

ERASMUS UNIVERSITEIT ROTTERDAM
Erasmus School of Economics

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“Are financial institutions secretly steering the market into sustainable responsible behavior?”

Hannah Schretlen
453310

Supervisor: Tim Eisert
Second assessor:

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Abstract

This research aims to investigate whether ESG performances contribute to the lowering of the cost of debt. In addition, the score implying controversies to ESG and the three different pillars – Environment, Social and Governance – are analyzed separately. Next to that, as the aim of this research is to get a clearer view on which determinants are of influence on the cost of debt regarding ESG. Therefore, variables are created constituting a proxy for firm quality, level of reporting and the existence of an ESG-related remuneration policy for the firm's management. Results revealed an overall negative relationship between ESG and the cost of debt, which confirmed what was expected. Firm quality, reporting and remuneration policy are included as dummy variables with a value of 1 for an above-median result or there was a remuneration policy. Firm-quality and the remuneration policy did not find evidence for a different treatment for the value of 1. Reporting however did find a significant moderating effect of reporting on the interpretation of ESG performance. The research made use of the DealScan database, COMPUSTAT, Thomson Reuters ESG Entire Universe database and DATASTREAM, investigating public companies within the US. Final results are based on regressions with around 1900 observations throughout the years from 2010 until 2021.

Keywords: ESG, Cost of Debt, Firm-Quality, Reporting, Remuneration Policy

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1.Introduction

Within the last few decades, an even longer existing problem finally came to attention. The world is exposed to new dangers as the climate is changing and people are connecting more easily. Because of this globalization, the bureaucratic lines between individuals, corporations and governments are becoming thinner. Companies are under the rising pressure from stakeholders, e.g. customers and governments, wanting them to become more sustainable. They want companies to contribute to society by reducing their carbon emission, maintaining and improving the obedience to the human rights of their employees, and remaining (becoming) an honest player in the market. In other words, companies are expected to behave socially responsible, as is captured by the umbrella term ‘Corporate Social Responsibility’ (CSR).

In the past, decisions considering the capital market were merely based on a two-dimensional perspective: risk and return (Fama, 1968). Within the last few years, sustainability has grown to be an important topic on the political agenda. Impact has now formed the third dimension (Choic & Wang, 2009). With the rising attention towards sustainability, the question of how to become sustainable and what ‘being sustainable’ means remains inconclusive. Some decades ago, a corporation was considered to be a money-making entity, only taking its own profit-making interests at heart (Fried, 1970). The impact of how their industry affected the environment or how their employees were paid were not the initial topics of interest. However, in recent times, this way of thinking has changed. Corporations do not only play part in making our economy grow, they also carry a responsibility, just as natural persons, in how they behave towards both other people and the environment overall.

As corporations are financed by financial institutions, the latter also carry responsibility, if not a leading position in how to engage social responsibility in daily operations. Financial institutions therefore have an important role in inducing long-term economic growth, which forces them to set their business model in line with the adjusting values of individuals and corporations (Guijarro, 2021). The behavior of financial institutions reflects the worlds’ view on how serious CSR matters are taken by stakeholders, if it were true the main priority remains to make profit (Friedman, 1970). In addition, as a nation and as a union, if we want to be able to accomplish our Sustainable Development Goals (SDGs) developed by the UN, the money provided by financial institutions is crucial in being able to adjust (UNEP, 2021). After the Kyoto protocol (1997), the treaty of the Paris Agreement of 2015(UNFCCC, 2020) arranged

the change in attitude of 197 nations towards GHG emissions. Its main goal is to reduce the increase of global warming to 1.5 degrees Celsius. This has stimulated the introduction of new regulations, trying to incentivize corporations towards a more conscious way of operating. In terms of financial institutions, the EU has developed the Action Plan on Sustainable Finance which incorporates three objectives:

- The first one is to reallocate free capital towards sustainable investments in order to achieve sustainable growth.
- The second one is to manage financial risks associated with climate change, environmental degradation, and social issues
- The third goal is to promote transparency and the incorporation of a long-term vision regarding financial and economic activities.¹

Therefore, it is clear financial institutions are important for the transition towards the achievement a social- and environmental-friendly goals. Despite the moral incentives to participate in this transition, the financial incentives can steer once behaviour in a (un)ethical way (Sims, 1992). Therefore, it is important to get insight on how financial institutions are addressing sustainability within their own business model. As a lending institution is paid through the interest rates of their customers and clients, the perception towards ESG matters could be reflected in the price. The influence of incorporating CSR on a firm's financial performance has been thoroughly investigated, revealing a slow pattern in time towards a better financial performance for the higher CSR-performing peer (Friede, Busch & Bassen, 2015). However, the subject of how CSR affects the costs of lending and which factors (do not) induce a changing pricing mechanism is still exposed to gaps because of the lack of relevant data and changing behaviour.

