2.47	610
Env low	21.57	19.31	38.76	8.45	8.35	580
Env high	94.09	94.00	97.42	91.98	1.20	580
Soc low	21.49	21.70	39.01	4.06	9.75	580
Soc high	92.82	92.85	99.33	88.35	2.46	580
Gov low	16.02	15.45	30.64	1.57	8.23	579
Gov high	83.05	82.47	97.69	72.28	6.92	579

The table introduces the results of high and low dummy variable creation.

In table 18, similarly to Goss and Roberts (2011), the high and low quartiles are compared with models 6 and 7. This regression is used to investigate whether investors and banks emphasize if corporations have a very high or very low ESG rating. In addition, the purpose is also to find support for the second hypothesis that corporations with high (low) 25% of overall ESG rating and individual dimensions of ESG will obtain lower (higher) financing costs for public and private debt. Model (1) reports that corporations with the top ESG rating pay 0.07% less for their debt, and the bottom pays 0.35% more. This finding supports the second hypothesis. In model (2) the same relationship continues in the environmental and almost in the social ratings. The governance rating reports opposite results indicating that corporations with the top governance rating pay more for their debt. According to Erragragui

(2018), this can be due to a “governance paradox” whereby governance concerns and strengths are not treated with the same interest by investors and banks. After analyzing the model (2) results it can be said that the second hypothesis does not fully hold anymore. The R-squares for the models are 34% and 32%, which implies that these models can explain the CoD variance quite well.

Table 18. High and low ESG ratings and cost of debt

Independent variables	(1)	(2)
ESG Characteristics:		
High ESG Rating	-0.0007***	
	(-4.0848)	
Low ESG Rating	0.0035***	
	(3.3271)	
High Environmental Rating		-0.0010***
		(-3.8301)
Low Environmental Rating		0.0026**
		(2.1747)
High Social Rating		-0.0001
		(-0.5022)
Low Social Rating		0.0023**
		(2.5200)
High Governance Rating		0.0010***
		(3.8712)
Low Governance Rating		-0.0017
		(-1.3126)
Corporate Characteristics		
Size	-0.0190***	-0.0205***
	(-4.2837)	(-6.0780)
Leverage	0.0041***	(0.0040)***
	(6.9366)	(6.7606)
Operating Profitability	(0.0432)**	0.0393**
	(2.3825)	(2.4401)
Market to Book	0.0003	0.0007
	(0.4802)	-1.1773
Sales Growth (%)	-0.0038	-0.0024
	(-1.0022)	(-0.6007)
Interest Coverage (%)	-0.1167***	-0.1121***
	-6.7966	(-6.7599)
Fixed Effects:		
Year	Yes	Yes
Industry dummies	Yes	No
Intercept	1.3103***	1.3845***
	(13.7264)	(19.0071)
R-squared	0.3426	0.3230
F-statistic	24.3186	31.0002
Observations	1955	1848

The table introduces the results of the regression model 6 and 7 for CoD. Model (1) uses the overall ESG rating as an independent variable. Model (2) uses three dimensions environmental, social, and governance combined. The t-statistics for each coefficient are reported in parentheses. ***, **, and * represents 1 %, 5 % and 10 % significance levels.

5.5. The relationship

This chapter's purpose is to find an answer to the third hypothesis that ESG rating has a different relationship between public and private debt financing costs. To investigate this hypothesis the results for public and private debt from tables 13 and 16 are compared. From the results, it can be seen that public and private debt are behaving the same way except for green bonds. This means that the overall ESG rating of the corporation is embodied in both conventional bonds and bank loans. The coefficients are negative and statistically significant at the level of 1% and 5%. These findings are comparable and therefore the third hypothesis is not supported. Besides, the CoD results that combine both debt markets give similar results. The green bonds are left out from this investigation because of the possible biased results.

