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ESG Practices and Cost of Debt: The Moderating Role of Board Gender Diversity

Evidence from Nordic Countries

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ABSTRACT:

Environmental, social and governance (ESG) issues have become increasingly critical in today's business environment. As ESG becomes increasingly critical, its impact on business and profitability has been examined, trying to demonstrate the benefits of ESG to a company's financial performance. However, its impact on debt financing and debt costs has been studied relatively little despite debt being an important financial instrument for European companies. In addition, with growing interest and changes in the law, stakeholders, such as lenders, have begun to implement ESG in their loan decisions. Therefore, this thesis investigates the relationship between ESG points and debt costs in listed companies in Nordic countries. Moreover, the study tests the impact of environmental, social and governance individually on the cost of debt.

While ESG has become an essential part of the firm's operations, the proportion of women in top positions in a company has become a more topical issue in the context of gender equality in the workplace. In addition, corporate governance has become more important since the financial crisis, exposing weaknesses in corporate boards and their operations. Today, they play a crucial role in ESG functions. For example, in European companies, it has been found that the board has a more prominent role in ESG actions than the CEO. In research, the proportion of women is generally combined with better governance and ESG reporting. Therefore, this work examines the proportion of women on company boards and its moderating role in the relationship between ESG and debt costs.

The thesis is conducted as a quantitative study. The relationship between ESG and debt cost is tested using OLS regression. The study uses secondary data from the Thomson Reuters database and contains ESG and financial data from listed companies in Denmark, Finland, and Sweden from 2006 to 2020. All firms lacking ESG data, as well as financial companies, were removed from the data. The final dataset included data from 270 companies from 17 different fields. The data is tested using four different regression models, two of which test the relationship between ESG and debt costs. The other two regression models test women's participation in government and its moderating effect on the ratio of ESG to debt costs.

The empirical findings of this study show a significant negative relationship between ESG and debt costs. Based on the results, companies can benefit from a high ESG score in terms of debt costs. However, compared to previous studies on the individual dimensions of the ESG, only the social dimension showed a significant negative impact on the cost of debt. In addition, this study found that firms with female board members have a more substantial impact on the negative relationship between ESG and debt costs. In addition, the results of this study support the theory of critical mass on the boards of Nordic companies. Therefore, companies can benefit from lower debt costs by bringing more women into their administrations based on these results.

KEY WORDS: ESG, Cost of debt, Gender diversity, Board of Directors, Public companies, Nordic

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TIIVISTELMÄ:

Ympäristö-, sosiaali- ja hallinto- (ESG) kysymykset ovat tulleet yhä kriittisemmiksi nykypäivän liiketoimintaympäristössä. ESG:n kriittisyyden kasvaessa akateemiset tutkimukset ovat pyrkinet tutkimaan sen vaikutusta liiketoimintaan, kannattavuuteen sekä yrittäneet osoittaa ESG:n hyötyjä yrityksen taloudelliselle tulokselle. Sen vaikutusta velkakustannuksiin on kuitenkin tutkittu suhteellisen vähän, vaikka velka on tärkeä rahoitusväline yrityksille. Lisäksi kiinnostus ESG-kysymyksiin ja lainmuutosten myötä sidosryhmät, kuten lainanantajat, ovat alkaneet soveltaa ESG:tä lainapäätöksissään. Tästä johtuen tämän pro gradun päätavoitteena on tutkia ESG-pisteiden ja velkakustannusten välistä suhdetta Pohjoismaisissa pörssiyrityksissä. Lisäksi tutkimuksessa testataan ympäristön, sosiaalisen ja hallinnon vaikutusta erikseen velan hintaan.

ESG:n tullessa olennaiseksi osaksi yritysten toimintaa myös naisten osuus yrityksen johtotehtävissä on noussut ajankohtaisemmaksi aiheeksi. Tämän lisäksi yrityshallinto on noussut entistä tärkeämmäksi finanssikriisin jälkeen, mikä paljasti heikkouksia yritysten hallituksissa. Nykyään niillä on keskeinen rooli ESG-toiminnoissa. Esimerkiksi eurooppalaisissa yrityksissä on havaittu, että hallituksella on näkyvämpi rooli ESG-toimissa kuin toimitusjohtajalla. Aikaisemmissa tutkimuksissa naisten osuus on yleensä yhdistetty parempaan yrityshallintoon ja ESG-raportointiin. Tämän vuoksi tässä työssä tarkastellaan myös naisten osuutta yritysten hallituksissa ja sen moderoivaa roolia ESG:n ja velkakulujen välisessä suhteessa.

Tämä pro gradu toteutetaan kvantitatiivisena tutkimuksena. ESG:n ja velkakustannusten välistä suhdetta testataan OLS-regressiolla. Tutkimuksessa käytetään Thomson Reuters -tietokannan toissijaista tietoa, joka sisältää ESG- ja talousdataa Tanskassa, Suomessa ja Ruotsissa toimivilta pörssiyrityksiltä vuosilta 2006-2020. Kaikki yritykset, joilla ei ole ESG-tietoja, sekä kaikki rahoitusyhtiöt poistettiin lopullisesta datasta. Lopullinen aineisto sisälsi tietoja 270 yrityksestä 17 eri toimialalta. Aineistoa testataan neljällä eri regressiomallilla, joista kaksi testaa ESG:n ja velkakulujen välistä suhdetta. Kaksi muuta regressiomallia testaavat naisten osallistumista hallitukseen ja sen moderoivaa vaikutusta ESG:n ja velkakustannusten suhteeseen.

Tutkimuksen empiiriset havainnot osoittavat merkittävän negatiivisen suhteen ESG:n ja velkakustannusten välillä. Tulosten perusteella yritykset voivat hyötyä korkeasta ESG-pisteestä velkakuluissa. Kuitenkin verrattuna aikaisempiin ESG:n yksittäisiä ulottuvuuksia vain sosiaalinen ulottuvuus osoitti merkittävää negatiivista vaikutusta velkakustannuksiin. Lisäksi tutkimuksessa havaittiin, että yrityksissä, joissa on naisia hallituksen jäseninä, on suurempi vaikutus ESG:n ja velkakustannusten väliseen negatiiviseen suhteeseen. Tämän tutkimuksen tulokset tukevat myös kriittisen massan teoriaa yritysten hallituksissa. Näiden tulosten perusteella yritykset voivat hyötyä alhaisemmista velkakustannuksista tuomalla enemmän naisia hallintoihinsa.

AVAINSANAT: ESG, Cost of debt, Gender diversity, Board of Directors, Public companies, Nordic

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1 Introduction

1.1 Background and Research Aim

Environmental, social, and corporate governance (ESG) practices are well-known and widely used today by companies worldwide. This results from the stakeholders' growing concerns regarding social and environmental issues. These growing concerns have increased the external pressure for modern companies to take more accountability and be more transparent with their stakeholders and investors (Carroll, 2016). The European Union has taken steps to address these stakeholders' demands and information needs regarding both companies' ESG and long-term risks (Manes-Rossi et al., 2018) by introducing the directive 2014/95/EU. The directive mandates large public interest entities to disclose their non-financial information. The specific purpose of this directive is to "help companies disclose high quality, relevant, useful, consistent and more comparable non-financial (environmental, social and governance-related) information in a way that fosters resilient and sustainable growth and employment and provides transparency to stakeholders" (2014/95/EU).

Due to the stakeholder demands and changing legislation, the ESG concerns are becoming more critical to companies. This trend can also be detected in the UN sustainable stock exchange initiative report. The report forecasts that by 2030, at the latest, every large company is expected to provide a report about their ESG practices (SSE, 2015). The trend is also understandable as, for example, disclosing ESG information can provide a company with positive opportunities. Through ESG reports, companies can communicate additional information in addition to financial data. This, in turn, can help to decrease the information asymmetries between the company's management and stakeholders (Martínez-Ferrero et al., 2016) and allow the company to be more transparent (Minutolo et al., 2019). Moreover, disclosing ESG reports can help stakeholders improve their understanding of the company's business and aid their investment decisions. In addition to these benefits for stakeholders, non-financial

disclosures are also linked to many financial benefits for the firms, such as gaining better access to finance (Raimo et al., 2021).

The increasing concern about ESG related issues has also made the lending institutions recognise the potential reputational and default risks associated with a company with ESG associated controversies. Many lending institutions, for example, have signed the United Nations Environment Programme's Statement by Banks on the Environment and Sustainable Development (UNEP, 2012). As a result, they have started to incorporate ESG related information in their internal procedures. This has included measures such as adding ESG factors in their risk assessment (Eliwa et al., 2021). Despite this, concerning the financial benefits, numerous academic studies have focused on investigating the effect of ESG disclosure on the cost of equity (El Ghouli et al., 2011; Ok & Kim, 2019; Limkriangkrai et al., 2016). However, much fewer studies have explored the relationship between ESG and the cost of debt (Eliwa et al., 2021; Bae et al., 2018).

The historical focus in academic research has been on the relationship between ESG disclosure and the cost of equity. Regardless, the ESG effects on the cost of debt present a vital knowledge gap in research. For example, Dhaliwal et al. (2011) call attention to this area of research. They argue that ESG practices could affect debtholders differently compared to equity-holders due to their payoff functions being different. Furthermore, European debt markets are twice the size of equity markets, and for most European companies, the most significant source of their financing is debt (Cascino et al., 2014). Moreover, according to Henze (2019), sustainable debt markets have increased significantly. This trend is expected to continue to increase, highlighting the importance of sustainability within the debt market.

Even though ESG has become more relevant in debt markets, Ioannou and Serafeim (2017) argued that ESG disclosure and its effects can vary across countries and firms. Similarly, Eliwa et al.'s (2021) research suggests differences even in EU countries. They found that in stakeholder orientated countries, the ESG disclosure has a more dominant

effect on the cost of debt. In research related to ESG and the cost of debt, Nordic countries have been part of research in multi-country studies like Eliwa et al. (2021). However, a sole focus on Nordic countries is limited. Despite this, it is more and more relevant to companies in these countries. For example, the banks operating in these countries are starting to implement risk analysis based on ESG factors in their loan and credit processes (Sustainability at Nordea, 2021; Vastuullisuus sijoittamisessa - OP Ryhmä, 2021). This kind of process can be seen in the Nordics' biggest financial institution, Nordea, which has implemented this process for public companies to manage their ESG related risks and opportunities (Sustainability at Nordea, 2021). This implies that ESG factors will become more critical for public companies in determining their cost of debt in the future.

For these reasons, the first aim of this study is to investigate the relationship between the cost of debt and ESG disclosure in Finnish, Swedish and Danish public companies. Hence, this research study aims to fill this gap regarding the ESG and cost of debt in the Nordic markets. Norway and Iceland are excluded from this research as they are not part of the European Union. Furthermore, there were no companies in Nasdaq Iceland with ESG scores. Regarding Norway, it has had a law mandating all publicly traded companies in Norway to have at least 40 per cent female representation on their board of directors since 2006.

However, ESG literature is limited as it mainly tries to find evidence for a direct relationship between ESG disclosure and the firm's financial performance. However, it fails to consider moderating factors in this relationship, such as board gender diversity (Manita et al., 2018; Shakil, 2021). For example, Setó-Pamies (2015) calls attention to research companies' internal factors which drive ESG practices. Board gender diversity presents an interesting moderator for the relationship between ESG and the cost of debt. Firstly, at the same time, as the pressure to include ESG factors in business operations is rising, there is also a growing public pressure to increase the proportion of female directors on boards. Due to this, there has been a positive upward trend in

female directors globally (Sila et al., 2016). Furthermore, as evidence suggests, companies with female members on the board tend to perform better concerning ESG issues (Zhang et al., 2012; Liu, 2018). This could be seen as a contributor to the positive trend driving companies to take ESG actions.

Despite this, women are underrepresented globally on corporate boards (Tanaka, 2014; Post et al., 2011). According to the 2019 Deloitte Women in the boardroom report, it will take more than 30 years to reach gender parity at the board level with the current rate. On the other hand, to promote gender diversity in companies, Belgium, France, and Norway have passed regulatory measures that mandate companies' boards to have a certain percentage of female members. Aside from the few countries, in general, in the European Union, there is no gender quota in place for the board of directors. Nevertheless, according to the 2014/95/EU, the companies in the member state in their corporate governance statement must clearly explain why diversity policies are not applied. This would include the board of directors and its aspects, such as gender diversity (2014/95/EU §19).