Since CSR leaves room for a wide range in interpretation, clarity is necessary. Social responsibility can be divided in three parts: Environment, Social and Governance, more often referred to as ESG. Climate change is considered to be one of the biggest risks our financial system has to deal with now and in the future (ECB, 2020). The risk is twofold, defined as transition risk and physical risk. Transition risk arises from the risks accompanied by the transition toward a low-carbon economy (Ferriani & Natoli, 2021). Examples are regulatory

¹ Action Plan: Financing Sustainable Growth. COM(2018)97.

changes, occurring new obligations, and high expenses due to e.g., taxes or scarcity. Physical risks occur from objective happenings such as droughts or floods. These risks tend to be complex, as they are not straightforward and involve unclear supply chains. Social risks have to do with diversity, human rights and the treatment of the employees. It is the job of Governance to be compliant with all new regulations and to withdraw themselves for e.g. corruption practices. As a financial institution's business model depends on the price of its products, the riskiness of the borrower is a determinant of this price, translated through the Probability of Default (PoD). The perception of the riskiness of a firm is often reflected in the credit ratings given to them. As it is ESG imposes risks for both firms and financial institutions, it can be suspected the level of sustainability is reflected in a firm's cost of debt.

Once stakeholders are aware of non-ESG compliant behavior, it can be damaging for the reputation, known as reputational risk (Porter, Serafeim & Kramer, 2019). Therefore, the lack of social responsibility can incur unexpected costs, as it can decrease a firm's value (Dhaliwal, Goodman, Hoffman & Schwab, 2022). One way of showing socially responsible behavior is by publishing firm-related information about it. However, legislators have not yet been able to formulate a uniform definition of CSR. Moreover, there are no final conclusive standards on how to quantify potential risks and how thorough once disclosures must be. This leaves a lot of room for individual interpretation. The lack of uniformity grants space for corporations to 'bend' the rules. They portray themselves as socially responsible, but are in fact, not. For example, if only small parts of a corporation's products come from recycled goods and the rest is pollutive, their marketing could give the consumer the idea the whole product is made from the recycled goods. Another way of misleading potential consumers is by using difficult language. Non-financial reporting statements are exaggerating the sustainable behaviour and/or is written using very hard to understand, but intrinsically empty, words (Delmas & Burbano, 2011). Both these misleading practices are referred to as *green washing*, meaning true behaviour is not necessarily equal to what is reported.

However, the transition within a corporation starts inside out, with its governance structure. If the management has a short-term perspective or is not a firm 'believer' of the potential risks of climate change and social expectations, agency problems between the management and other stakeholders arise which can therefore constitute a problem. Ethical behavior is often driven by financial incentives, as making profit remains of great importance (Sims, 1992; Fama & Jensen, 1992). Therefore, it is case to align the management's view with the stakeholder's view, as it

increases efficiency and potentially firm value (Xiou & Zhao, 2016). One way of doing this is by addressing the management directly by using reward policies based on socially responsible accomplishments, or by setting regulatory boundaries and obligations (Scott, Beck-Krala & Klmkewicz, 2020). Whether and how this tactic is related to ESG however, has not been investigated yet.

Therefore, as it remains unclear how ESG affects the price of lending and which determinants are of importance for the perception on ESG, the following research question is investigated, allowing for multiple hypotheses to be investigated:

“How is the Cost of Debt (CoD) affected by Environmental, Social and Governance (ESG) performances of the borrowing companies?”

Contribution

In comparison to other research regarding this subject, this study focuses on the US within an after-crisis time scope from 2010 until 2021. In addition, it does not only look at the relationship between CoD and ESG factors, but also whether there is a different assessment for high-quality firms, how lending costs are influenced by reporting and what role a firm’s remuneration policy regarding achieving CSR goals plays. Furthermore, earlier studies often focus on bonds or accounting based measures when assessing CoD. This study however focuses on the primary market – the syndicated loan market – instead of the (secondary) bond market. Therefore, the lending costs are free from potential biases constituted by supply and demand. Besides the academic attributions, this study also provides more insight for participating stakeholders within this field of expertise. Since reporting is included, the investigation sheds light on what the real effect of CSR incorporation is, or whether reporting about it is enough. Also, the assessment of the remuneration sheds new light on which incentives are useful for achieving the ESG related targets.

In the sequel of this thesis, section 2 will address the theoretical framework in section 2.1, together with hypothesis development in section 2.2. Furthermore, section 3 will discuss the data (3.1) and methodology (3.2). Hereafter, the results are shown in section 4, after which chapter 5 forms the final section, discussing the results and formulating the conclusion.

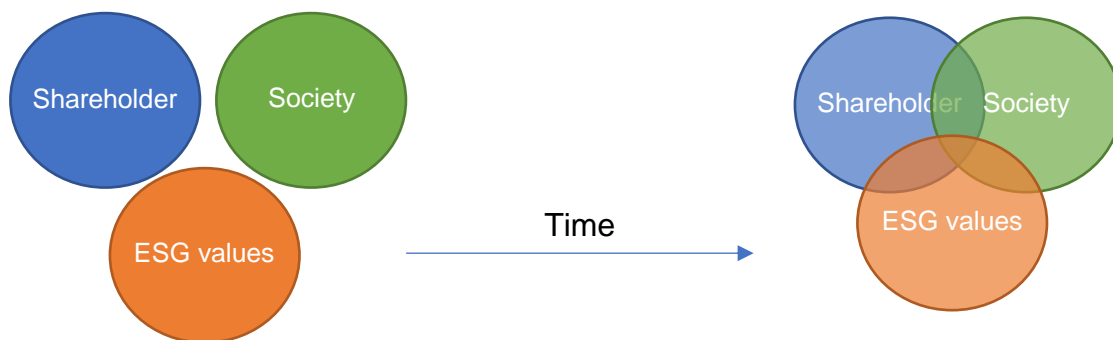
2. Theoretical Framework and Hypothesis Development

2.1 Theory

2.1.1 Corporate social responsibility

The term Corporate Social Responsibility (CSR) was first used by an American economist called Howard Bowen in 1953, who named his publication “Social Responsibilities of the Businessman”. From then, the term went through development. Nevertheless, CSR does not hold a unified definition. The content depends on the context of time and cultural environment. The United Nations (UN) described it as “a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders”, trying to capture a large scope of relevant matters. It is perceived as (finding) a balance between the role corporations have in society regarding economic, environmental and social matters, combined with the maintenance of the satisfaction of their stakeholders. Nowadays, society itself is becoming one of these stakeholders, blurring the once-so-clear lines (Russo & Perrini, 2010).