When this same hypothesis is investigated from the perspective of the dimensions the results differ and asymmetric can be found. For the public debt, the only negative and significant value can be found for environmental rating. This result indicates that the environmental dimension is the most important dimension for corporations in Nordic countries that finance their projects through public debt. The results for private debt are significant for every dimension and positive for social rating and negative for others. This indicates that corporations that decide to choose private debt should invest in their environmental and governance rating. Overall, it can be concluded that ESG and environmental ratings have the same relationship for public and private debt. Besides, the other two dimensions can also experience this relationship but this thesis did not find significant proof for that. Hence, in light of these results, the third hypothesis will be rejected. This means that ESG rating has a symmetric impact on public and private debt financing and therefore it does not matter which debt financing form Nordic corporations use in the sense of ESG rating. In addition, most of the other control variables are also behaving similarly in both financing forms. However, because this hypothesis is not tested formally in this thesis and the conclusion is created through comparison, the results could be different with some models. Therefore, I suggest that this causality should be studied more in the future.

5.6. Longer maturity debt

The last hypothesis of this thesis states that the found negative relationship is stronger for longer-maturity debt. When comparing debt instruments bonds are issued at longer maturities than bank loans (Ge et al. 2015). This same evidence is obtained when tables 11 and 14 are examined as mean maturities for conventional bonds are over double compared to bank loans. When the ESG rating regression results for public and private debt are compared the results indicate that the negative effect is much stronger for bonds -0.6% than for bank loans -0.09%. This same effect is shown in the environmental rating for -1% and -0.1%. Therefore, the last hypothesis is supported and it holds. According to Oikonomou et al. (2014), the reason for this might be that the financial benefits produced from corporate social performance accrue mainly in the long run. This implies that corporations with high ESG ratings should finance their project with longer maturity debt. Although the results seem very clear this effect should be further investigated with formal testing. The comparison results are also based on data from different data sources, so this may have affected the results. Therefore, no direct conclusions can be drawn from the comparison that investors appreciate better ESG ratings more than banks and hence ask less interest in their investments. This effect should be studied more in the future.

5.7. Robustness test

This chapter includes one robustness test to confirm the results for the dependent variable CoD. As earlier in model 2, all the variables remain the same, however, the sample period now covers from 2010 to 2019. The results for this sample period are shown in table 19. Although the observation amount is almost half a size from the previous the results are quite identical or stronger. ESG rating and all dimensions except governance show a significant negative relationship. These results confirm the robustness of the original results and also suggest that this found effect is becoming stronger from the 2010s onwards. The R-squares for models are 21% and 20% implying that the models explain the variation of CoD quite well.

Table 19. ESG rating and cost of debt for sample period 2010-2019

Independent variables	(1)	(2)
ESG Characteristics:		
ESG Rating	-0.0024***	
	(-5.1686)	
Environmental Rating		-0.0033***
		(-4.4357)
Social Rating		-0.0019*
		(-1.8029)
Governance Rating		0.0040****
		(6.0847)
Corporate Characteristics		
Size	-0.0209***	-0.0163***
	(-4.5265)	(-7.2463)
Leverage	0.0084***	0.0080***
	(12.8042)	(17.2603)
Operating Profitability	-0.0007	-0.0006
	(-0.8522)	(-1.0035)
Market to Book	-0.0008	-0.0010
	(-1.0191)	(-1.2578)
Sales Growth (%)	-0.0001	-0.0001
	(-0.8941)	(-0.9654)
Interest Coverage (%)	0.0003	0.0002
	(0.3416)	(0.2310)
Fixed Effects:		
Year	Yes	Yes
Industry dummies	Yes	No
Intercept	1.2311***	1.1024***
	(12.8170)	(18.8566)
R-squared	0.2166	0.2068
F-statistic	10.6471	17.5021
Observations	1265	1159

The table introduces the results of regression model 5 for the cost of debt between the years 2010-2019. Model (1) uses the overall ESG rating as an independent variable. Model (2) uses three dimensions environmental, social, and governance combined. The t-statistics for each coefficient are reported in parentheses. ***, **, and * represents 1 %, 5 % and 10 % significance levels.

6. Conclusion

This thesis objective was to study the relationship between ESG ratings and corporate financing costs in the Nordic countries. After going through the roots of CSR and ESG concept the shifted attention towards ESG issues can be easily seen and especially the increased attention towards environmental issues. Despite the attention and well-developed literature on the ESG and CSR performance-related matters, very few empirical studies have concentrated on the relationship of ESG ratings and the corporation financing costs. (Erragragui 2018 and Eliwa et al. 2019.)