According to the Deloitte report (2019), Sweden has the highest percentage of female board members at 33.3 per cent of the three countries investigated in this study. Despite the low levels of female directors, female board members are essential members. It has been argued that they can moderate the cost of debt through ESG (Setó-Pamies, 2015). For this reason, the second aim of this study is to try to fill in the gaps in research by examining gender diversity as the moderator of the cost of debt via ESG disclosure.

1.2 Research Objectives

This research has three main objectives. The first objective is to investigate the relationship between ESG disclosures and the cost of debt within publicly listed companies in Finland, Sweden, and Denmark. Some research on this relationship has been conducted in Europe (Gerwanski, 2020; Kordsachia, 2020; Pizzutilo et al., 2020;

Eliwa et al., 2021), but the research is still mainly focused on the USA market (Eliwa et al., 2021). The research on Nordic countries is limited. Despite this, the market provides an interesting focus considering these countries' potential cultural and country-specific factors (Ioannou and Serafeim, 2017; Eliwa et al., 2021), where responsible thinking is embedded into society. Firstly, the Nordic countries are known for their robust universalist state based on universal welfare, transparent political culture, and considerable emphasis on participation, dialogue, and equality. Secondly, in Nordic countries, the ESG actions are under pressure from the business-society model. This means that those actions usually dealt with within ESG often belong to the public domain, conflicting with the voluntary efforts of the business. This could mean that the conventional idea of the benefits of ESG may not hold in the Nordic context (Gjølborg, 2010).

The second objective of this study is to investigate if one of the areas of ESG has more effect on the cost of debt. Hence, this research tries to answer if the companies would be able to decrease the cost of debt by focusing on one of the areas of ESG. The last objective is to investigate the moderating relationship of gender diversity of the board of directors in the relationship between ESG and the cost of debt. Studies have shown that the gender diversity of the board of directors can positively affect ESG practices as well as decrease risks.

1.3 Research Structure

After the introduction, the second chapter of this study will focus on theoretical frameworks and define the fundamental concepts of this thesis. Thus, special attention in this chapter is paid to stakeholder theory, legitimacy theory and the concepts of ESG and the board of directors. In the third chapter, a literature review will be conducted, which will look into the relationship between ESG and the cost of debt and how the board of directors can moderate this relationship. Based on the literature review, six different hypotheses are generated. In chapter four, the data and the methodology for

this study are introduced to answer these hypotheses. In chapter five, empirical results of the regression analysis are outlined and discussed. Lastly, in chapter six, the summary and conclusion for the study are given with suggestions for practical implications of the results as well as the potential future research direction in this area of study. Furthermore, the limitations of this study are outlined.

2 Theoretical Frameworks and Definitions

2.1 Key Theories

2.1.1 Stakeholder Theory

One of the fundamental theories in this research is stakeholder theory. This theory is focused on the relationship between a company and its stakeholders (Fernando & Lawrence, 2014). Stakeholder theory emphasises firm accountability beyond factors such as financial performance (Hasnas, 1998). The term stakeholder started to appear for the first time in the 60s to signify the other parties besides the shareholder, who has a stake in the company's decision-making (Goodpaster, 1991). One of the most classical definitions of stakeholder is Freeman's (1984) definition. He states that a stakeholder is *"any group or individual who can affect or is affected by the achievement of a corporation's purpose"* (Parmar et al., 2010).

Freeman's definition of stakeholder has given the base for the stakeholder theory. However, Freeman's definition has been criticised as it is seen as too broad and can include almost anyone as a company's stakeholder. Hence, there is no clear definition of a stakeholder in academic literature (Mitchell et al., 1997). Other academics have tried to make the definition more specific while keeping the foundation of Freeman's work (Fernando & Lawrence, 2014). For example, Goodpaster (1991) argued for strategic and moral stakeholders. Mitchell et al. (1997), on the other hand, criticised Freeman's (1984) definition by stating that it does not distinguish between different stakeholders based on their importance to the firm (Shankman, 1999; Wagner Mainardes et al., 2011). Based on his criticisms, he argued for latent, expectant and definitive stakeholders.

Stakeholder theory itself can generally be divided into two different perspectives, the ethical (moral) branch and the positive (managerial branch) (Guthrie et al., 2006). According to the ethical branch, all stakeholders have the same rights for fair treatment by the company regardless of their power. Furthermore, it states that the management

should manage the company to benefit all stakeholders instead of focusing only on the more powerful parties (Fernando & Lawrence, 2014). However, this also causes one of the main limitations of this perspective as stakeholders can have different and opposing concerns, making it difficult to treat every stakeholder fairly. For example, Hasnas (1998) suggests that managers should manage the company to achieve the optimal balance among the different stakeholders in the event of a conflict of interest. However, they note that this will, at some point, mean that the interest of some stakeholders must be sacrificed in the interests of others.

On the contrary, the managerial view argues that managers should focus on meeting the demands of stakeholders who have control over the critical resources required by the company, such as finance, labour, and materials (An et al., 2011). Hence, the more critical the stakeholders are to the company, the more effort is put into meeting their interests (Fernando & Lawrence, 2014). This perspective holds that managers who fail to identify the demands of the most powerful stakeholders increase their risks of adverse consequences if the powerful group decides to exercise their power over the company. For this reason, their needs are addressed first (Nasi et al. 1997). This was also argued by Ullmann (1985). According to this paper, the more significant a stakeholder group is to the organisation, the more likely it is that their expectations are included in the company's plans. Hence, business operations such as reporting will directly be associated with the powerful stakeholder group's expectations.

2.1.2 Legitimacy Theory

Legitimacy theory is related to stakeholder theory. According to the legitimacy theory, companies are constantly striving to ensure that they are viewed as working within the constraints and norms of the society where they operate (Lokuwaduge & Heenetigala, 2016). For this reason, a firm's operations should continuously seek to be in line with the values and norms expected by society (Solikhah, 2017). However, these values and norms are not to be assumed to be fixed but instead continuously changing. Hence, this

requires companies to adapt to these changes (Deegan, 2014, p.344). Supporters of this theory often refer to the "social contract" between the company and the society in which it operates. The social contract refers to society's many implicit and explicit expectations about how the company should operate. Hence, for the company to be able to continue its operations, it needs to meet the expectation laid by the society at large and not only the requirements of, for example, shareholders (Deegan, 2014, p.345).

However, as the norms and values of society are continuously changing, it is not easy to consistently meet these expectations. Therefore, a legitimacy gap may arise (Fernando & Lawrence, 2014). The legitimacy gap refers to the difference between how society expects the company to act and how it perceives its actions. Therefore, a legitimacy gap may arise if the company continues to act the same way, even when society's expectations have changed. Another source of legitimacy gap may arise if some unknown information about the company's operations becomes public, for example, through the news. If this information is negative, it can significantly affect the company's legitimacy. Furthermore, even if the company is performing per society's expectations, its legitimacy might still be threatened if it fails to disclose how it meets society's expectations. For this reason, it is assumed that legitimacy is affected by what information the firm discloses and not just by how the company has changed its operations (Deegan, 2014, p. 349).

2.2 ESG and Corporate Social Responsibility

ESG includes issues regarding companies' environment, social and governance actions. For example, environmental issues encompass climate change and energy usage. Social aspects are concerned with issues such as human rights and gender equality. Lastly, corporate governance is about preventing corruption and bribery as well as about shareholder protection (Galbreath, 2013).

ESG has emerged as part of CSR, and the terms are closely related (Galbreath, 2013). However, there are some critical differences between the terms. Firstly, ESG is

specifically concerned with how firms and investors include these ESG factors into their decisions and business models. On the other hand, CSR is a more general term regarding how firms can be socially responsible and good corporate citizens. The second key difference is that ESG has specifically included governance issues. At the same time, CSR refers to them more indirectly while focusing on environmental and social concerns (Gillian, 2021). Nevertheless, studies that have taken the CSR perspective will be included in the analysis in the following chapters despite these differences. This is because this study is not solely focusing on governance issues. Furthermore, the terms are used interchangeably.

As mentioned, ESG has been derived from CSR. Hence, it is essential to understand CSR as many of the issues and questions raised are also relevant to ESG. Firstly, there are multiple definitions of CSR and a weak consensus among academics and corporations on its exact meaning. This has, for example, led to that different management disciplines having taken views on CSR that are biased and only serve their interest (van Marrewijk, 2003). Additionally, it is still a changing concept as the global business environment continues to evolve with increasing demand for responsible products and services (Carroll, 1999; Dahlsrud, 2008).

2.2.1 Defining CSR

One of the first definitions of CSR was generated by Howard Bowen in his book, *Social Responsibilities of the Businessman* (1953). He defined CSR as "*the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action that are desirable in terms of the objectives and values of our society*" (Blindheim and Langhelle, 2010). The same view is held by Spencer (1958), who claimed that the challenge for managers is not in profit-making but in creating social action (Hack et al. 2014). In the 1960s, therefore, "*Enlighted self-interest*" was the primary assumption of CSR. Hence, the focus was on community service and philanthropic actions (Banerjee, 2009).

Milton Friedman presented a very opposing view of CSR from the original idea and disagreed with the whole concept. He considers that the company's main objective is to maximise profit for shareholders. He argued that any money used for actions that do not generate money for the shareholders is a waste of shareholders' money and decreases their wealth (Friedman, 1970). In his view, managers' CSR actions are against shareholders' interest, and hence board of directors should intervene. Most of the criticism of this view arises from the understanding that the only obligation of a firm is to maximise profit, whether it is legal or not. However, this is a usual misunderstanding of Friedman's view. According to him, profit maximising should be made within the law. Hence, deception and fraud are not acceptable. He also indicates that firms should act within the ethical norms. However, it should be noted that Friedman did not define what he meant by ethical norms (Schwartz and Saiia, 2012).

A widely cited and accepted view on CSR is Carroll's four elements of CSR (Crane and Matten, 2004). The definition was initially stated in Carroll's 1979 work as "Corporate social responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has for organisations at a given point in time". The CSR pyramid was then an extension of this definition, where he described the responsibilities that went beyond the requirement of the society (Carroll, 2016). This definition holds and expands on Joseph W. McGuire's earlier definition. In his book *Business and Society* (1963), he defined CSR as a company's responsibility to society beyond its legal and economic obligations (Carroll, 1999). Carroll's CSR pyramid is much more detailed compared to other definitions. However, the problem arises as the dimensions are not as clear-cut as the model would suggest but are interlinked (Höllerer, 2012).

Additionally, it has been proposed that as the business environment changes, ethical responsibilities increase their importance relative to economic and legal obligations (Werther & Chandler, 2010, p.9). To this argument, Carroll's view on CSR is more suitable than Friedman's. However, reflecting on Friedman's argument, Carroll's definition

embraces profit, judicial conduct of business as well as ethical business norms. This would leave only the philanthropic part of the model for Friedman to reject (Carroll, 2016). On the other hand, Carroll's and McGuire's definition suggests that following the law, as Friedman would propose, does not immediately mean that the company is socially responsible (Kakabadse et al., 2005). This implies that Carroll's view is more relevant in today's society.

More recent literature has tried to define CSR by the company's responsibilities toward its stakeholders (Sweeney and Coughlan, 2008). For example, Freeman and Dmytryiev (2017) argue that stakeholder theory centres itself on activities close to the company. Meanwhile, as Carroll saw it, CSR activities go far beyond communities where the companies have no operations. Similarly, Donaldson and Preston (1995) view that businesses are responsible for stakeholders of the company rather than the society as a whole, contrary to what Carroll had defined (Holcomb et al., 2007). This is also seen in practice as companies often communicate their responsibilities and policies concerning their different stakeholder groups (Sweeney and Coughlan, 2008).

There is one significant criticism of all the above definitions and theories. They are developed in the USA and reflect mainly this culture. However, for example, when the CSR pyramid was tested in the European context, the results generated were different from the original. Despite all levels of the CSR pyramid being relevant, the significance and interlinks of these levels altered in the European context compared to America (Visser, 2006). The same concern was raised by Dahlsrud (2008), who concludes that CSR is a socially established theory which means that it is impossible to find a universal definition. Additionally, as most literature has been conducted in western culture, this could lead to the definition having a Western bias. Even though a universal definition for CSR is not required, it does need a point of reference. This reference point would give an everyday basis for the debate and indicate that all arguments concern the same thing (Okoye, 2009).