Figure 1



Note: from the author. Based on the paper of Russo & Perrini (2010).

CSR has been analyzed throughout several implications: the stakeholder theory, value creation, risk mitigation, and morality. Views on how business organizations are dealing with CSR differs from seeing it as a distortion of the purpose of economics to looking at it as a real opportunity for business organizations to integrate the new social and environmental values and contribute to its development (Friedman, 1970; Murray, 2005; Mosca & Civera, 2017). Friedman (1970) argued that forcing CSR implementation on businesses is immoral; it would violate the rights of its owners i.e., its shareholders. More modern scholars however consider it to be full of chances (Cappucci, 2018; Koller, Nutall & Henisz; 2019).

One could say the relationship between CSR and firm operations can be simplified to two headways. The first one looks through the eyes of the conventional and utilitarian economist. Here, the reason to integrate CSR manifests in its potential to create additional value by establishing comparative advantage (Castaldo, Perrini, Misani, & Tencati, 2009). The other headway focusses more on the other side of the spectrum; the earlier mentioned equal role a business could play within the field of generating a world in line with our values regarding social, environmental and economic perspectives (Jamali & Mirshak, 2007; Visser, 2012).

2.1.1.1 ESG

The concept of sustainability in business and investment decisions is a hot topic. Environmental, Social and Governance (ESG), has developed from an ethical and philanthropic sector to a mainstream market aiming for better financial performance (Kiesel & Lücke, 2019). At the same time, the topic grew into a large research field (Friede et al., 2015). Environmental, Social and Governance (ESG) has grown to be the fundament for further differentiation in definition. As mentioned in the introduction, the environmental pillar focusses on physical- and transition risk occurring from climate change, such as floods and regulated carbon emission. Social risk is associated with e.g., human rights and the fulfillment of diversity and Governance is related to money laundering, corruption and regulatory compliance. As the attention toward ESG is growing, regulation is trying to keep up. Corporations are voluntarily disclosing about sustainable practices, but are, in most jurisdictions, not yet obliged by law. The EU knows some regulation indicating the obligation to disclose about ‘sustainable products’ and products with a ‘principal adverse impact’, but the US for example are still in negotiation on what these rules must be (ECB, 2020; Katz & McIntosh, 2021).² In addition, society is forcing companies to do so by adjusting their portfolios or to de-invest in non-sustainable companies. However, the development of the true and quantifiable meaning of ESG is still in its first stage of development. As there is no unified definition yet of what the ESG factors are, or how to measure them, there is room for loopholes creating a non-controllable amount of ESG information (Hass, Fixler, Wentland & Wentland, 2021).

² Regulation (EU) 2019/2088 (Sustainable Finance Disclosure regulation (SFDR)); Regulation (EU) 2020/852 (Taxonomy Regulation).

2.1.2 CSR and underlying theories

Despite the efforts governments and global entities put into stimulating corporations into better ESG incorporation, a corporation has its own reasons to participate in ESG engagement. Literature has shown several explanations indicating benefits from ESG engagement. Reduction of information asymmetry, reputational improvement, the avoidance of the loss of institutional investors, improving financial performances and the reduction of estimation risks are all incentives to enhance their CSR participation (Bhuiyan & Nhung Nguyen, 2019; Perez, 2015; El Ghouli, Guedhami, Kwok & Mishra, 2011; Zhang, Tong, Su, & Cui, 2015).

According to legitimacy theory, corporations always strive to ensure they are viewed as working within their society's borders and norms (Deegan & Unerman, 2011). Thus, corporations strive to guarantee their operations are seen as lawful by external parties. Therefore, corporations embrace societal perceptions in order to strengthen their legitimacy, such as social and environmental practices that include actual actions and/or disclosure (Deephouse, 1996). Furthermore, Neu, Warsame, and Pedwell (1998) argue financial stakeholders such as banks are the firms' primary stakeholders. Therefore, available information will be adjusted to the priorities of financial stakeholders, with the purpose of meeting their needs more effectively. The legitimacy theory argues companies should incorporate society's needs overall instead of focusing on the profits made for their investors (Eliwa, Aboud & Saleh, 2021). Consequences of not incorporating CSR properly in terms of society's wishes could unfold in higher costs of financing, such as higher costs of debt, once companies are punished by society with fees or restricted with legislative boundaries (Aouadi & Marsat, 2018).