This thesis complements the corporate ESG and financing cost literature gap by using non-financial attributes encompassed in ESG rating performance to explain the price of public and private debt. For this purpose, the ESG data were derived from two different sources for Nordic corporations covering a period between 2002 and 2019. The analysis, based on an extensive data set comprising more than 365 bonds, 227 bank loans, and 4257 costs of debt ratios issued by 300 corporations in 17 industries. Therefore, this thesis provides recent evidence on this subject matter. These results show a direct link between ESG ratings and corporate financing costs. ESG ratings have a negative effect on the cost of debt (i.e. lowering the financing costs) which is in line with expectations. However, the individual effects of ESG dimensions on the financing costs are inconclusive.

Moreover, it seems that the environmental dimension is the most important dimension of ESG that influences creditors to offer more favorable interest rates for corporations. These results were found in the empirical part for both public and private debt and for these combining CoD dependent variable. According to Hamrouni et al. (2019), this advice corporations to review their operations if they want to lower their cost of debt and this probably leads corporations to come up with eco-friendly practices and products. It can be concluded that pro-environmental management reduces corporation financing costs and more importantly, the presence of environmental concerns increases the corporation's financing costs.

In line with the expectations, the social dimensions were also negatively associated with the financing costs. However, when this was studied separately for public and private debt the negative relationship was not found. This indicates that a corporation can benefit from an excellent social rating when it is using both public and private debt at the same time. A positive effect of governance rating on the financing cost was also unexpected. It seems that corporations can be punished by lenders for addressing governance concerns too much. The private debt was the only one showing a significant negative relationship. This can be due to case company preferences towards this dimension importance or private financing sector preferences. The positive finding for governance can also highlight that probably investors in Nordic counties do not see governance as an important rating because countries are already very stakeholder-orientated and having excellent governance is a normal way to work for Nordic corporations (Cheung et al. 2014). Overall, the dimensions results suggest that corporations should focus on transparent ESG disclosure, and this way they can minimize their financing costs.

Similarly to Oikonomou et al. (2014), the empirical results indicate that the financial benefits produced from ESG ratings accrue mainly in the long run as the link between ESG ratings and spreads is more significantly negative for longer-maturity debt. This is probably due to a better estimation of future risks of potential debtors. Otherwise, the relationships are pretty symmetric for public and private debt. The results also support the Cheung et al. (2018) study where they found that corporations with superior ESG ratings in more stakeholder-oriented countries like Nordic countries are more likely to obtain debt financing with lower interest rates than are their counterparts in less stakeholder-oriented countries. This can be one reason explaining the significant negative relationships. These findings have particular importance as financial debt is one of the most prevailing forms of external financing.

If all the findings will be put together the practical implications are the following. First, ESG ratings and corporation financing costs have a clear negative relationship in Nordic countries and corporations should use this as their benefit. Second, from the dimensions, the environmental rating has the biggest impact. Third, although the findings encourage

corporations to continue investing in overall ESG rating, it can be seen that public and private creditors can consider individual ESG dimensions a bit differently. Fourth, according to findings if corporations want to benefit most from the negative relationship they should use longer-maturity debt. Lastly, one interpretation of the results also could be that Nordic countries have created conditions that drive socially responsible corporate behavior.

Furthermore, this thesis results provide important information for investors when they are making decisions for their portfolios. Particularly the results advise investors to invest in corporations that have a high environmental rating. The findings can also be useful for managerial practices. According to Oikonomou et al. (2014) and La Rosa et al. (2018), corporations managers should be aware of the effect that their corporation's social posture has on the cost of debt financing, and managers of high-risk corporations can use ESG ratings as a strategic project and complementary tool to appear more reliable and pay less for their financing costs. Because the findings are based on Nordic countries the policymakers should nurture and maintain this corporate social responsibility friendly institutional stakeholder orientated environment.