2.2.2 ESG Reporting

The systematic publication of information about a company's social performance is referred to as corporate social responsibility reporting. There are no widely established mandatory rules for CSR reporting as there are for financial reports (Schreck, 2013). As discussed in the previous section, the lack of common ground gives the CSR reporting ambiguity not found in financial reporting. Despite some standards and regulations about reporting, like the 2014/95/EU, managers still have leeway in terms of the type, amount, and quality of CSR data they share (Schreck, 2013). Despite this, publishing corporate social responsibility reports is an almost universally adopted practice. Companies globally are increasingly issuing their CSR reports. According to the KPMG survey (2020), the reporting rate for sustainability exceeded 70 per cent among the N100 companies. N100 companies refers to the top 100 companies by revenue from a worldwide sample of 5200 companies. This rate was found in all sectors except in the retail industry. Furthermore, among the G250, the 250 largest companies in the world by revenue, a 100 per cent reporting rate has been achieved in five sectors.

Many theories attempt to explain why companies report their CSR practices. These explanations are often related to standards, regulations, legitimacy, and stakeholders (Lokuwaduge & Heenetigala, 2016). According to Searcy (2016), the definition of CSR makes an explicit reference to stakeholders. This is due to sustainability decision-making and CSR reporting being closely connected to stakeholders' needs and hence connected to stakeholder theory. In line with the stakeholder theory, these reports are mainly directed toward external stakeholders such as lenders, customers, investors, and the public. From these reports, stakeholders should be able to assess reasonably how the company's operations may affect them either positively or negatively (Schreck, 2013).

Based on legitimacy theory, CSR activities and reporting should be adequate to societal opinion to improve a firm's legitimacy. However, impression management is linked to legitimacy theory. Impression management suggests that the disclosed reports are made and tailored with the essential stakeholders in mind (Eliwa et al., 2021). For

example, Neu et al. (1998) studied Canadian public companies and their environmental disclosure. Their study found an increase in the level of environmental disclosure when it concerned financial stakeholders such as banks and government regulators. However, they detected a decrease in the level of disclosures regarding the concerns of stakeholders such as first nation people and environmentalists. Furthermore, a study by Lokuwaduge and Heenetigala (2016) about Australian companies found evidence that instances that could have an adverse reaction among the stakeholders, such as industrial disputes and grievances, were either not reported or only mentioned briefly. This could be in order to create a positive perception of a company and avoid tarnishing the company's reputation among the stakeholders. A more recent study on the Canadian market by Diouf and Boiral (2017) also confirms these results. These studies support the legitimacy theory as well as the managerial view of stakeholder theory that different stakeholders may have varying influences on what is reported.

One of the main criticisms of CSR reporting is that it can be quite ambiguous. This has increased the appeal of ESG reporting. It can be more impactful as it provides the opportunity to report more quantifiable metrics (Lev, 2021). The EU has tried to tackle the criticisms of sustainability reports by bringing more legislation and standardisation to the information required to be disclosed. The 2014/95/EU directive was one of the steps toward this. It mandated companies to report specifically on their ESG actions. Moreover, companies that have not reported before are now required to do so, hence expanding the number of companies reporting on ESG. This has been important as evidence, for example, from Hummel and Schlick's (2016) study indicated that firms with historically better sustainable performances are more willing to report them than those with worse performance. For this reason, the mandate would increase reports from companies that may have historically bad ESG performance.

However, despite the mandate, there has not been any requirement for the reports to be externally audited or confirmed. Regarding this issue, Laufer (2003) argued that in order to improve reporting quality, it is necessary to have independent assurance and

appropriate stakeholder engagement. Furthermore, Pflugrath et al. (2011) found evidence that CSR reports are seen as more credible when assured and if assurance of CSR reports is common within the firm's industry.

In response to the shortcomings of 2014/95/EU, the EU has proposed a new corporate sustainability reporting directive that will likely take force in 2023. This new directive would cover more companies within the EU. It would also include non-EU subsidiaries located in the EU. In addition, it would also outline the new ESG reporting standards, the requirement to digitise ESG data, and the requirement for ESG reports to be externally audited (Messini et al., 2021). Hence, this proposal will put more scrutiny on ESG reports to avoid impression management and "greenwashing". It will also heighten the quality of the report and bring it closer to being at the same level as financial performance reports and indicators (Sohail et al., 2021). From this, it could be argued that the measures taken by the EU are trying to decrease the effects suggested by the legitimacy theory. This also showcases the importance of ESG disclosures for firms operating within the EU. Furthermore, as will be discussed next, the improvement in ESG quality will also likely affect ESG ratings. This is due to the directive providing ESG agencies with more reliable ESG reports from more companies.

2.2.3 ESG Ratings

There have been attempts to integrate ESG issues into the investment and valuation processes within the last decades. Furthermore, responsible investors have started to use these criteria in their investment decisions. For this reason, it can be argued that ESG rating agencies have grown in importance as information intermediaries in capital markets due to the demand for collecting, evaluating, aggregating and disseminating ESG data (Christensen et al., 2021). The common objective of rating agencies is to provide a measurement of firms' ESG performance. Furthermore, they aim to evaluate how well a firm manages its ESG risks and opportunities (Christensen et al., 2021) while providing objectivity and verifiability for assessing firms' ESG performance (Scalet &

Kelly, 2010). Many ESG rating providers exist nowadays, but some of the largest ones are MSCI, Thomson Reuters, and Sustainalytics (Christensen et al., 2021).

The data collection methods vary between different providers. The data gathering may include:

- Reviewing corporate social responsibility reports.
- Conducting voluntary company surveys.
- Assessing media stories.
- Conducting independent investigations.
- Actively speaking with the management of the firm.

The ratings usually result in quantitative analysis. However, this may also differ between agencies. For example, some provide narrative discussion in addition to or instead of the quantitative results. On the other hand, some evaluations are wholly based on non-financial information to assess social responsibility without regard to financial performance or some combination of these (Scalet & Kelly, 2010).

However, there is some criticism for these ratings, which circles back to the definition problem of CSR. Sindreu and Kent (2018) point out that ESG criteria are difficult to define. Hence, when ESG agencies rate firms, there is often little common ground between different ratings. Furthermore, Chatterji et al. (2016) also questioned the validity of these ratings. They found evidence that different rating systems continue to have little agreement on what they are attempting to measure. For this reason, when agencies try to measure similar theoretical constructs, they tend to have high measurement errors. This is highlighted by Berg et al.'s (2020) study. They found that the same company's ESG rating may differ when measured by another ESG rating model. Furthermore, ESG ratings can be susceptible to impression management tactics such as "greenwashing" if companies strategically take CSR actions to improve their ESG ratings in order to improve their reputation (Liu, 2018). However, as discussed, under the new directive, this could become a lesser problem as the ESG reports need to be audited.

2.3 Board of Directors

2.3.1 The Role of Board of Directors

The board of directors consists of directors who can appoint and fire the CEO. Furthermore, they are in place to guide the corporation, oversee any strategic planning processes, and identify and monitor its major risks. Their responsibilities also include appointing, developing and planning senior management succession. Lastly, they are there to implement policies and reliable internal systems (Maharaj, 2008). Moreover, Fama and Jensen (1983) argued that having board of directors is an important control system for ensuring the separation of control and decision making to protect shareholders' interests.

It has been argued that the board of directors has two traditional roles, monitoring and advising (Manita et al., 2018). The effectiveness of monitoring depends on the firms' internal and external governance mechanisms. The goal of these mechanisms is to monitor management's behaviour toward shareholders, given the potential for conflicts of interest occurring with the separation of ownership and control (Manita et al., 2018). The literature on the board of directors usually uses three fundamental theories to explain the role and responsibilities of the board of directors: agency theory, stakeholder theory, and resource dependence theory (Squires & Elnahla, 2020).

Agency theory describes a situation where the principle is granted decision making authority on behalf of the agent. This is called the principle-agent relationship (Squires & Elnahla, 2020). This relationship is often present in large public companies between managers and shareholders (Cabeza-García et al., 2018). The central assumption of this theory is that individuals will act per their self-interest if "all else being equal" (Squires & Elnahla, 2020). Hence, in the corporate context, the assumption is that the managers are prone to self-interest, which would not always align with the shareholders' interests. From this, a conflict or so-called agency problem may arise. For this reason, some monitoring is required to protect the owners' interests by the board of directors (Squires

& Elnahla, 2020). Therefore, from the point of view of agency theory, the focus in research on monitoring is understandable.

However, in its applications to the board of directors, the agency theory is criticised for being narrow and emphasising the shareholder/principal relationship while ignoring the interest of other stakeholders (Shankman, 1999). In addition, the narrowness of the theory is questioned, especially in regard to modern companies in a globalised world (Squires & Elnahla, 2020). On the other hand, Squires and Elnahla (2020) argue that taking the agency theory view on information asymmetries can lead the board of directors to take action in order to make monitoring and advising tasks more efficient. This would lead the board to have more time to spend on their advising and strategic roles.

On the other hand, the 21st century brought changes to the more traditional perspective of the board of directors' role. Traditionally their duty has been seen to be for the company's owners (Kemper & Martin, 2010). For this reason, agency theory has been convenient in explaining boards' duty to shareholders. However, Kemper and Martin (2010) argue that there has been a shift from this traditional perspective driven by the global financial crisis of 2008-2009. In today's society, it could be seen that boards' responsibilities are not only for the shareholders but also to stakeholders, to which agency theory falls short in its application. These responsibilities for stakeholders have meant that many companies have started to tackle ESG concerns (Chams & García-Blandón, 2019). Hence, the stakeholder perspective is a more prominent theory in today's business environment concerning the duties of the board of directors. With this in mind, it could be argued that stakeholder theory extends agency theory to various stakeholders, as shareholders are not the only stakeholders in the company's interest (Hillman et al., 2001).

Furthermore, it is argued that stakeholders want diversity within the board of directors. This is because it displays the company's management's consideration of different

stakeholders' concerns (Hafsi and Turgut 2012). This is in line with the stakeholder theory as it attempts to explain how stakeholders may influence the management decision-making process in order for the organisation to make decisions consistent with stakeholders' needs and concerns. Additionally, the theory holds that a company should try to understand and harmonise the interests of different stakeholders (Squires & Elnahla, 2020), to which a more diverse board may respond better. This argument is supported by Post and Byron's (2016) meta-analysis of 140 studies. Their analysis concluded that female directors bring different perspectives and tend to require the board to consider the issues more in-depth while considering more stakeholders.

However, where agency theory has been criticised for being too focused on shareholders and narrow in general, stakeholder theory has received criticism for being too broad (Squires & Elnahla, 2020). This criticism is in line, especially with the ethical branch of stakeholder theory. Moreover, it is argued that stakeholder theory can decrease decision-making efficiency due to confusion resulting from balancing the objectives of more than one stakeholder group (Squires & Elnahla, 2020).

Stakeholder theory, especially the positive branch of the theory, is closely related to the resource dependence theory. Pfeffer and Salancik developed this theory in 1978. According to them, when appointed to the board, the person will support the organisation and try to help it solve its problems and help in any other way. They outlined four different ways in which the board member can benefit the company:

1. By providing advice and counsel.
2. By improving legitimacy.
3. By providing better communication between external stakeholders.
4. By providing better access to support from essential stakeholders outside the firm.

Hence, it is concerned with the board's ability to access valuable resources outside the firm (Hillman & Dalziel (2003). Based on this theory, it can be argued that firms with gender-diverse boards have better access to a broader range of different resources than firms with homogeneous boards (Byron & Post, 2016). Moreover, it suggests that

stakeholder and resource dependency theory coexist as managing the different stakeholder expectations and needs requires a wide range of knowledge and skills (Eccles et al., 2014). In conclusion, stakeholder and resource dependence theories see board members as mediators between different stakeholders. Therefore, they are in an excellent position to bring value to the firm by providing access to resources.

2.3.2 Board of Directors and ESG issues

The Enron crisis in the USA in the early 2000s and the financial crisis in 2008 revealed critical problems with the effectiveness of corporate governance. Especially with the board of directors and how they executed their duties (Andrade et al., 2014; Ferrero-Ferrero et al., 2015). However, since then, the role of the board of directors has become essential concerning companies' ESG actions. For example, according to Huang (2013), within the European context, the company's board of directors can have a more significant impact on the company's CSR performance than the CEO. For this reason, considering the board of directors' role regarding ESG issues is essential. Especially as studies have found that ESG factors are linked to decreasing a firm's risks (Sassen et al., 2016). The reduced risks could be seen as preventing potential reputational damages, sustainability risks and the consequences of these risks like financial distress, litigations, or corruption (Reber et al., 2021). Furthermore, disclosing ESG information can be seen as decreasing the company's idiosyncratic risks. This is due to the decrease in information asymmetries between the company and its external stakeholders (Reber et al., 2021).