Throughout the investigation on the reasoning behind the incorporation of CSR, keeping the legitimacy theory in mind, two main arguments are distilled by prior research. The first reasoning argues companies are engaged with CSR because they want to comply with the social norms and expectations, and thereby do so by changing their behavior (Neu et al., 1998; Pinkse, 2008; Cho, Laine, Roberts & Rodrigue, 2015). This motivation is referred to as the Substantive Management Approach. The second approach, however, is not focused on the changing of their actions but more on how firms can present themselves to the outside world, also known as the Symbolic Approach. Resulting, annual disclosures do not honestly reflect their actions and even blur out truly important information, constituting the growing problem of *green washing* (Delmas & Burbano, 2011).

Since investors often depend on the disclosures provided by the firms themselves, misguided pictures are created, and firms are portrayed as CSR-conscious while concealing critical information. By doing so, firms appear legitimate and experience the benefits, e.g. lower financing costs, of incorporating CSR without having to make costly investments to reverse their controversial practices. For example, Nazari et al. (2017) have discovered enterprises with poor ESG performance included in the S&P 500 index increase their ESG disclosure by employing more sophisticated and difficult-to-understand vocabulary in order to dazzle readers and conceal bad performance. Additionally, Michelon et al. (2015) discover that UK-listed corporations incorporate carefully picked useless information in their reports making them look as socially responsible, while the truly important information is overshadowed or concealed. In contrast, other research implies managers may fear that investors would penalize them for the high expenses associated with ESG policies. As a result, managers frequently seek to downplay their true ESG performance, which is also referred to as *brown washing* (Kim & Lyon, 2014). These latter findings are more in line with the trade-off theory, which frames the incorporation of CSR negatively affects the firm value, due to higher costs and the inefficient usage of resources (Friedman, 1970; Jha & Rangarajan, 2020).

Other well-known theories providing reasoning in favor of the potential of ESG are the Stakeholder's theory, the Resource-Based Theory (RBV) and the Risk Management Perception (Tarmuji, Maeleh & Turmaji, 2016; Grant, 1991; Barney, 1996; Kordsachia, 2020). The Stakeholder Theory asserts that successful stakeholder management may be achieved by effectively implementing CSR policies and procedures. The founder of the theory argues businesses should be concerned about the effect of its strategic decisions on its stakeholders (Freeman, 1984). Establishing mutually beneficial long-term relationships with important components can provide the organization with a number of competitive benefits, including increased profitability, reputational advantage and better risk management due to lower information asymmetry, which reasons with the risk management perception (Hoepner et.al, 2014). In other words, through CSR, the business may form trusted connections with main stakeholders by addressing their real needs and concerns, which can contribute to an increased corporate valuation or the preservation of assets during difficult times. Therefore, the theory argues incorporating CSR can increase firm performance by incorporating its stakeholder's values, stimulating the potential to attract capital from both shareholders and creditors. The RBV theory emphasizes the idea that a firm can generate long term value because of the

exploitation of its rare, non-substitutable, sustainable and valuable, both tangible and intangible, resources, enhancing competitive advantage (Grant, 1991). It contributes to the firm's efficiency, saving costs and therefore adding value to a firm. CSR incorporation can improve a firm's reputation, which is according to Jenkins (2009), a resource that fits all the boxes. In addition, engaging in CSR activities could attribute to an improved inherent alignment of interests between employees and management, stimulating its efficiency and therefore generating value.

2.1.3 CSR – Firm performance evidence

As a start, an extensive study from Friede, Busch and Bassen (2015) investigated more than 2000 empirical researches about the relationship between ESG performance and firm performance. With that, they provided an overview of the inconclusiveness experienced when investigating the relationship. Over 90% of the analyzed studies could not confirm, regardless of what was expected, a significant negative relationship between ESG and financial performance. This study looked at the significant results of empirical research, without looking at one specific proxy for firm performance. The findings are confirmed by the study of Goyal, Rahman, & Kazmi, (2013), who used accounting-based financial performances as a proxy for the CSR-firm performance relationship. Cho, Chung and Young (2019), found a significant result during their investigation on CSR and firm performance, again implying CSR performance contributed positively to a firm's performance. The study concentrated on the Korean stock market and looked at the effect on a firm's profitability, measured by RoA, and the firm's value, measured by Tobin's Q. CSR was significantly and positively correlated with RoA, however, the results regarding the Tobin's Q remained insignificant. These findings were confirmed by a study merely focusing on Germany in the post-crisis period; results revealed a positive and significant relationship with the RoA but did not find evidence in relation to the Tobin's Q (Velte, 2017).

Furthermore, research has also focused on the effect non-financial disclosures on firm performance. ESG disclosure can be seen as a proxy for ESG performance, assuming that companies are eager to disclose about CSR accomplishments. However, this assumption overlooks the idea of greenwashing, creating a paper-based reality instead of an honest view on a firm's contributions. Nevertheless, by investigating ESG disclosure, it is possible to detect green washing and create a more thorough understanding of the importance of disclosure. A study by Mohammad & Wasiuzzaman (2021) took a close look on the Malaysian market,

investigating 661 listed firms between 2012 and 2017. They found a 1-unit increase in ESG disclosure, resulted in a 4 percent incline in firm performance.

Fatemi, Glaum & Kaiser (2016) also investigated the effect of disclosure on firm performance but differentiated between ESG Strengths and ESG Weaknesses during their research. They discovered that ESG Strengths boost business value while weaknesses lower it. In and of itself, ESG disclosure lowers value. But, more crucially, they conclude that disclosure has a critical moderating influence, since it reduces the negative impact of controversies while increasing the positive impact of strengths.