Whereas this thesis has contributed to the existing literature by investigating the relationship of ESG rating and financing cost in the Nordic countries, it has offered some insights for possible future researches as well. Therefore, one possible future research that Ge and Liu (2015), also suggested could be a study that investigates corporations that will more likely to issue debt in the future, whether their cost of debt financing is lower. Another possible future research could focus on examining the relationship between different bonds and bank loan markets. According to Oikonomou et al. (2014) and Cheung et al. (2018) in the future, this study should be extended to emerging economies because they are facing changing institutional environments. In addition, it is also worth researching whether the economic returns derived from ESG ratings in terms of reduced financing costs outweigh the cost of the investment required to increase the ESG rating.

The main conclusion of this thesis was meant to be that the orientation toward long-term corporate social responsibility should be important for all kinds of corporations, investors, lenders, and banks to fulfill their fiduciary duties with the broader objectives of the society. The results suggest that banks and investors appreciate ESG practices and these reduce the operating risk that the corporations are facing. Public and private debt markets for lenders take into account extra ESG disclosure when assessing the creditworthiness of borrowers.

6.1. Limitations

Although this thesis sheds new light on the association between ESG ratings and corporate financing costs, it has several limitations. First, the data is retrieved from two different databases and the other one belongs to the case company. This shapes the data and sets some limitations. Also, the data amounts for some variables could have been higher to get more reliable results. Secondly, the empirical part does not include obligations and contractual constraints that often exist in the debt market. Third, this thesis investigates only specific countries in a specific period of time. More validity for the obtained results can be get if other countries are also studied. Finally, more complex testing methods could have been used to obtain different results.

7. REFERENCES

Arx, U & Ziegler, A. (2008). The Effect of CSR on Stock Performance: New Evidence for the USA and Europe. *IDEAS Working Paper Series from RePEc*.

Asnani, D. (2018). Impact of Material ESG SASB Factors on the Cost of Debt in Banking [online]. [cited 10.6.2020]. Available from World Wide Web: <URL:https://ssrn.com/abstract=3248154 or http://dx.doi.org/10.2139/ssrn.3248154>.

Ata Ujan, A. (2019). CSR symbolic potential and business sustainability. *Cogent Business & Management*, 6(1), [online]. [cited 7.7.2020]. Available from World Wide Web:<URL: https://doi:10.1080/23311975.2019.1699299>.

Attig, N., El Ghoul, S., Guedhami, O. & Suh, J. (2013). Corporate Social Responsibility and Credit Ratings. *Journal of Business Ethics*, 117(4), pp. 679-694, [online]. [cited 6.7.2020]. Available from World Wide Web:<URL: https://link.springer.com/article/10.1007/s10551-013-1714-2>.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An empirical investigation of the relationship between corporate social responsibility and profitability. *Academy of Management Journal*, 28, 446-463.

Avetisyan, E. & Hockerts, K. (2017). The Consolidation of the ESG Rating Industry as an Enactment of Institutional Retrogression. Business Strategy and the Environment, 26(3), pp. 316-330, [online]. [cited 7.7.2020]. Available from World Wide Web:<URL: http://doi:10.1002/bse.1919>.

B. Carroll, A. (2015). Corporate Social Responsibility (CSR) is on a Sustainable Trajectory. *Journal of Defense Management*, 05(02), [online]. [cited 5.5.2020]. Available from World Wide Web:<URL: http://doi:10.4172/2167-0374.1000132>.

Bae, S., Chang, K. & Yi, H. (2018). Corporate social responsibility, credit rating, and private debt contracting: New evidence from syndicated loan market. Review of Quantitative Finance and Accounting, 50(1), pp. 261-299, [online]. [cited 16.6.2020]. Available from World Wide Web:<URL: http://doi:10.1007/s11156-017-0630-4>.

Bengtsson, E. (2008). A History of Scandinavian Socially Responsible Investing. *Journal of Business Ethics*, 82(4), pp. 969-983, [online]. [cited 5.5.2020]. Available from World Wide Web:<URL: http://doi:10.1007/s10551-007-9606-y>.

Bowen, H. R. (1953). Social responsibilities of the businessman. New York: Harper & Row, pp. 231-255.

Capelle-Blancard, G. (2017). Environmental, Social and Governance (ESG) performance and sovereign bond spreads: An empirical analysis of OECD countries. None, pp. 1-56.