In order to tackle these risks and improve the effectiveness of the board, a frequent suggestion has been to increase the diversity within the boards (Ferrero-Ferrero et al., 2015). The academic literature has several arguments to support this view. For example, Adams and Ferreira (2009) reported a range of differences between female and male directors, which can affect the board's effectiveness. For example, they found that female directors tend to have a better attendance record. The more gender-diverse the

boards were, the fewer attendance problems the male directors had. Furthermore, they found that female directors are more likely to join monitoring committees than their male counterparts. This suggests that the more gender-diverse the board is, the more effort is put into monitoring. Moreover, boards with more diversity seem to be more inclined to hold CEOs accountable for lousy stock market performance. Again, this suggests that board diversity increases board monitoring effectiveness. Moreover, the evidence suggests that boards with female members are more concerned with ESG issues than those with no women or only a few women (Ferrero-Ferrero et al., 2015). Additionally, it is suggested that women are usually associated with being more risk-averse and more willing to disclose ESG reports (Ferrero-Ferrero et al., 2015). This could be because female directors are more concerned with litigation and reputational risks, as Srinidhi et al. (2011) argued.

One proposed reason that female directors are more likely to tackle ESG is that women and men show differences socially and culturally (Liao et al., 2015). For example, Ibrahim and Angelidis' (1994) study suggested that female board members' values and decisions are more driven by philanthropy than economic factors. Similarly, Galbraith and Buckman (1993) found that women and men tended to use different decision criteria when dealing with issues of self-interest. Women were more likely to use utilitarian decision rules while men leaned towards egoist decision rules. Furthermore, it is suggested that female directors tend to support the adaptation of more socially responsible initiatives (Post et al., 2011). These arguments align with Malinowski and Berger's (1996) study, which found evidence that when confronted by a moral dilemma, women tend to make more ethically sound decisions than men.

Furthermore, Beltramini (1984) found that women were more concerned about issues such as improving business ethics and how ethical considerations can be implemented in corporate policies. In addition, they were more concerned about whether the ethical standards are suitable to meet society's needs. Moreover, as discussed earlier, ESG reporting has been criticised for being nothing but impression management. However,

as the evidence from studies shows, women tend to behave more ethically in situations requiring ethical judgment compared to men. They are also more likely to recognise unethical actions (Post et al., 2011) and hence, reduce the risks related to ESG issues.

3 Literature review

3.1 ESG and Cost of Debt

Despite the firms recognising the significance of ESG practices, its effect on the cost of debt is still a controversial question in academic research. On the one side, some studies have indicated a negative relationship between ESG and the cost of debt. For example, Ge and Liu (2015) conducted a study related to this question based on a sample from the USA. They studied a sample of 4260 new bonds issued between the years 1992 and 2009. The evidence from this study indicated that higher CSR scores were associated with a lower yield spread, whereas having a low CSR was associated with a higher yield spread. Hence, their study concluded that CSR could affect firms' ability to raise public debt at a lower price and covenant intensity in the US market. Furthermore, they concluded that the effect of CSR is more pronounced if the company is operating with high information asymmetry. On the other hand, Goss and Gordon (2011) could not find that CSR would have impacted the cost of debt, at least for high-quality borrowers. Furthermore, a study by Ye and Zhang (2011) suggests that the relationship is not linear at all but U-shaped.

Regarding debt markets, risk factors present essential considerations. Banks, for example, are primarily concerned with default risk. Default risk refers to the probability that the firm is unable to repay the principal and interest on its debt. It is directly associated with debt holders' welfare, and hence it is one of their main concerns (Sun & Cui, 2014). Furthermore, idiosyncratic risks are also among the risks argued to affect the cost of debt. It has been indicated that financial markets might reflect these risks (Goss & Roberts, 2011). For example, Lee and Faff's (2009) research found evidence that high CSR scores reduced idiosyncratic risk. One explanation for the reduction of this risk can be found in agency theory and information asymmetry, which results from a firm having an information advantage over the lending institution (Gerwanski, 2020). As ESG disclosures are associated with lower information asymmetry between a lender and a

borrowing firm, it is suggested that this would decrease idiosyncratic risks and thus lower the cost of debt (Eliwa et al., 2021). This is supported by Martínez-Ferrero et al.'s (2016) research. Their study of an international sample of 575 publicly listed non-financial companies found evidence that voluntary CSR disclosure reduced information asymmetry.

On the other hand, al-Hadi et al. (2017) researched 651 publicly listed Australian companies and the risk of financial distress between the years 2007 and 2013. According to their findings, better CSR can significantly decrease the company's financial distress, indicating that firms with better CSR are seen as more reliable and less likely to default. Their study also found evidence that firms with better CSR practices have an easier time accessing finance. Furthermore, Zeidan et al. (2015) suggest that banks would be able to detect opportunities by implementing sustainability factors into banks' credit ratings. This would flag companies with high risks related to ESG factors that could have damaging consequences despite being financially sound. Based on this, they argue that banks that consider ESG factors would have less reputational risks. Hence, they are in a better position to gain a competitive advantage by lending to companies that have less likelihood of default compared to banks that do not consider these issues.

Similarly, Gerwanski (2020) found evidence regarding ESG and the cost of debt in the European context after directive 2014/95/EU had been proposed. According to the findings, better ESG performance can decrease the cost of debt. However, the study was conducted to investigate integrated reporting (IR). The author found that the cost of debt decreased with the implementation of IR. Hence the results are partly due to this effect. However, the same study found that the benefits of IR decreased with increasing ESG performance. Although, the author noted that this association was only found in environmentally sensitive industries. Moreover, the paper suggests that companies in environmentally sensitive industries tend to be priced at a premium interest. However, with ESG disclosures, these companies are able to compensate for these interest premiums. Furthermore, the author argues that disclosures signal a decrease in

litigation and default risks and better management of risks. Gerwanski (2020) also found that ESG as a risk reduction mechanism is more decisive in dynamic industries, suggesting that debt holders operating in highly volatile markets should pay more attention to ESG factors.

Similar results were found by Kordsachia (2020), also from the European context from the same time period. Firstly, the author did find consistent evidence that the cost of debt is lower in socially responsible companies. Secondly, the study indicated that the effect of CSR on the cost of debt is more relevant to companies in financial distress. Finally, the evidence from the study suggests that through CSR practices, companies can generate "moral capital" and goodwill. This "moral capital" will then create protection similar to insurance to help reduce the potential financial impacts of negative events that were not anticipated.

Contrarily to these results, some studies found an insignificant or positive relationship between ESG and the cost of debt. For example, Hoepner et al. (2016) analysed the major industries in 28 different countries and the relationship between CSR and the cost of debt. The authors found that country-level sustainability factors, such as culture and economic behaviour, significantly affected the pricing of debt. However, they could not find evidence that firm-level sustainability would affect the cost of debt. On the other hand, Goss and Gordon (2011) found only a modest impact of CSR on the cost of debt. Furthermore, their study suggests that banks punish low-quality borrowers' investments in CSR by inflecting higher loan spreads and shorter maturities. This, they argue, is due to agency risks being high, and banks may see investments in CSR as overinvestments. Regarding high-quality borrowers, they could not find evidence that the banks were concerned about their CSR investments nor that it would impact the cost of debt.

Furthermore, Ye and Zhang (2011), in their study on the Chinese stock exchange, found a U-shape relationship between CSR and the cost of debt. According to the evidence from their research, if firms have either very low or high CSR, then the cost of debt is

also likely to be higher. As suggested by the study, only companies with a lower than optimal level of CSR will see a reduction in the cost of debt if CSR is improved. In comparison, companies with extremely high CSR performance would see an increase in the price of debt. Ye and Zhang (2011) further argue that firms that perform on the extreme high end of CSR may do so due to the self-interest of managers, which would lead to agency conflict and constrain of resources. However, it should be noted that the optimal level of CSR was found to vary depending on the size of the firm. This idea has also been argued by Bartkus et al. (2002). They argued that managers' excessive corporate philanthropic giving might be seen as unnecessary by some critical stakeholders like banks.

3.1.1 Environmental Factors and Cost of Debt

Some studies suggest that the cost of debt can be affected to different degrees by environmental, social, and governance factors. For example, Eliwa et al.'s (2021) study of public companies in 15 different European countries found a negative effect of environmental and social dimensions on the cost of debt. However, no significant relationship was found between the governance dimension and the cost of debt.

Similar results to Eliwa et al.'s (2021) study regarding the effect of environmental dimensions have been found in other studies as well. For example, Jung et al. (2016) found evidence that Australian firms failing to indicate their awareness of their carbon risks and failing to respond accordingly are associated with a higher cost of debt. Similar results were observed by Nandy and Lodh (2012), who found that more favourable loan contracts were granted to firms with lower environment scores in the US market. Pizzutilo et al. (2020) support the findings of Jung et al. (2016) in the European context. According to their conclusions, the higher carbon emissions of a company significantly affected the risk profile perceived by the lender. Thus, their cost of debt was higher compared to companies with low carbon risk. On the other hand, Ratajczak and Mikołajewicz (2021) investigated the 300 most sustainable companies globally in 2017,

ranked by Corporate Knights. They found that environmental factors affected the cost of debt only regarding long-term debt. Regarding the influence on short-term debt, the authors could not detect any significant effect on the company's environmental performance.

One possible explanation for the environmental dimension and the cost of debt was suggested by Jung et al. (2016). In accordance with their suggestion, environmental factors can lead to an agency problem. Firstly, if a company takes an environmentally less optimal project and is successful, shareholders will obtain the gains. On the other hand, despite being successful, creditors bear the risks of reputational damage by being linked to a project that is harmful to the environment. Hence, banks are better off loaning to an environmentally sustainable company.

3.1.2 Social Factors and Cost of Debt

As stated, Eliwa et al. (2021) study found a negative relationship between social factors of ESG and the cost of debt. The same was confirmed by Ratajczak and Mikołajewicz (2021). Compared to the environmental factors, they were able to detect a significant effect of social factors on the cost of short and long-term debt. Oikonomou et al. (2014) studied how the corporate social performance affected the cost of debt in the US market and the credit ratings. According to the results, initiatives regarding supporting local communities, the improved level of product safety and quality, as well as good employee relationships were associated with decreased risk premiums and hence, decreased cost of debt. Furthermore, their study suggests that higher levels of corporate social performance can enhance credit quality and decrease the perceived credit risk. The study also indicated that the financial benefits from corporate social performance arise mainly in the long run. As the results found that the negative link between corporate social performance and bond yield spreads is more pronounced for longer maturity bonds. Their study included 17 different industries, and these results were found to be robust for all of them.

3.1.3 Governance Factors and Cost of Debt

A number of studies analyse not only environmental factors but also the governance dimension (Erragragui, 2018; Nandy and Lodh, 2012; Jung et al., 2016). Similarly to the study by Elwin et al. (2021), governance factors were shown to have no impact on the cost of debt. In contrast, Andrade et al. (2014) studied the impact of the Sarbanes-Oxley (SOX act). The authors found that firms with better governance are associated with a lower cost of debt. This is because they are perceived to be more transparent, and the reports they disclose as more reliable. Similar results were found by Ghouma et al. (2018) in the Canadian market, where they found a negative relationship between corporate governance and the cost of debt. However, when they tested the individual corporate governance components, the only relevant components were related to the structure of the board and disclosure quality. They argued that it results from reduced agency problems due to a strong board and reduced information asymmetry due to improved disclosure quality. Based on this literature review, the following hypotheses can be generated:

H1: There is a negative relationship between a firm's ESG ratings and its cost of debt

H2: There is a negative relationship between a firm's environmental score and the cost of debt

H3: There is a negative relationship between a firm's social score and the cost of debt

H4: There is a negative relationship between a firm's governance score and the cost of debt

3.2 Gender Diversity of Board of Directors

3.2.1 Gender diversity of Board of Directors and ESG

Studies have shown that the board of directors' structure can play a vital role in whether ESG practices are successfully executed (Post et al., 2011; Ghouma et al., 2018). Hence, the board of directors' involvement has become more critical in supporting ethical and moral practices, social practices, ESG disclosures, and applying ethical codes (El-Kassar et al., 2015). Especially, female board members have been linked to improved performance in ESG areas. For example, Liu (2018) study investigated the association between board gender diversity and environmental violations. The study found evidence that firms with a greater presentation of females on their board of directors also had significantly fewer lawsuits regarding environmental violations. The results suggested that one potential reason for this is that gender-diverse boards formulate more eco-friendly environmental policies, leading to less concern about the environmental factors. Moreover, studies have indicated that women tend to recognise ethical dilemmas and act more ethically in those situations (Post et al., 2011).