Research by Krueger (2015) however, focused more on how the agency problem is related to CSR. The study investigated the difference in effect of a positive and negative CSR announcement between a firm with high agency problems and lower agency problems in the short term on its shareholders. It first revealed a negative reaction for both negative and positive announcements. However, the respond to positive announcements was less reluctant and systemic. Second, results indicated that companies in which agency problems are less likely, reactions were also less severe. At last, it showed that observable efforts of the manager to revert CSR irresponsible behavior, is rewarded by increasing stock prices. Therefore, it was concluded CSR engagement is also valuable for the shareholders.

2.1.4 Cost of Capital and CSR Performance – Cost of Equity

The relation between CSR performance and financial performances is well funded. The relation between the Cost of Capital (CoC) and CSR, however, is still not thoroughly investigated. The CoE represents the minimum rate of return required by investors given the risk associated with the investment in the firm. To determine CSR effects on the CoE, one should know the components of estimating the CoE, one of which is Beta. Beta captures its systematic risk and translates the firm's sensitivity relative to the market (Fama & French, 1992). Literature states errors in the estimation parameters result in risk that cannot be diversified, causing its connection with CoC (Barry & Brown, 2007). As a proxy for CSR efforts, researchers often look at the level of disclosure about CSR. A stronger commitment to disclosure can have a direct effect since it has the potential to reduce estimation risk, resulting in lower betas.

A study by El Ghouli et al., (2011) found that – within a large sample of US firms – firms with better CSR rankings are rewarded with lower CoE, which is in line with what Xox, Brammer

& Millington (2004) found. Investments of firms regarding environmental policies and better employee circumstances were the main contributors to this lowering of costs. The lower costs of Equity were also confirmed by Bellavite, Pellegrini, Caruso & Mehmeti (2019). They found that higher ESG scores, which they used as a proxy of ESG performance, reduced the CoE. However, the relation had a U-shape, meaning when a certain point was reached, referred to as ‘the threshold’, the relation became positive. These relations can be explained by the reduced risks through what the market believes and how good corporate governance could reduce information asymmetry and agency problems (El Ghoual et al., 2011).³

More recently, Garzón-Jiménez and Zorio-Grima (2020) analyzed 22 studies investigating the relationship between CoC and CSR. The authors were using different proxies for the CoC and used different measures for their dependent variables related to CSR. They found most of the papers revealing a negative relation between CSR and the Cost of Equity (CoE), implying a higher CSR scores lowers the CoE. Companies operating in “sin-industries⁴”, however confirmed a positive relation, indicating higher CoE. This was reasoned in line with the risk mitigation perception; sin-industries experience more (future) regulatory boundaries (e.g, transition risks⁵), more agency problems, a loss in goodwill and a deteriorated stakeholder relation.

2.1.5 Cost of Capital and CSR Performance – Cost of Debt

The Cost of Debt still forms a niche landscape when it comes to available research in relation to CSR. However, within the last few years, the attention for it is increasing (Hoepner, Oikonomou, Scholtens & Schröder, 2016). Shareholders and creditors have diverging interests and embrace a different perception of risk, and thus should be assessed separately (Sharman & Fernando, 2008). Since a lender gains because of the repayment of the principal and interest payments, the mitigation of the Probability of Default (PoD) is key within a lenders’ business model (Merton, 1974). Therefore, transparency about ESG factors could attribute to a better risk assessment and a potentially lower PoD, affecting the CoD, which is in line with the

³ According to agency theory, a misalignment of interests between shareholders and managers can lead to agency difficulties, in which managers engage in actions that benefit themselves rather than the firm's owners. The lack of trust can occur from the information asymmetry, caused by the differences in control between the principal and the agent (Jensen and Meckling 1976).

⁴ Corporations engaged in unethical activities, such as alcohol, cigarettes, gambling, adult entertainment, or weaponry.

⁵ Transition risk is the risk that the implementation of climate regulations to reduce CO2 emissions will have a detrimental impact on some high-emitting businesses (ECB, 2021), see section 1.

stakeholder's theory and the perception on risk mitigation (Hill & Jones, 1992). As mentioned, creditors look at risk differently from shareholders. Therefore, it is argued the optimal of expenditures, from the perspective of the creditor, of a firm is as high as the point where it does not constitute in a marginal improvement in the PoD (Kordsachia, 2021). This exceeds the optimal amount that would fit shareholders. If so, a negative relation between CSR and the CoD can be expected.

Past studies regularly mention information asymmetry as a cause of a higher CoD; lenders want the risk of 'the unknown' to be covered by the interest rate (Semenescu & Badarau, 2011). A paper by Magnanelli and Izzo (2017) investigated the relation between CSR and the CoD. They used an international sample with firms based in the USA, Europe and East Asia. The final sample consisted of 1641 observations over a time scope from 2005 until 2009, covering different industries. As a proxy for CoD, they measured the interest expenses over the total debt. Contrary to the expectations of the researchers, they found a positive relation between CSR performance, implying banks do not consider CSR stimulating behavior as risk-reducing/ consider them to have a higher risk-profile. Eliwa, Aboud & Saleh, 2021, found contradictory results in their investigation, covering the years between 2005 and 2016. They found a negative relationship between CSR performance and the cost of debt, measured as a ratio between the interest expenses and the average amount of debt, which might be attributable to the different time scope of the investigation.