Carroll, A. B. (1999). Corporate Social Responsibility: Evolution of a Definitional Construct. *Business & Society*, 38(3), pp. 268-295, [online]. [cited 6.6.2020]. Available from World Wide Web:<URL: http://doi:10.1177/000765039903800303>.

Carroll, A. B. (Ed.). (1977). Managing corporate social responsibility. Boston: Little, Brown, pp. 105-108.

Chava, S. (2014). Environmental Externalities and Cost of Capital. Management Science, 60(9), pp. 2223-2247, [online]. [cited 16.7.2020]. Available from World Wide Web:<URL: http://doi:10.1287/mnsc.2013.1863>.

Cheung, Y., Tan, W., and Wang, W., (2018). National Stakeholder Orientation, Corporate Social Responsibility, and Bank Loan Cost. *Journal of Business Ethics*, 150(2), pp. 505-524.

Climate Bonds initiative (2018) The Green Bond Market in The Nordics. [online]. [cited 17.7.2020]. Available from World Wide Web:<URL: https://www.climatebonds.net/files/reports/cbi-nordics-final-03b.pdf>.

Cortina Lorente, Juan Jose; Didier Brandao, Tatiana; Schmukler, Sergio L.. 2020. Global Corporate Debt during Crises : Implications of Switching Borrowing across Markets (English). *Policy Research working paper; no. WPS 9142*. Washington, D.C. : World Bank Group. [online]. [cited 1.7.2020]. Available from World Wide Web:<URL:http://documents.worldbank.org/curated/en/105021580999161805/Global-Corporate-Debt-during-Crises-Implications-of-Switching-Borrowing-across-Markets>.

Crane, A., McWilliams, A., Matten, D., Moon, J., & Siegel, D. S. (Eds.). (2008). The Oxford handbook of corporate social responsibility. *Oxford University Press on Demand*.

Davis, K. (1960, Spring). Can business afford to ignore social responsibilities? *California Management Review, 2, 70-76.*

Davis, K. (1967, Winter). Understanding the social responsibility puzzle: What does the businessman owe to society? *Business Horizons,* 10, 45-50.

Davis, K. (1973). The case for and against business assumption of social responsibilities. *Academy of Management Journal,* 16, 312-322.

De Fiore, F. & Uhlig, H. (2011). Bank Finance versus Bond Finance. *Journal of Money, Credit and Banking,* 43(7), pp. 1399-1421, [online] [cited 11.6.2020]. Available from World Wide Web:<URL: http://doi:10.1111/j.1538-4616.2011.00429.x>.

Deloitte & Touche, Bouma, J. J., Jeucken, M. & Klinkers, L. (2001). Sustainable banking: The greening of finance. *Sheffield: Greenleaf Publ*, pp. 72-81.

Dunne, T. & McBrayer, G. (2019). In the interest of small business' cost of debt: A matter of CSR disclosure. *Journal of Small Business Strategy*, 29(2), pp. 58-71.

Ehlers, T. (2017). Green bond finance and certification. BIS quarterly review: international banking and financial market developments, pp. 89-104.

El Ghoul, S. (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking and Finance*, 35(9), pp. 2388-2406.

Eliwa, Y., Aboud, A. & Saleh, A. ESG practices and the cost of debt: Evidence from EU countries. Critical Perspectives on Accounting. [online]. [cited 27.7.2020]. Available from World Wide Web:<URL: http://doi:10.1016/j.cpa.2019.102097>.

Epstein, E. M. (1987). The corporate social policy process: Beyond business ethics, corporate social responsibility, and corporate social responsiveness. *California Management Review*, 29, 99-114.

Epstein, M. J. (2018). Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts. San Francisco: Berrett-Koehler Publishers. pp. 120-131.

Erragragui, E. (2017). Do creditors price firms' environmental, social and governance risks? Research in International Business and Finance [online]. [cited 28.7.2020]. Available from World Wide Web:<URL: https://www.sciencedirect.com/science/article/pii/S0275531917304555>.

EU TEG Report (2019) Report on EU Green Bond Standard: Proposal for an EU Green Bond Standard. [online]. [cited 28.7.2020]- Available from World Wide Web:<URL:

https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-green-bond-standard_en.pdf>.