Zhang et al. (2012) support Liu's (2018) findings. They investigated the effect of board composition and CSR performance after the SOX act had been enacted. Based on their findings, they argue that female board members not only improved stakeholder management and helped to improve the legitimacy of the firm but also improved the overall CSR performance of the firm. Similar results to Zhang et al. (2012) were found by Bernardi and Threadgill (2010). The authors found that women pay more attention to societal and ethical behaviours. According to the result of their study, when women are in crucial governance positions, like the board of directors, they are more likely to report information regarding environmental and social issues.

The literature also suggests that for more diverse boards, the reporting of these issues is of higher quality (Al-Shaer & Zaman, 2016). For example, Mather et al. (2021) studied Australian public companies' voluntary disclosures and natural language extraction

processes. In their study, gender-diverse boards used less opportunistic language. Hence, it could be argued to have decreased "greenwashing" and improved the reporting quality. Furthermore, in their international study, Frias-Aceituno et al. (2013) studied 568 companies over two years. They found that gender diversity on the board is positively associated with CSR disclosed despite the differences in corporate governance models.

3.2.2 Gender diversity of Board of Directors and Cost of Debt

Usman et al. (2019) researched the relationship between gender diversity and the cost of debt on the Shanghai and Shenzhen stock exchanges. They found that borrowers were charged 4 per cent less if the board of directors had at least one woman. Similarly, Kordsachia (2021) found that board gender diversity reduced the creditors' interest requirement in the European market. These findings are consistent with the result of Post and Byron (2016) and Adams and Ferreira (2009) findings which suggest that more gender-diverse boards result in greater corporate governance effectiveness, improved accountability, and greater transparency. Hence, gender-diverse boards are projected to give positive indications to lenders about solid corporate governance (Pandey et al., 2020). Furthermore, the evidence from these studies supports the view that if the board is gender-diverse, banks will price the debt lower since there is less danger of default due to female board members' effective monitoring, strategic orientation, and advising capabilities (Usman et al., 2019). Based on the discussion, the following hypothesis is suggested:

H5: The effect of ESG rating on the cost of debt is more pronounced for firms with a more gender-diverse board

3.2.3 Critical Mass Theory

Based on the literature, it can be argued that gender diversity influences corporate policies regarding ESG and can act as a moderator for the cost of debt. However, the

results are not quite as conclusive due to the effect of critical mass. For example, one or two "token" women on a board are linked to worse firm performance, while three or more women (reaching a critical mass) have been linked to better performance (Joecks et al., 2013).

Literature suggests that having at least two female members on the board can be enough to encourage changes in how the board makes decisions. The critical mass theory, argued by Kanter (1977), suggests that the group size influences the behaviour of the group. When a subgroup's size hits a specific "critical mass" level, the sub-groups influence grows. In accordance with this theory, when minorities are significantly underrepresented, they are referred to as "tokens." In practice, they are stereotyped and viewed as less competent by the majority group, resulting in a lesser status than the majority group. However, when a minority group achieves a critical mass, its interactions within the whole group will change (Kanter, 1977). Based on this, if there is only one woman on the board of directors, she will most likely be viewed as a token. As a result, she will have little influence over corporate decision-making that would significantly be different from an all-male board (Cabeza-Garzia, 2018). When members of the minority group form a critical mass, however, the situation is reversed, and personal connections improve (Kanter, 1977).

Regarding this theory, Konrad et al. (2008) suggested that the critical mass of women on a board of directors is achieved when a board of directors consists of three or more female directors. Their key argument is that by having three female directors, the chances of women's views and ideas being heard will improve, and the dynamics of the board will change considerably. Furthermore, studies have found that fewer than three women in a group of men do not feel as free to express their thoughts and opinions. Hence, the mere presence of women does not imply that they hold the same power as men, who often represent the majority group on boards. However, as not all boards are of the same size, Joecks et al. (2013) found that the critical mass of female directors to impact a firm's operations is 30 per cent.

Critical mass theory regarding gender-diverse boards is much researched. For example, Pandey et al. (2020) found evidence that the critical mass is needed to be reached in the Australian market before female board members would significantly affect the cost of debt. Similar results have also been found when studies have looked at CSR factors. For example, Yarram & Adapa (2021) found no significant relationship between gender diversity and CSR when the board had only one female board member. On the other hand, when the threshold of three women was reached, the relationship became positive.

On the contrary, Cook & Glass (2018), in their study of Fortune 500 companies, found that even one or a token woman on the board of directors was able to influence the firm's commitment to CSR positively. This was found to be the case in all areas of CSR, community engagement, stronger governance, and increased focus on sustainable practices. Despite these results showing that only one or two women on board can be associated with more robust CSR records, they did find that firms with three or more women on the board showed significantly better governance and community engagement records. Based on this discussion, the following hypothesis is presented:

H6: The effect of ESG rating on the cost of debt is more pronounced for firms with at least three women on board of directors

4 Data and Methodology

4.1 Research Design

This study was conducted as quantitative research similarly to Eliwa et al. (2021) research. Moreover, this approach was chosen as the purpose of this study is to find the impact of ESG score on the cost of debt. The quantitative research method allows the investigation of the potential relationship between the variables and based on the results draw useful conclusions (Saunders, Lewis and Thornhill, 2016, p.136). However, quantitative research has some limitations that should be considered. One of the main limitations is that it can exclude important in-depth knowledge that cannot be transformed into a quantifiable form (Choy, 2014).

This study will utilise secondary data from a database providing ESG ratings. ESG ratings are produced by multiple different organisations, like Thomson Reuters, Bloomberg and MCSI. In order to examine this study's objectives, the data will be gathered from the ASSET4-database, which Thomson Reuters provides. In addition to the data being readily available due to the University of Vaasa having the license to use this database, ASSET4-database also provides international coverage of the latest information available about ESG rating and relevant financial indicators used in this study. It collects data from over 9000 firms globally with over 630 standardised ESG metrics. Furthermore, it has multiple methods in place to check potential errors in the process (Thomson Reuters, 2022). Lastly, Thomson Reuters is one of the largest ESG data providers in the industry. It has been argued that data from large and well-known organisations in their industries is reliable and trustworthy as their existence to some extent depends on providing credible data (Saunders, Lewis and Thornhill, 2016 p. 265).

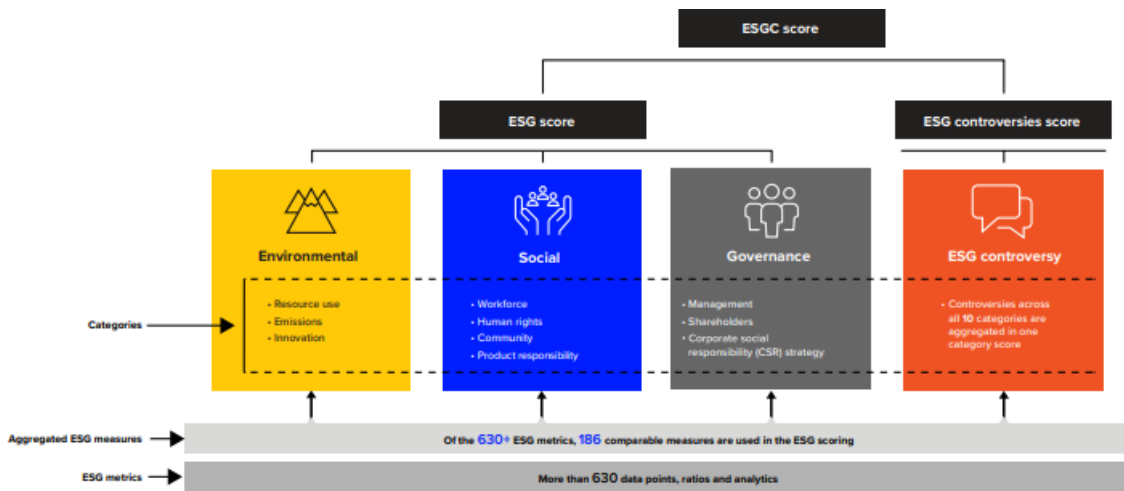
To gather the data, Thomson Reuters utilises publicly available information such as company reports, websites, and CSR reports. This data is then being used to rank companies' ESG performance and effectiveness based on three main dimensions: Environmental (E), Social (S) and Governance (G). The three main dimensions are further

broken down into ten subcategories, as shown in figure 1. The environmental dimension is assessed by resource use, emission and innovation subcategories and the social dimension by the workforce, human rights, community, and product responsibility. Lastly, the governance dimension is determined by management, stakeholders, and CSR strategy subcategories (Thomson Reuters, 2022).

To rank the companies, they produce a score between 0 and 100 which shows the indicator's performance in relation to other firms measured during the same year. In addition, each company is assigned a controversy score which is used to assess the controversies regarding each subcategory. The final ESG score combines the ESG score and ESG controversy scores. Before April 2020, firms that did not report enough information regarding individual dimensions were assigned a score of 0,5 on that dimension. However, to encourage more openness about releasing information about ESG, from April 2020 onwards, companies that do not report enough information are assigned a score of 0 (Thomson Reuters, 2022).

In addition to the ESG data, the database also contains financial variables required in this research, such as interest expenses. Moreover, the database also includes information regarding the firm's board size and its diversity (Thomson Reuters, 2022), which are required to answer the second objective of this study. Hence, all the variables which are used in this research can all be obtained from the same database.

Figure 1: Thomson Reuters Refinitiv ESG score (Thomson Reuters, 2021)



4.2 Regression models

The first objective of this research is to answer whether there is an association between ESG scores and the cost of debt. Although regression analysis cannot prove a causal relationship, it can determine whether or not there is a significant correlation between variables and the direction and magnitude of the relationship (Studenmund, 2017, p. 6). As this is the aim of this study, the regression method will be used to determine the potential association between ESG and the cost of debt. Hence, two different regression models are constructed to investigate the relationship between ESG and the cost of debt. One for the overall score of ESG and one for the individual scores. Furthermore, utilising the regression model allows explaining the movements in the dependent variable as a result of the changes in the independent variable. A similar method has also been used in studies by Goss and Roberts (2011), Oikonomou et al. (2014), Jung et al. (2018) and Eliwa et al. (2021). They have tested the association by a pooled ordinary least square (OLS) regression. OLS, compared to many estimation techniques, is relatively simple to use to analyse the relationship between dependent and independent variables. Furthermore, OLS has further two beneficial properties. Firstly, the sum of residuals is zero, and secondly, OLS can be demonstrated to be the "best" estimator once specific presumptions have been met (Studenmund, 2017, p.37).

Therefore, following the methodology in these studies, this study will also use OLS regression.

The cost of debt will be used as a dependent variable and ESG rating as the independent variable. For the first model, which aims to answer H1, the regression will first be performed only with control variables, FSIZE, IntCov, LEV, ROA and BSIZE. After this, the overall ESG scores are included. Furthermore, year and industry fixed effects will be used in all models. The following two models are constructed:

$$CoD_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 FSIZE_{i,t} + \beta_3 BSIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ROA_{i,t} \quad (1)$$

$$CoD_{i,t} = \alpha + \beta_1 Env_{i,t} + \beta_2 soc_{i,t} + \beta_3 gov_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 IntCov_{i,t} + Fixed\ Effects + v_{i,t} \quad (2)$$

The second aim of this study is to investigate the moderating relationship of gender diversity of the board of directors on ESG and the cost of debt. For this reason, two more regression models are generated. Hence, the third model in this study will be used to test hypothesis 5. The regression is run using a proxy for gender diversity, the proportion of women (PWOMEN). Lastly, the fourth model is constructed to answer H6 about the critical mass of women on the board of directors (CMASS). Similarly to models 1 and 2, fixed effects are included for both models. Based on this, the following regression models are created:

$$CoD_{i,t} = \alpha + \beta_{1-4}(ESG)_{i,t} + \beta_5(PWOMEN)_{i,t} + \beta_6(ESG * PWOMEN)_{i,t} + \beta_{7-9}(Control\ Variables)_{i,t} + Fixed\ effects + v_{i,t} \quad (3)$$

$$CoD_{i,t} = \alpha + \beta_{1-4}(ESG)_{i,t} + \beta_5(critical\ mass)_{i,t} + \beta_6(ESG * critical\ mass)_{i,t} + \beta_{7-9}(Control\ Variables)_{i,t} + Fixed\ effects + v_{i,t} \quad (4)$$

In addition to this, for all four models, robust t-statistic for heteroskedastic has been calculated and reported in the brackets.