Contemplating to both findings, Goss and Roberts (2011) found evidence for a higher CoD in cases of concerns about socially responsible behavior. The study used a different proxy for the CoD. They looked directly at the spread between the loan price granted compared to its accompanying base rate. However, their findings only applied for high ranked companies; companies with low credit ratings were not treated favorable because of their CSR. These findings are confirmed by a study of Raimo, Caragno, Zito, Vitolla & mariani (2021), who investigated 919 firms within Europe, revealing a negative relationship between ESG disclosure and the Cost of Debt. Since results remain inconclusive, the matter is still interesting for further research, in which this research will participate.

2.2 Hypothesis development

2.2.1 ESG performance

Because there is still a lot of unclarity about how CoD is affected by the CSR, and thus how responsible behavior of firms is priced in, the next research question is formulated:

“How is the Cost of Debt affected by the ESG performances of the borrowing companies?”

A study by Chiesa, McEwen and Burua (2021) found the environmental pillar does have a negative effect on the CoD, when measured based on the coupon rates of 5260 issued bonds in the US and EU between 2016 and 2018. Piechocka-Kaluzna, Thuczak & Lopatka (2021) found the environmental pillar was the only one of three with a significant negative relation with the CoE, however did not generate any significant results with the CoD. A study revealing more clear result was provided by Echholtz, Holtermans, Kok and Yönder (2019). They compared mortgages provided to environmentally certified buildings and their conventional peers. The results showed a significantly lower CoD of 24 to 29 basis points for the green buildings. Hamrouni (2019) investigated a sample of French listed firms, focusing on the three ESG pillars separately. Results revealed three different relationship. Again, the environmental pillar performed a significant negative relationship with the CoD. The Social Pillar however, indicated a significant positive relationship, where Governance remained insignificant. These findings were partly confirmed by a research of Shad, Shamin & McShane (2020), who again found a negative relationship for the Environmental pillar, but insignificant outcomes for both the Social and the Governance pillar. Contrary, Hasan, Hoi, Wu & Zhang (2017) find better social scores induce lower borrowing costs provided by banks. Again, not one conclusive answer to how each pillar affects the CoD separately. Therefore, the following sub-hypothesis are formulated to provide more insights.

H1a: There is a negative relationship between ESG and CoD.

H1b: There is a negative relationship between ESG and CoD.

H1c: There is a negative relationship between the Social Pillar and CoD.

H1d: There is a negative relationship between the Environmental Pillar and CoD.

H1e: There is a negative relationship between the Governance Pillar and CoD.

2.2.2 Credit rating

The inclusion of ESG-related factors within the risk assessment is fairly new. It is argued by scholars the incorporation of ESG factors lowers the idiosyncratic risk, as it is the firm-specific risk that is being anticipated (Ghoul et al., 2013; Lee & Faff, 2009; Mishra & Modi, 2013). Mishra and Modi (2013) stressed the fact their findings revealed a decreasing impact of ESG performance on the CoD once the firm quality became lower. This finding indicates that when companies become closer to a potential threat of bankruptcy, lenders will progressively gravitate away from non-financial metrics like ESG performance and move back towards traditional credit risk measurements. However, according to, the ‘credit quality hypothesis’, which was assumed by Gottesman & Roberts, (2004) high-risk borrowers are locked out of the long-term loan market. Consequently, this would mean low-quality firms do not even participate in the long-term CoD investigation. Contradictory to both, a study by Kordsachia (2021) in which the Interest Coverage Ratio (ICR) was used as a proxy for financial distress, found a stronger negative relationship for firms closer to financial distress in comparison to the healthier firms. Nevertheless, this study expects high-quality firm has a stronger (negative) relation with CoD since it is plausible financial institutions slowly shift towards non-financial characteristics once the financial health is considered save. Therefore, the following hypothesis is developed:

H2: The negative association between ESG and CoD is stronger for high-quality firms than for low-quality firms

2.2.3 Reporting

A theory that is often used to explain the potential reduction of Cost of Debt is the risk mitigation hypothesis, which is intertwined with the theory of information asymmetries. The combination is important since simply put, a reduction in information asymmetries improves once ability to mitigate risk. Although reporting is often used as a proxy for ESG performance, Ashforth and Gibbs (1990) identify two distinct approaches to ESG disclosures by businesses. The first one is referred to as the substantial approach and the second one as the symbolic approach. Corporations utilize the substantive approach to positioning themselves through the eyes of others as dedicated to high ESG values. By doing so, they distance their position from other, low-ESG performing market participants. Therefore, reporting is meant as sharing the true reflection of their operations. Nevertheless, the absence of regulation of ESG disclosure,

combined with a lack of uniformity in technical frameworks, allows managers to purposefully distort their ESG disclosure in order to appear to have a high level of ESG commitment when their actual ESG performance is worse than implied.

Prior research on the relationship between ESG performance and ESG disclosure has produced mixed results, with the majority indicating a positive relationship (Dhaliwal, Li, Tsang, & Yang, 2011; Dunne & McBrayer, 2019; Lyon & Maxwell, 2011; Plumlee, Brown, Hayes & Marshall, 2015; Reverte, 2012), while others indicate a negative relationship (Hughes, Anderson, & Golden, 2001). These findings would support the substantive approach in that ESG performance is motivated by truly providing the necessary information necessary in order to create transparency and engage stakeholders within their processes. Nevertheless, other findings suggest a negative relationship, implying the so-called symbolic – greenwashing – approach. This would mean reporting and ESG performance are supplements of each other, thriving away the true value of its information (Cho, Guidry, Hageman & Patten, 2012). This study elaborates on these findings and suspects a negatively positive effect of reporting on ESG, indicating the substitution effect.