European Commission (2001) Green Paper: Promoting a European Framework for CSR [2001]366 final; Brussels: European Commission).

European Commission (2017) Analysis of European Corporate Bond Markets: Analytical Report Supporting the Main Report from the Commission Experts Group on Corporate Bonds, [online]. [cited 26.7.2020]. Available from World Wide Web:<URL: https://ec.europa.eu/info/sites/info/files/171120-corporate-bonds-analytical-report_en.pdf>.

European Commission (2019) Taxonomy Technical Report. [online]. [cited 28.6.2020]. Available from World Wide Web:<URL: https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-taxonomy_en.pdf>.

European Commission Final Report (2019) EU Loan syndication and its impact on competition in credit markets. [online]. [cited 28.6.2020]. Available from World Wide Web:<URL: https://ec.europa.eu/competition/publications/reports/kd0419330enn.pdf>.

Febi, W., Schäfer, D., Stephan, A. & Sun, C. (2018). The impact of liquidity risk on the yield spread of green bonds. *Finance Research Letters*, 27, pp. 53-59, [online]. [cited 15.7.2020]. Available from World Wide Web:<URL: http://doi:10.1016/j.frl.2018.02.02>.

Flammer, C. (2019) Global Economic Governance Initiative: Corporate Green Bonds. [online]. [cited 15.7.2020]. Available from World Wide Web:<URL:

https://www.bu.edu/gdp/files/2018/11/GEGI-GDP.WP_.Corporate-Green-Bonds.pdf>.

Friede, G. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. Journal of Sustainable Finance & Investment, 5(4), pp. 210-233.

Ge, W. & Liu, M. (2015). Corporate social responsibility and the cost of corporate bonds. Journal of Accounting and Public Policy, 34(6), pp. 597-624, [online]. [cited 14.6.2020]. Available from World Wide Web:<URL: http://doi:10.1016/j.jaccpubpol.2015.05.008>.

Gerard, B. (2019). ESG and Socially Responsible Investment: A Critical Review. Beta, 33(01), pp. 61-83, [online]. [cited 16.7.2020]. Available from World Wide Web:<URL: http://doi:10.18261/issn.1504-3134-2019-01-05>.

Giese, G., Lee, L., Melas, D., Nagy, Z. & Nishikawa, L. (2017). Foundations of ESG Investing: How ESG Affects Equity Valuation, Risk, and Performance. *Journal of Portfolio Management*, 45(5), p. 69. doi:10.3905/jpm.2019.45.5.069

Goss, A. & Roberts, G. (2011). The impact of corporate social responsibility on the cost of bank loans. *Journal of Banking and Finance*, 35(7), pp. 1794-1810.

Hachenberg, B. (2018). Are green bonds priced differently from conventional bonds? *Journal of Asset Management*, 19(6), pp. 371-383, [online]. [cited 15.5.2020]. Available from World Wide Web:<URL: http://doi:10.1057/s41260-018-0088-5>.

Hamrouni, A. & Uyar, A. (2019). Are corporate social responsibility disclosures relevant for lenders? Empirical evidence from France. Management Decision, 58(2), pp. 267-

279, [online]. [cited 12.5.2020]. Available from World Wide Web:<URL: http://doi:10.1108/MD-06-2019-0757>.

Heinkel, R. (2001). The Effect of Green Investment on Corporate Behavior. *Journal of Financial and Quantitative Analysis*, 36(4), pp. 431-449, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http://doi:10.2307/2676219

Hoepner, A., Oikonomou, I., Scholtens, B. & Schröder, M. (2016). The Effects of Corporate and Country Sustainability Characteristics on The Cost of Debt: An International Investigation. *Journal of Business Finance & Accounting*, 43(1-2), pp. 158-190, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http:// doi:10.1111/jbfa.12183>.

Hong, H. (2009). The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, 93(1), pp. 15-36, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http:// doi: 10.1016/j.jfineco.2008.09.001>.

Huang, J. (2018). The Effect of Corporate Social Responsibility on Cost of Corporate Bond: Evidence from China. Emerging Markets Finance and Trade, 54(2), pp. 255-268, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http:// doi:10.1080/1540496X.2017.1332591>.