4.3 Regression variables

4.3.1 Dependent Variable

The cost of debt

The objective of the main test of this study is to find if ESG influences the cost of debt (CoD). This study will use accounting-based measures to measure the cost of debt for two reasons. Firstly, accounting-based measures have been used in a similar study by Oikonomou et al. (2014) and Eliwa et al. (2021). Moreover, Orlitzky et al. (2003) found that ESG tends to correlate more with accounting-based measures compared to market-based measures. Hence, the proxy for the cost of debt is calculated as the ratio of a firm's interest expense to its average debt.

4.3.2 Independent Variables

ESG score

ESG ratings are used as an independent variable in this study. The ESG rating is based on three key dimensions, environmental, social and governance. In the Thomson Reuters database, each individual dimension of ESG has been given weight. Hence, it gives a balanced picture of the firm's ESG performance.

Environmental dimension

The environmental dimension (ENV) examines a firm's operation in relation to its impact on natural surroundings and ecosystems. The score gives an indication of firms' efforts to become more environmentally friendly. Furthermore, it measures how effectively it can refrain from environmental risks. In addition to measuring a firm's management of risks, it measures how well the firm is able to capitalise on the opportunities for environmentally friendly operations and create long term shareholder value through these.

Social dimension

The social category (SOC) focuses on measuring how capable the firm is in managing its relations with its workforce, stakeholders and the society in which it operates. Through these social practices, companies are able to generate trust and loyalty with those who are impacted by their actions. For this reason, this score reflects the firm's reputation and gives an indication of the state of its license to operate within the society.

Governance dimension

Lastly, the corporate governance score (GOV) focuses on measuring the firm's processes and functions. The score reflects how well and effectively a firm's governance structures are capable of ensuring that shareholders' best interests are met in the long run. Hence, the governance score measures a firm's ability to direct and control its rights and obligations by creating effective incentives and checks and balances.

Board gender diversity

In addition to the ESG scores, in order to examine the second objective of this study, the moderating role of gender diversity within the board of directors on the relationship between ESG and cost of debt, further two independent variables are introduced to measure gender diversity. Gender diversity is measured similarly to Reguera-alvarado et al. (2015) study. Firstly, the proportion of women on the board of directors in relation to the total number of board members is denoted as (PWOMEN). The second variable for gender diversity is dichotomous. This is used to test the hypothesis regarding the critical mass theory. Following Konrad et al. (2008) finding of dynamics in critical mass within the board of directors, the dummy variable is assigned a 1 if three or more women occupy the board of directors' seats. In all other cases, the dummy variable is assigned 0. The variable is denoted as (CMASS).

4.3.3 Control variables

Previous studies suggest four control variables that are typically significantly related to the cost of debt and should be controlled. These are firm size (FSIZE), interest coverage

rate (IntCov), leverage (LEV), and return on assets (ROA) (Eliwa et al., 2021; Erragragui, 2018). Additionally, to these control variables, board size (BSIZE) will also be included as a control variable due to the nature of this study.

Firm size

The firm Size (FSIZE) is controlled as the evidence suggests that larger companies display a lower risk profile. Moreover, they tend to have better means to access external finance resources compared to smaller companies (Magnanelli & Izzo, 2017; Erragragui, 2018; Eliwa et al., 2021). Therefore, the firm size will be determined by calculating it as a natural logarithm of total assets in year t (Eliwa et al., 2021).

Interest Coverage Rate

Interest coverage rate (IntCov) is an indicator of a company's ability to pay interest. Hence, IntCov is used as a proxy for the company's solvency. It is anticipated that the higher the rate of IntCov is, the lower the debt (Oikonomou et al. (2014; Erragragui, 2018; Eliwa et al., 2021). The interest coverage rate is measured as total operating income deflated by total interest expense (Eliwa et al., 2021).

Leverage

Leverage (LEV) is measured by dividing total debt by total assets in year t . It is expected that LEV has a positive correlation with the cost of debt as a high level of leverage is expected to increase default risks and, consequently, the cost of debt. Hence, firms with lower leverage levels also have lower interest rates and better solvency than firms with a high level of leverage (Jung et al., 2016; Eliwa et al., 2021).

Return on Assets

Companies with a high return on assets (ROA) are usually better financially. As a result, they may typically obtain loans with cheaper interest rates. ROA is measured as the "net income before extraordinary items deflated by total assets" (Oikonomou et al., 2014; Eliwa et al., 2021).

Board Size

According to Adams and Ferreira's (2009) study, firms with larger boards tend to have a more representation of female board of directors. However, as Adams and Ferreira pointed out themselves, one may argue that an increase in the board size is due to the increase in female board members. Despite this, they argue that it is essential to control for board size to guarantee that the effects found are caused by gender diversity rather than any other variable.

However, there is debate effectiveness of larger and smaller boards. For example, Benson et al. (2011) argued that smaller boards outperform larger boards. Meanwhile, Anderson et al. (2004) argue that larger boards have better monitoring capacity. A similar argument is made by de Villiers et al. (2011). They argued that larger boards are usually more prone to be diverse and contain directors from various backgrounds. As a result, the firm would be paying more attention to ESG issues, like governance.

Furthermore, for example, Walls et al. (2012) found that board size can significantly affect the company's environmental CSR ratings. On the other hand, Lorca et al. (2011) find a negative association between board size and a firm's financing costs. However, following prior literature, board size (BSIZE) will be controlled (John and Senbet, 1998; Lorca et al., 2011; Liu et al., 2018; Usman et al., 2019). As a proxy for board size, the natural logarithm of the total number of directors on the board will be used (Carter et al., 2003).

Fixed effects

Following studies from Cheng et al. (2014) and Eliwa et al. (2021), the regression models of this study will be controlled for industry and year fixed effects. The industry in which the firms operate will be fixed. This is due to prior evidence indicating that banks can set higher interest rates on debt if the firm's industry is considered high risk. This is despite

the firm having similar credit ratings as a company doing business in a less risky industry (Magnanelli & Izzo, 2017).

4.4 Data and sample

As mentioned, the data for the thesis is retrieved from Asset4-database. The data retrieved will be in a format of unbalanced panel data. The initial data set retrieved covers data from 1999 to 2021 and consists of 5062 publicly listed companies from Finland, Denmark and Sweden. However, only a handful of companies were assessed for their ESG performance between 1999 to 2005 and 2021. As a result, these years were left out of this study. Furthermore, to follow Eliwa et al.'s (2021) study, the data is gathered approximately from the same period between 2006 to 2020. Moreover, the firms that had not been assessed for their ESG performance were removed from the data set. Lastly, financial firms are excluded from this research as they tend to be very different in terms of their capital structures compared to non-financial firms. For example, financial firms tend to have high leverage. In contrast, for a non-financial firm, this would usually indicate that the firm is under financial stress. In addition, they are regulated differently, so previous researchers have excluded the sector from their research (Raimo et al., 2021; Eliwa et al., 2021).

The final dataset consists of 270 publicly listed firms after excluding firms without ESG ratings, firms from the financial sector and duplications. The dataset contains both active and dead firms to prevent any survivorship bias. Table 1 presents the number of firms that have been included in the study per industry (panel A) and per country (panel B). Panel A in table 1 reports the 17 industries which are included in the sample. The different industries are relatively equally represented. The only exceptions are the aerospace and defence industries, as their representation is only 0,37 per cent. Other industries which are not as largely represented are oil and gas (1,11%), energy and automobiles and parts sectors (1,48%). The largest representations of companies in this sample operate in the industrial sector (12,59%), the service industry (11,85%) and

healthcare and pharmaceutical (11,11%). Furthermore, Panel B shows that majority of the sample are Swedish public companies representing 51,11 per cent of the sample. Finland and Denmark are relatively equally represented at 27,41 per cent and 21,48 per cent, respectively.

Table 1: Sample distribution per industry and country

Panel A: Total number of firms per industry		
Industry	Total	percent %
Constructions and Materials	24	8,89
Consumer goods	24	8,89
services	32	11,85
Healthcare and Pharmaceutical	30	11,11
Industrials	34	12,59
Oil & Gas	3	1,11
Technology	23	8,52
Telecommunications	8	2,96
Manufacturing	24	8,89
Transportation	11	4,07
Retail	18	6,67
Industrial metals and Mining	10	3,70
Energy	4	1,48
Aerospace and Defence	1	0,37
Entertainment and leisure	12	4,44
Beverage, Food, and Tobacco	8	2,96
Automobiles and Parts	4	1,48
<i>Total</i>	<i>270</i>	<i>100</i>
Panel B: Total number of firms per country		
Country	Total	percent %
Denmark	58	21,48
Finland	74	27,41
Sweden	138	51,11
<i>Total</i>	<i>270</i>	<i>100</i>

4.5 Descriptive Statistics

Figure 2 presents the overall average ESG scores for Danish, Finnish and Swedish publicly listed companies between the years 2006 to 2020, as well as the average combined score of the three countries. The table shows that the ESG scores have increased gradually over the years. Moreover, the lowest combined average ESG score was recorded in 2006. Meanwhile, the highest score was reported in 2017. The ESG average scores have increased by 25,3 points, after which it has settled in the high to mid-50 score range. Furthermore, the trend has been relatively similar in all three countries.

However, Sweden outperformed Finland and Denmark until 2015. After 2015 the average scores have been almost the same in all three countries.

Figure 2: ESG Scores 2006-2020

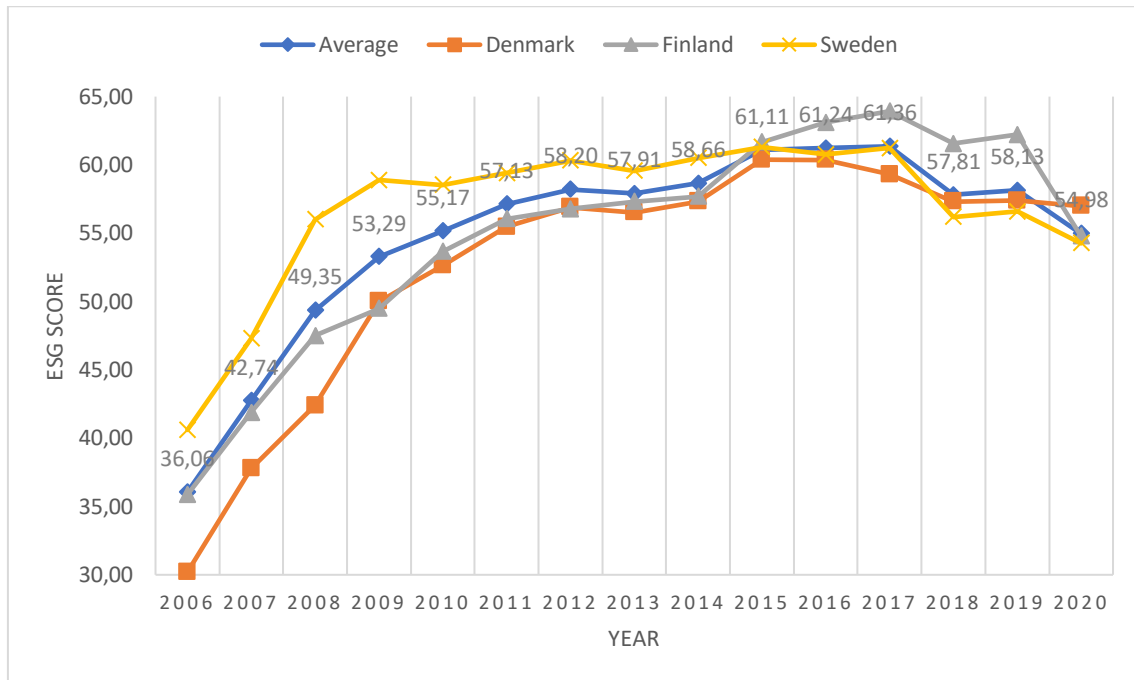


Table 2 summarises the descriptive statistics of the study's main variables. The average ESG score is relatively high at 55,55, with a standard deviation of 18.07. The ESG scores in the dataset range from a minimum of 1,31 to a maximum of 94,38. Furthermore, regarding the three main dimensions of ESG, the companies have performed best in the social dimension and worst in the governance dimension. Moreover, firm size has a mean of 15,13, and board size has a mean of 2.18. Lastly, the average proportion of women on the board of directors is 0,26. The results for the proportion of women are relatively in line with what had been reported in Deloitte's (2021) report despite the average proportion being on the lower side. However, in Deloitte's report, the only year considered was 2021.