H3: Reporting has a significant effect on the CoD through ESG performance

2.2.4 Remuneration

As is the case with many business initiatives, the success of any ESG integration program is highly dependent on the managers' motivations. From a research point of view, it is anticipated that appropriately controlling for management motivation will be crucial to successfully establish a relationship between CSR and business performance. Corporate performance and rewards for its management are often justified by the agency theory. When a principal assigns or hires an agent, various concerns may arise. The main problem occurs because of the lack of trust in that the principal acts in line with the interests of its shareholders or other stakeholders. Moreover, it is expected the principal focuses more on the optimization of personal wealth (Shapiro, 2005). Agency theory is predicated on the notion that the agent is primarily motivated by self-interest and will select the most beneficiary way to act on. As a result, becoming trustworthy parties, operating in line with what the other party wants may become difficult, owing to a conflict of interests (Jensen & Murphy, 1990). It is common for the principal to have more information than the agents, causing information asymmetry and therefore the lack of trust (Zenger & Gubler, 2018). The enforcement of longed behavior could align counterintuitive views and could therefore contribute towards better performances. This reasoning is also in line

with the Stakeholder theory as more stakeholders' values are considered. The study by Schwepker (2001) argues the enforcement of ethical behavior has a positive effect on the behavior of employees. This can be explained by the reducing distance in principal and agent priorities. The study revealed that enforcement resulted in better firm performance, in line with earlier findings of Chun (2013). Next to it, the researcher argued that firms with more committed employees experience less bankruptcy risk, since opportunistic behavior is reduced or even removed (Grissaffe & Jaramillo, 2007). However, Garvey, Kazdin, Nash, LaFond & Safa (2016) found that organizations with the most diverse set of social policies are more likely to face ethical issues. They argue the enforcement of codes is ineffective. Brander and Poitevin (1992) found evidence promoting managerial compensation contracts as a valuable determinant of the financial structure. The paper argues it is possible to eliminate agency costs of debt completely, once managerial remuneration contracts are included. Therefore, the inclusion of ESG related managerial remuneration could induce lower costs of debt once accompanying agency costs are sufficient and ESG matters are highly valued by its stakeholders and therefore the lender. Therefore, this research expects a negative relation between the CoD and the remuneration policy. This reasoning is twofold. First, earlier research confirmed the effect of incentivising the operating managers to act in line with its stakeholders. Second, this research suspects stakeholders do consider ESG measures to be of importance. Therefore, a negative relationship between the remuneration policy and the cost of debt is assumed. To conclude with, the following hypothesis are developed in order to provide more insight on this yet unclear topic:

H4: The management's remuneration for ESG performance is negatively associated with CoD

3. Data and methodology

3.1 Data

The data and methodology used to test the hypotheses are described in the following section. The data gathering process and the basic characteristics of the samples are first described. In the second section it is substantiated which variables are used and which methods are applied.

For the purpose of collecting ESG data, the Thomson Reuters ASSET4 dataset is used. Earlier research often made use of the MSCI ESG KLD STATS (formerly KLD and GMI) for the ESG data gathering, however, for the purpose of this research this data did not consist of the sufficient information, as it only provides information until 2018 (Dhaliwal, Tsang & Yang, 2011; Amiraslani, Lins, Servaes & Tamayo, 2017; Matthiesen & Salzmann, 2013; Sharfama &

Fernando, 2008). The Thomson Reuters dataset makes use of an ESG Score and ESG Controversies score. In addition, it also contains scores covering the contribution to the three different pillars, which are even further diversified in ten categories, covering over 450 metrics. Therefore, the dataset grants the possibility to provide a thorough view of the individual effects of both the ESG scores and its pillars.

At first, the data gathering process started with all the companies Thomson Reuters evaluated, without excluding any industry. The ESG data was collected first since the database contained the information for the main explanatory variables. Next, the *ESG ASSET4 8700 Companies Entire Universe* database is used to obtain a suitable identifier which can be used to connect to the DealScan database. The Global Company Key (GVKEY) – in combination with the International Securities Identification Number (ISIN) – was most actively represented and therefore chosen to go further with. The final number regarding the firm-level information revealed a final number of 1798 of companies.

Hereafter, the companies are linked to the loan-specific information. For this matter, the WRDS-Reuters DealScan dataset is used. To be able to link both datasets, the *Dealscan-Compustat Linking Database* is utilized to obtain the ‘old’ Borrower Company ID’s; the unique identifiers of the DealScan database. To be able to retrieve the most up to date information about the loans granted, the new linking dataset was necessary to extract the new Company ID’s together with the new facility ID’s. This eventually led to the conversion towards 4482 granted loans to 928 companies within North America between 2010 and 2021. The data sample regarding the firm-based approach made use of the Compustat database, which provided firm-specific information about active and inactive publicly held companies operating in North America. The totality of the Compustat data covered over 300 annual data items about the balance sheet, the cash flows and the income statements. In addition, it also provides information about the location, industry, market prices and earnings. In this thesis, the annual data regarding North America publicly held companies is utilized to construct the necessary variables. The constructed variables, including both the firm-specific and loan-specific information, allows to investigate the effects of ESG contributions on the pricing of loans. Since not every company has information about all included independent variables, most regressions are run on approximately at least 1900 or more observations including all industries, depending on which hypothesis is investigated (Appendix D).