Institute of International Finance (2019) Global Debt Monitor: High Debt May Exacerbate Climate Risk, [online]. [cited 12.4.2020]. Available from World Wide Web:<URL: http://http://files.clickdimensions.com/iifcomai7nn/files/globaldebtmonitor_november_vf.pdf>.

Jemel-Fornetty, H., Louche, C. & Bourghelle, D. (2011). Changing the dominant convention: The role of emerging initiatives in mainstreaming ESG. Critical Studies on Corporate Responsibility, Governance and Sustainability, 2, pp. 85-117, [online].

[cited 15.5.2020]. Available from World Wide Web:<URL: http:// doi:10.1108/S2043-9059(2011)0000002011>.

Jung, J., Herbohn, K. & Clarkson, P. (2018). Carbon Risk, Carbon Risk Awareness and the Cost of Debt Financing. *Journal of Business Ethics*, 150(4), pp. 1151-1171, [online]. [cited 10.6.2020]. Available from World Wide Web:<URL: http:// doi:10.1007/s10551-016-3207-6>.

Karpf, A. & Mandel, A. (2017). Does it Pay to Be Green? *SSRN Electronic Journal*, [online]. [cited 15.4.2020]. Available from World Wide Web:<URL: http:// doi:10.2139/ssrn.2923484>.

Kim, M., Surroca, J. & Tribó, J. A. (2014). Impact of ethical behavior on syndicated loan rates. *Journal of Banking and Finance*, 38(1), pp. 122-144, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http:// doi: 10.1016/j.jbankfin.2013.10.006>.

Knüpfer, S. & Puttonen, V. (2018). Moderni rahoitus (10., uudistettu painos.). Helsinki: Alma Talent, pp. 112–122.

Koch, T. W. & MacDonald, S. S. (2015). Bank management (Eight edition.). Boston, MA, USA: Cengage Learning, pp. 42-50.

KPMG (2017) The Road Ahead: The KPMG Survey of Corporate Responsibility Reporting 2017, [online]. [cited 10.4.2020]. Available from World Wide Web:<URL: http:// https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf>.

La Rosa, F., Liberatore, G., Mazzi, F. & Terzani, S. (2018). The impact of corporate social performance on the cost of debt and access to debt financing for listed European non-financial firms. *European management journal*, 36(4), pp. 519-529, [online].

[cited 17.7.2020]. Available from World Wide Web:<URL: http:// doi: 10.1016/j.emj.2017.09.007>.

Latapí Agudelo, M., Jóhannsdóttir, L. & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), pp. 1-23, [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http:// doi:10.1186/s40991-018-0039-y>.

Louche, C., Idowu, S., Leal Filho, W. &. (2010). Innovative CSR: From Risk Management to Value Creation. Management of Environmental Quality: *An International Journal*, 21(5), [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http:// doi: 10.1108/meq.2010.08321eae.001>.

Lubin, D. A. (2010). The sustainability imperative. Harvard business review : HBR, 88(5), pp. 42-50.

Menz, K. (2010). Corporate Social Responsibility: Is it Rewarded by the Corporate Bond Market? A Critical Note. *Journal of Business Ethics*, 96(1), pp. 117-134, [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http:// doi:10.1007/s10551-010-0452-y>.

Michelon, G., Pilonato, S. & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. Critical Perspectives on Accounting, 33(C), pp. 59-78, [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http:// doi:10.1016/j.cpa.2014.10.003>.

Nanayakkara, M. & Colombage, S. (2019). Do investors in Green Bond market pay a premium? Global evidence. Applied Economics, 51(40), pp. 4425-4437, [online]. [cited 10.6.2020]. Available from World Wide Web:<URL: http:// doi:10.1080/00036846.2019.1591611>.

OECD (2019) Corporate Bond Markets in a Time of Unconventional Monetary Policy, [online]. [cited 11.6.2020]. Available from World Wide Web:<URL: http:// https://www.oecd.org/corporate/Corporate-Bond-Markets-in-a-Time-of-Unconventional-Monetary-Policy.pdf>.