Firstly, the descriptive statistics regarding financial indicators (CoD, IntCov, Lev and ROA) show that the average cost of debt is 0,05. This is almost the same as in Eliwa et al.'s

(2021) study of European companies, where the debt cost was 0,06. Furthermore, the mean leverage is 0,33, which falls between the 0.1-1.0 range. This is generally considered to be an acceptable leverage ratio. The mean interest coverage rate is 25,42, indicating that, on average, the companies in the three countries have been able to meet their interest obligations. Lastly, the mean ROA is 0,13, which indicates that the companies generally have good ROA. These results seem realistic as they are relatively similar to the results found in previous studies (Gray et al., 2009; Kordsachia, 2020; Eliwa et al., 2021)

Table 2: Descriptive statistics

	Obs	Mean	Std. Dev.	Min	Max
CoD	3400	0,05	0,10	0,00	3,36
FSIZE	3400	15,13	2,03	6,50	20,05
IntCov	3398	25,42	97,51	-593,06	2195,08
LEV	3400	0,33	2,27	0,00	113,68
ROA	3400	0,13	3,78	-2,48	218,19
BSIZE	1690	2,18	0,30	1,10	3,30
PWOMEN	1690	0,26	0,13	0,00	0,75
CMASS	1690	0,36	0,48	0,00	1,00
ESG	1689	55,55	18,07	1,31	94,38
ENV	1690	17,77	8,12	0,00	32,80
SOC	1690	21,25	7,10	0,29	34,55
GOV	1690	15,89	6,58	0,39	30,06

4.6 Correlations

Table 3 presents the correlation matrix between the variables. Firstly, the correlation results give valuable information regarding the potential issues of multicollinearity. Overall, the variables are showing low intercorrelation for most variables. This conclusion can be drawn as the absolute correlation coefficient is less than 0,7. However, the correlation results for ESG and its dimension show relatively high multicollinearity (0,6393-0,8099). This is expected as the individual scores have been derived from the ESG score. Furthermore, suppose the firm is performing well in one area. In that case, it can be expected that they are performing well in other areas of ESG as well. However, this multicollinearity could potentially bias the regression results. To

avoid this problem, the models constructed will take this into consideration. Hence, one model has been made for the overall ESG score and another for the individual dimensions. As shown in table 3, multicollinearity is lower between the three individual dimensions of ESG. Hence, a regression model that considers this should not lead to biases in the results.

A closer examination of the results of control variables indicates that debt cost is negatively correlated with FSIZE and LEV and positively correlated with IntCov and ROA. This deviates slightly from previous research, which has found negative correlation between the cost of debt and firm size, ROA and IntCov, and a positive correlation with leverage (Eliwa et al., 2021; Erragragui, 2017). Additionally, the results show that board size is positively correlated with the cost of debt. This is in line with Benson et al.'s (2011) argument that smaller boards are more effective than larger ones. Regarding the ESG score, the correlation results indicate that the cost of debt is negatively correlated with the ESG score. Moreover, a negative correlation is found between ESG scores and leverage. In contrast, a positive correlation is found between ESG score and firm size, IntCov and ROA. The results regarding ESG are consistent with prior research and the predictions made in this study (Eliwa et al., 2021; Erragragui, 2017).

As could be expected, there is a strong positive correlation between the overall ESG score and individual scores (0,6393-0,8579). If the score for an individual dimension increases, it could be argued that it will also increase the overall ESG score. Furthermore, it can be noted that the ESG score is positively correlated with firm size and board size. This supports the notion that bigger firms have more resources for ESG practices. In addition, the correlation between ESG score and PWOMEN and CMASS are also positive. Similar results are found between all individual dimensions as well. This is consistent with research findings that more diverse boards have better ESG performance. Furthermore, there is also a negative correlation between the variables measuring gender diversity and the cost of debt. This supports the findings that companies with more gender-diverse boards have lower debt costs.

Table 3: Correlation matrix

	CoD	FSIZE	IntCov	LEV	ROA	BSIZE	PWOMEN	CMASS	ESG	ENV	SOC	GOV
CoD	1,0000											
FSIZE	-0,0147	1,0000										
IntCov	0,0208	0,0489	1,0000									
LEV	-0,1858	0,0276	-0,2865	1,0000								
ROA	0,0520	0,0422	0,4667	-0,2520	1,0000							
BSIZE	0,0101	0,6133	0,0627	-0,0784	0,0606	1,0000						
PWOMEN	-0,1427	0,0000	0,0101	0,0908	0,0086	-0,0352	1,0000					
CMASS	-0,1042	0,2487	0,0169	0,0133	-0,0179	0,3430	6539,0000	1,0000				
ESG	-0,0547	0,4465	0,0765	-0,0469	0,0785	0,3726	2487,0000	0,2838	1,0000			
ENV	-0,0504	0,3662	0,0674	-0,1033	0,0452	0,3138	0,1532	0,1812	0,8099	1,0000		
SOC	-0,0716	0,3809	0,1707	-0,1000	0,1557	0,3356	0,2404	0,2696	0,8579	0,6693	1,0000	
GOV	-0,0298	0,2922	-0,1049	0,1128	-0,0504	0,1857	0,1665	0,1811	0,6393	0,2665	0,3334	1,0000

5 Empirical results

5.2 Regression results

Firstly, the results presented in table 4, column 1 with control variables are somewhat consistent with previous studies. However, Eliwa et al. (2021), Erragragui (2017) and Gray et al. (2009) found a significant negative relationship between the CoD and FSIZE, ROA and IntCov. Compared to the results from this study, the results only indicate a significant negative relationship between CoD and IntCov. At the same time, despite FSIZE being negative, it is not significant. Furthermore, the relationship between CoD and ROA is positive, though not significant.

In contrast to studies by Jung et al. (2016) and Eliwa et al. (2021), the results indicate a significant negative relationship between CoD and LEV. Previous research has found that firms with high leverage tend to be less likely to increase their debt as they already have higher default risks (Baker et al., 2003; Sun and Cui, 2014, Jung et al., 2016; Eliwa et al., 2021). Therefore, a possible cause for a negative association is that the firms have more long-term debt, often associated with cheaper debt expenses. Moreover, BSIZE has a positive relationship with the cost of debt, though this is not significant. This differs from Anderson et al.'s (2004) study, where they detected a negative association between the cost of debt and the size of the board.

Table 4, column 2, shows the results where the regression was run with model one with ESG score. According to the results, there is a significant negative association between ESG score and the cost of debt. The estimated coefficient of the ESG score is -0.000178 and is statistically significant at a 1% level (t-statistics -3.344). Based on this, it could be concluded that overall, in Denmark, Finland and Sweden, a one-point increase in ESG rating would lead to an expected decrease of 0,0178 % in the cost of debt. This result is consistent with the prediction made in this study and prior research indicating that a higher ESG score decreases the cost of debt for the firms (Goss &

Roberts, 2011; Ge & Liu, 2015; Eliwa et al., 2021). Therefore, based on the regression results, H1 is supported. However, R-squared is relatively low, which indicates that the model can only explain 8 per cent of the variance.

Table 4: Regression of ESG and cost of debt between years 2006-2002

	(1) CoD	(2) CoD
ESG		-0.000178*** (-3.344)
FSIZE	-3.94e-05 (-0.0476)	0.000663 (0.782)
IntCov	-3.22e-05*** (-3.100)	-3.08e-05*** (-2.961)
LEV	-0.0738*** (-5.887)	-0.0740*** (-5.900)
ROA	0.0111 (0.784)	0.0121 (0.848)
BFSIZE	0.00359 (1.036)	0.00456 (1.321)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Constant	0.0890*** (6.631)	0.0846*** (6.201)
Observations	1,689	1,688
R-squared	0.078	0.080

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

The results from model two presented in table 5 indicate that a significant negative association is only found between CoD and social dimension (SOC) at the coefficient of -0.000431 (t-statistics -2.290). Furthermore, the significance level drops to 5% compared to the overall ESG score, where the significance level was 1%. These results are somewhat consistent with Eliwa et al.'s (2021) study. It also found a significant negative relationship between SOC and CoD. Similarly, Hasan et al. (2017) study found that companies with higher social capital had significantly lower bank loan spreads. Also, the non-significant governance score is consistent with some previous studies. For example, Erragragui (2018) and Eliwa et al. (2021) have reported that a good governance score does not significantly correlate with lower debt costs. Regardless, some studies have

found a significant relationship between GOV and CoD (Andrade et al., 2014; Ghouma et al. (2018).

However, the results regarding environmental dimension (ENV) differ from the prediction made here and from the prior research findings. For example, Eliwa et al. (2021) found a significant negative relationship between CoD and ENV. Furthermore, the results differ from Nandy and Lodh's (2012) study. They found that more environmentally friendly companies tend to get more favourable loan contracts than less environmentally conscious firms.

Table 5: Regression of the individual dimension of ESG on the cost of debt

	(1) CoD
ENV	-0.000193 (-1.040)
SOC	-0.000431** (-2.290)
GOV	0.000104 (0.324)
FSIZE	0.000686 (0.746)
IntCov	-2.78e-05** (-2.407)
LEV	-0.0755*** (-6.365)
ROA	0.0139 (0.972)
BSIZE	0.00515 (1.425)
Year fixed effect	Yes
Industry fixed effect	Yes
Constant	0.0840*** (6.089)
Observations	1,689
R-squared	0.083

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

One possible explanation for these results might be that Nordic countries are generally considered sustainable. For example, Gjølborg (2010) argued that the government has already taken care of objectives included in the individual dimensions. Hence, as argued in Nordic countries, ESG performance may be different from studies done outside the Nordics as the ESG is so firmly embedded and valued in the culture. Therefore, from the stakeholder theory perspective, it could be argued that lenders, as stakeholders, do not weigh on the individual dimensions in their lending decisions too much. This could be due to the assumption that companies are already performing at an acceptable level. This is in line with Goss and Gordon's (2011) findings that CSR did not have an impact on the cost of debt for high-quality borrowers. Hence, investing in one individual dimension, besides SOC, does not generate any additional or distinct advantages for the firms in terms of lowering the cost of debt. However, this is not to say that companies may not benefit from these activities in association with other important stakeholders.

It is notable that despite the results regarding individual dimensions, the overall ESG score was still significantly negatively associated with a lower level of debt at a significance level of 1%. Hence, this implies that lenders, as stakeholders, are more interested in the overall score of ESG rather than the individual dimension score. This is expected as ESG is becoming a more relevant question for different stakeholders due to the growing interest and the new regulations imposed. Hence, from a legitimacy theory view, it could be argued that higher ESG indicates a firm's legitimacy. In contrast, a lower ESG could expose a legitimacy gap, posing a risk for lenders as essential stakeholders and leading to a higher cost of debt.

Another explanation was made by Eliwa et al. (2021). They argued that lenders, like banks, evaluate the combined and unifying influences of all three individual ESG dimensions. This is done to assess the management team's credibility in managing the different dimensions and its stakeholders. This would also explain the non-significant governance score. Similarly, Rahaman and Al Zaman (2013) highlight the management

quality and its effect on the cost of debt and how lenders consider risks originating from the quality of the practices derived from the different dimensions of ESG.

The moderating effect of gender diversity

The final two hypothesis states that the higher proportion of women within the company's board of directors positively affects the relationship between ESG score and the cost of debt. Therefore, it is expected that the impact of ESG on the cost of debt will be more significant in companies that have more gender diversity within their board of directors.

The regression results for models 3 and 4 are presented in table 7. Regarding H5, the results indicate that variable PWOMEN (column 3) significantly affects the relationship between ESG and the cost of debt (-0.00136) at a significance level of 1%. This suggests that the impact of ESG on the cost of debt is more evident in companies that have more gender diversity on their boards. These results are also consistent with prior studies (Post et al., 2011; Liu, 2018). For example, Velte (2016), in his study of German and Austrian companies, found that women on board significantly affected the ESG rating of the companies. In addition, he concluded that having CSR experts on the board did not have a significant effect while having female representation on the board did have a significant effect on ESG.

Similarly, this study indicates that the differences in the benefits associated with ESG can be affected by and attributed to the board characteristics like gender. As mentioned previously, the benefits of ESG on the lower borrowing costs are often linked to the decrease in information asymmetry, bankruptcy risk and agency costs (Erragragui, 2017). Furthermore, the company's ability to manage its ESG can significantly impact its critical stakeholders and its legitimacy, especially in a business environment where everything is connected. If these stakeholder relationships are poorly managed, it can pose a business risk and hence the firm's ability to pay its debt and, therefore, posing a risk for the lenders. However, as indicated previously, female directors are seen as

better at managing multiple stakeholders and ESG practices, leading to better ESG performance and fewer risks within the business. Hence, allowing the lenders to lower the cost of debt. The results of this study would support this notion. Therefore, based on the results, H5 can also be accepted.

Regarding H6, the results in column (5) show a significant effect of reaching a critical mass of women on the board of directors on the relationship between ESG score and the cost of debt at a 1 % significance level (-0.00916; T-statistic -4.670). This is also consistent with previous studies (Joecks et al., 2013; Pandey et al., 2020; Yarram & Adapa, 2021). This suggests that the impact of ESG scores on the cost of debt is more pronounced in companies with at least three or more women or where critical mass is reached. In this regard, H6 can be accepted. However, the R2 values are low (0,086-0,090) for all variables. This indicates again the relatively low explanatory power of the regression models.

Table 6: The interaction of board gender diversity and ESG with cost of debt

	(1) CoD	(2) CoD	(3) CoD	(4) CoD	(5) CoD
ESG	-0.000178*** (-3.344)	-9.75e-05* (-1.647)	0.000250** (2.100)	-0.000133** (-2.347)	-7.32e-05** (-2.262)
PWomen		-0.0349*** (-4.121)	0.0359 (1.374)		
ESG*Pwomen			-0.00136*** (-2.809)		
CMAS				-0.00916*** (-4.670)	0.00202 (0.311)
CMAS*ESG					-0.000188* (-1.715)
FIZE	0.000663 (0.782)	0.000433 (0.508)	0.000584 (0.674)	0.000631 (0.749)	0.000728 (0.850)
IntCov	-3.08e-05*** (-2.961)	-2.83e-05*** (-2.693)	-2.88e-05*** (-2.728)	-2.91e-05*** (-2.816)	-2.95e-05*** (-2.830)
LEV	-0.0740*** (-5.900)	-0.0721*** (-5.757)	-0.0734*** (-5.757)	-0.0743*** (-5.923)	-0.0748*** (-5.900)
ROA	0.0121 (0.848)	0.0119 (0.819)	0.0121 (0.834)	0.00934 (0.650)	0.00911 (0.637)
BSIZE	0.00456 (1.321)	0.00282 (0.799)	0.00195 (0.551)	0.00849** (2.414)	0.00775** (2.184)
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Constant	0.0846*** (6.201)	0.0926*** (6.721)	0.0755*** (6.099)	0.0748*** (5.779)	0.0720*** (5.741)
Observations	1,688	1,688	1,688	1,688	1,688
R-squared	0.080	0.086	0.090	0.086	0.087

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

5.2 Robustness test

In order to improve the reliability of the empirical results, two robustness tests are conducted. The first robustness test aims to verify if the relationship between ESG score and cost of debt holds if the countries are tested separately. The results for the ESG score are presented in table 7. As the results suggest, the ESG score negatively correlates

with the cost of debt in all of the three countries tested. However, the association is only significant at a 1% level in Finland. Besides this, the results are quite similar to the main test.

Table 7: Regression of ESG and CoD from 2006 to 2020 for Denmark, Finland and Sweden

	Denmark	Finland	Sweden
	(1) CoD	(2) CoD	(3) CoD
ESG	-0.000367 (-1.586)	-0.000213*** (-2.924)	-8.98e-05 (-1.343)
FSIZE	0.00337 (1.137)	0.00317** (2.282)	-0.00544*** (-5.453)
IntCov	-4.02e-05*** (-2.610)	-3.33e-05 (-0.931)	-5.61e-05** (-2.469)
LEV	-0.140*** (-5.126)	-0.0659*** (-4.049)	-0.0278*** (-2.692)
ROA	0.0194 (0.677)	-0.0112 (-0.493)	0.0182 (1.035)
BSIZE	0.0140 (1.594)	-0.0157*** (-3.027)	0.0211*** (5.410)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Constant	0.0819 (1.111)	0.0585*** (3.028)	0.0927*** (5.736)
Observations	489	466	733
R-squared	0.114	0.114	0.193

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

For the individual scores, the results are shown in table 8. The results are relatively similar regarding the ENV, as it is non-significant in all countries. Furthermore, compared to the main test, the results for SOC deviates only from Denmark's results, which is non-significant. However, for the GOV score in Denmark, there is a negative association with the cost of debt at a significance level of 10%. Moreover, the association is positive for Finland and Sweden at a significance level of 10% and 1%, respectively. Based on this, the robustness test mostly confirms the results from the main test besides GOV results.

Table 8: Regression of ENV, SOC and GOV and CoD for Denmark, Finland, and Sweden

	Denmark	Finland	Sweden
	(1) CoD	(2) CoD	(3) CoD
ENV	1.78e-05 (0.0238)	-0.000157 (-0.641)	-0.000228 (-0.822)
SOC	0.000119 (0.217)	-0.000768*** (-2.981)	-0.000556** (-2.375)
GOV	-0.00291* (-1.923)	0.000543* (1.783)	0.000627*** (2.964)
FSIZE	0.00418 (1.426)	0.00190 (1.228)	-0.00455*** (-4.682)
IntCov	-6.72e-05*** (-2.662)	-5.02e-06 (-0.141)	-5.18e-05** (-2.438)
LEV	-0.128*** (-5.793)	-0.0683*** (-4.345)	-0.0286*** (-2.796)
ROA	0.0218 (0.756)	-0.00634 (-0.305)	0.0139 (0.816)
BSIZE	0.0306** (2.400)	-0.0124** (-2.298)	0.0240*** (6.207)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Constant	0.0522 (0.914)	0.0704*** (3.476)	0.0741*** (4.571)
Observations	490	466	733
R-squared	0.138	0.138	0.213

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

The second robustness test aims to verify the results of the impact of board gender diversity on the association between ESG and CoD. All the variables of model 3 will stay the same. However, instead of using the percentage of women on board (PWOMEN), the BLAU index of gender diversity will be used. For this reason, the Blau index (BLAU) for gender diversity is calculated. The index is often utilised in board gender diversity-related studies due to its ability to assess group heterogeneity (Reguera-alvarado et al., 2016). The Blau index can take values between 0 to 0.5, where 0.5 indicates that the board comprises an equal number of female and male directors (Campbell and Minguez-Vera, 2008).

The index is computed with the following formula:

$$\text{Blau index} = 1 - (\text{proportion of women}^2 + \text{proportion of men}^2)$$

The results are shown in table 9, column 2. The robustness test results indicate that variable BLAU significantly affects at a significance level of 1% the relationship between ESG and the cost of debt (-0.00146). These observations are quite similar to the results presented in table 6. Hence, this confirms the robustness of the initial results that the impact of ESG on the cost of debt is more apparent in companies that have more gender diversity on their boards. Furthermore, the R-square is 0,089, which is similar to the original results. On the other hand, this again is on the low side.

Table 9: The moderating affect of BLAU to relationship between ESG and CoD

	(1) CoD	(2) CoD
Blau index	-0.0321*** (-3.341)	0.0393* (1.659)
Blau index*ESG		-0.00146*** (-3.051)
FSize	0.000392 (0.452)	0.000532 (0.606)
IntCov	-2.89e-05*** (-2.754)	-2.98e-05*** (-2.798)
LEV	-0.0717*** (-5.703)	-0.0733*** (-5.718)
ROA	0.0132 (0.905)	0.0138 (0.944)
BSIZE	0.00365 (1.049)	0.00287 (0.823)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Constant	0.0940*** (6.867)	0.0696*** (5.595)
Observations	1,688	1,688
R-squared	0.085	0.089

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses

6 Summary and Conclusion

The growing demand for ethical business behaviour has introduced businesses to new challenges. Therefore, it can be assumed that the ESG related expectations continue to grow. Especially as the European Union will be implementing a new corporate social responsibility directive, which will eventually affect small and medium-sized companies. Hence, this requires companies to continue to invest in ESG.

This change has also affected debt markets, and lending institutions have started implementing ESG factors in their lending decisions. However, as Hoepner et al.'s (2016) analyses found, country-level sustainability factors can influence the cost of debt more than firm-level factors. Regardless of this, most similar studies have been conducted either with European companies (Eliwa et al., 2021) or with companies from the USA (Ge and Liu, 2015). For this reason, this study aimed to deepen the understanding of the effects of ESG on the debt market in the Nordic countries, which are rated high in global ESG ratings. These countries also give a unique perspective due to the position ESG holds in Nordic countries. As Stellner (2015) argued that investors in a country that scores below average on ESG criteria are less willing to pay extra for a product solely because of the firm's outstanding sustainability performance. Therefore, they are probably less concerned about ESG scores while making investing selections. On the other hand, investors are more inclined to recognise firms with strong ESG ratings in countries with relatively high ESG ratings and value ESG factors in their investment decisions. For this reason, the main prediction was that companies with higher overall ESG scores enjoy a lower cost of debt. Furthermore, it was expected that similar results would arise from each individual dimension of ESG.

Moreover, in order to keep up with changing market demands and competition, it has required the firms to consider multiple different expectations and needs. For this reason, these challenges have required adjusting the way they view the purpose of the business from only making money and returns to shareholders to a more responsible business model. The market change has also led to a shift from the shareholder

perspective to a more inclusive stakeholder perspective. This has meant including sustainable principles into all levels of its operations and strategic decisions. Hence, the shift into more sustainable operations has raised issues about managing diverse groups of stakeholders. Prior studies have argued that women on the board of directors bring various perspectives and are more concerned with other stakeholders than just shareholders. Hence, the initial prediction based on previous research was that there would be a positive impact on the number of women on the board of directors on the relationship between ESG and the cost of debt.

The sample of this study employed panel data from 270 publicly listed companies in Denmark, Finland and Sweden. The sample was gathered from the period between 2006 and 2020. After controlling for firm size, interest coverage ratio, leverage, return on assets and board size, the results from this study are somewhat consistent with prior studies. The results confirmed the negative relationship between ESG and the cost of debt. However, in contrast to what was originally expected of the individual dimension of ESG, only social factors significantly impacted the cost of debt. As a result, only hypotheses one and three could be accepted. This could be explained by the fact that in Nordic countries, the level of ESG is already so high that most firms are already meeting the needs of their stakeholders. Competitive advantage is only achieved if the stakeholders see ESG as unique and valuable. Hence, in a market where most companies are performing at a high level of ESG, achieving competitive advantage becomes increasingly difficult on an individual dimension level. This would be consistent with Ye and Zhang's (2011) suggestion of a U-shaped relationship between ESG and the cost of debt. Moreover, the analysis included the number of women on the board of directors to investigate whether internal factors affect the association between ESG ranking and the cost of debt. The results of the regression support this positive link both for variable PWOMEN and CMASS. The robustness test confirmed these results with the Blau index.

Practical implications

From a practical point of view, in Nordic countries keeping the ESG at an acceptable level could be the most beneficial strategy while focusing their resources on other areas. As stated in the Nordic countries, the level of ESG is already relatively high. Hence, reaching the acceptable level would still require investments. Furthermore, the result suggested that a well-rounded ESG strategy would be most beneficial in gaining a lower cost of debt. This is due to the overall ESG rating having a significant negative relationship with the cost of debt.

Additionally, the result suggests that companies with more female boards of directors can benefit more profoundly from this relationship. For this reason, companies could gain from re-evaluating the company's governance structure and culture to encourage more female presence on the board of directors. This could be especially important in the future as more and more scrutiny is put on ESG practices.

Future research

This study presents multiple different possibilities for further research. This study tested if public companies with higher ESG rankings benefit from the lower cost of debt financing and if the number of women on the board of directors affects this association. Hence, future research could focus on non-publicly listed companies. This presents a fruitful research area as the demands for ESG reporting for non-publicly listed companies are increasing. Especially after the corporate social responsibility directive takes place in 2023. Furthermore, this study could be replicated with companies from countries that have mandatory quotas on how many women, at minimum, a company board must include. The results could be then compared to see if there is a difference between the results when gender diversity is voluntary compared to imposed by legislation.

Limitations

Finally, as often in empirical investigation, this study has several potential limitations that should be considered, such as endogeneity and omitted variable bias. These concerns were addressed by using five different control variables, which previous studies have supported. A second limitation concerned secondary data obtained from Thomson Reuters Asset4 specialised database. Even though this database is often used in similar studies and is generally accepted within this field of study, obtaining primary data would greatly support the findings in this study. Especially since the results from these databases are dependent on what they measure and, hence, can be highly subjective on what they consider important when measuring the ESG ratings for companies. As a result, if this study were to be replicated with another database, the results could differ significantly from the results obtained here. Lastly, for this study cost of debt was measured by the ratio of the company's interest expense to its average debt. This, however, could potentially be disruptive if a company's debt level changes close to the end of the year. For this reason, a more prominent measure for the cost of debt could be developed for future research.

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