Oikonomou, I. (2014). The Effects of Corporate Social Performance on the Cost of Corporate Debt and Credit Ratings. Financial Review, 49(1), pp. 49-75.

Principles for Responsible Investment (2018) Annual report 2018, [online]. [cited 3.4.2020]. Available from World Wide Web:<URL: http:// d8g8t13e9vf2o.cloudfront.net/Uploads/g/f/c/priannualreport_605237.pdf>.

Reverte, C. (2012). The Impact of Better Corporate Social Responsibility Disclosure on the Cost of Equity Capital. Corporate Social Responsibility and Environmental Management, 19(5), pp. 253-272, [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http:// doi:10.1002/csr.273

Sarwar, A., Samiul, A. & Ikramul, H. (2018). Why banks should consider ESG risk factors in bank lending? Banks and Bank Systems, 13(3), pp. 71-80, [online]. [cited 12.7.2020]. Available from World Wide Web:<URL: http:// doi:10.21511/bbs.13(3).2018.07>.

Sassen, R., Hinze, A. & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, 86(8), pp. 867-904, [online]. [cited 17.5.2020]. Available from World Wide Web:<URL: http://doi:10.1007/s11573-016-0819-3>.

Sethi, S. P. (1975, Spring). Dimensions of corporate social performance: An analytic framework. California Management Review, 17, pp.58-64.

Steiner, G. A. (1971). Business and society. New York: Random House. pp.121-125.

Stellner, C. (2015). Corporate social responsibility and Eurozone corporate bonds: The moderating role of country sustainability. *Journal of Banking and Finance*, 59, pp. 538-549, [online]. [cited 11.6.2020]. Available from World Wide Web:<URL: http:// doi:10.1016/j.jbankfin.2015.04.032>.

Strand, R. (1983). A systems paradigm of organizational adaptations to the social environment. Academy of Management Review, 8, 90-96.

Sustainable Stock Exchanges Initiative (2018) Report on progress: A paper prepared for the Sustainable Stock Exchanges 2018 Global Dialogue, [online]. [cited 28.3.2020]. Available from World Wide Web:<URL: http://www.sseinitiative.org/wp-content/uploads/2018/10/SSE_On_Progress_Report_FINAL.pdf>.

Tang, D. Y. & Zhang, Y. (2018) Do shareholders benefit from green bonds? *Journal of Corporate Finance*, [online]. [cited 10.6.2020]. Available from World Wide Web:<URL: http:// doi:10.1016/j.jcorpfin.2018.12.001>.

Tapanainen, M. (2010). Yritysten yhteiskuntavastuu–Eettisyyttä, bisnestä vai sinipesua? Finnwatch, [online]. [cited 4.4.2020]. Available from World Wide Web:<URL: http:// www. finnwatch. org/images/stories/PDF/Ykv. pdf>.

Tarmuji, I., Maelah, R. & Tarmuji, N. H. (2016). The Impact of Environmental, Social and Governance Practices (ESG) on Economic Performance: Evidence from ESG Score. *International Journal of Trade, Economics and Finance*, 7(3), pp. 67-74, [online]. [cited 10.6.2020]. Available from World Wide Web:<URL: http:// doi:10.18178/ijtef.2016.7.3.501>.

Tencati, (2011) A. Business Ethics and Corporate Sustainability, pp. 12-16.

Thomson Reuters (2019) Environmental, Social and Governance (ESG) Scores from Refinitiv. June 2019, [online]. [cited 16.6.2020]. Available from World Wide

Web:<URL: http:// www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf

United Nations Global Compact (2019). Progress Report, [online]. [cited 10.5.2020]. Available from World Wide Web:<URL: http://www.unglobalcompact.org/docs/publications/2019-UNGC-Progress-Report.pdf

Walton, C. C. (1967). Corporate social responsibilities. Belmont, CA: Wadsworth, pp.26-38.

Wartick, S. L., & Cochran, P. L. (1985). The evolution of the corporate social performance model. Academy of Management Review, 10, 758-769.

Weber, O. R. & Remer, S. (2011). Social Banks and the Future of Sustainable Finance. Routledge, pp. 53-64.