3.1.1 Variables Selection

3.1.1.1 Dependent variable

As a measure of the Cost of Debt, the all-in spread drawn is used as a proxy of CoD. It is measured as upfront free + annual fee + utilization fee + spread over LIBOR (Ivashina, 2005). The variable is transformed into a logarithm as it revealed a more suitable distribution in terms of linear regression analyses compared to the unadjusted variable, as it removes the skewness of the original data. Therefore, despite the accompanying difficulty within the interpretation, the log-transformed model is used during the sequel of this research in order to get the most reliable results.

3.1.1.2 Independent variables

3.1.1.2.1 ESG measures

The independent ESG measures included are the ESG Score, the ESG Controversies Score, the Environmental, Social and Governance Pillar Score, the SG Reporting Scope score and the Policy Executive Compensation ESG Performance score. The ESG Score from Thomson Reuters (ESG Score) collects and calculates approximately 400 ESG metrics at the business level, from which the 178 most pertinent data points are chosen to enable the entire company assessment and scoring process. The underlying metrics are determined by their relevance to the industry, their data availability and their materiality. The overall ESG score is calculated by combining the ten categories and is a proxy for the company's ESG performance. In addition, the three main pillars – Environment, Social and Governance - will be analyzed separately in order to provide a thorough view on their impact of the pillars individually. As mentioned, the three sub-categories are an integral part of the total ESG Score. These three pillars represent 10 sub-sub-categories, which can be found in appendix A.

The ESG Controversies Scores reveals a company's ESG performance based on published data from the ESG pillars and a worldwide media overlay of ESG issues, indicating negative ESG-engagement in any sort of way. The influence of the unfavorable event may continue to be felt in the following year if additional events, such as litigation, ongoing legislative battles, or fines, are associated with the negative event (Refinitiv, 2021). As the situation continues, all fresh media pieces are recorded.

Next to that, the variables including information on the reporting scope of a company and the information about a firm's remuneration policy – ESG Reporting Scope (CGVSDP041) and

Policy Executive Compensation ESG Performance (CGCPDP0013) respectively - are also retrieved from the Thomson Reuters Database. The reporting scope entails the percentage of the company's activities covered in its environmental and social reporting. For the purpose of this research, the variable is transformed into a dummy variable in which the above-median company's get a value of one, and zero otherwise (Refinitiv, 2021).

The Executive Compensation holds if the company has an extra-financial performance-oriented compensation policy; the compensation policy includes remuneration for the CEO, executive directors, non-board executives and other management bodies based on ESG or sustainability factors. If yes, the dummy variable carries a value of one, and zero otherwise (Refinitiv, 2021).

3.1.1.2.2 Credit rating

The long-term credit ratings are obtained from the Compustat database and are, if necessary, manually complemented using the Thomson Reuters Datastream database. Individual ratings are converted into the scale of S&P, as is retrieved as such from Compustat. Therefore, the Rating is based on a scale deferring from D (in default) to AAA (prime). The firm's rating represents the measure of risk associated with the firm, mainly determined by the probability of default (PoD). The lower the credit rating, the higher the risk associated with the accompanying company. As a higher risk increases the chances of default, this risk - if the loan is granted - will be reflected in the interest rate. Therefore, a higher rating, implying a relatively low PoD, is expected to be negatively correlated with the Cost of Debt. Since this research focuses on the difference between high- and low-quality companies, the variable is transformed into a dummy variable. The value of 1 represents the high-quality firms with an above-median score, and zero otherwise.

3.1.1.3 Control Variables

3.1.1.3.1 Firm characteristics

Return on Assets (RoA) - Return on Assets is integrated as a proxy for company profitability in accordance with the literature and accepted practices (Caragnano et al., 2020; Gerwanski, 2020). It is calculated as net income divided by the total assets. Indeed, prosperous businesses are anticipated to be more resourceful and have a larger capacity to service debt than unprofitable businesses. As a result, productive businesses often have a reduced default risk, which results in a cheaper cost of financing (Graham et al., 2008). As a result, a negative correlation between profitability and debt financing costs is expected.

Market/Book – As a proxy of growth opportunities, the Tobin's Q is used as a proxy (Dennis, Nandy & Sharpe, 2000). It is measured as $(\text{Total Assets} + \text{Market Value Fiscal} - \text{Common Equity})$ divided by Total Assets.

Leverage – The financial leverage is calculated as the total debt divided by total equity. Debt is significantly correlated with default risk, and earlier research indicates enterprises with a high level of leverage face significant debt commitments and face a higher chance of default (Zhu, 2014). As a result, a positive correlation between financial leverage and debt financing costs is anticipated.

Z-score – The Z-score from Altman (further defined by Hillgeist, Keiting, Cram & Lundstendt (2004)) is used as a proxy of financial distress and is measured using five financial ratios. As the paper of Altman states, the calculation is as follows: 1.20 (Working Capital/Total Assets), 1.40 (Retained Earnings/Total Assets), 3.30 (Earnings Before Interest and Taxes/Total Assets), $0.60 \times (\text{Market Value of Equity}/\text{Book Value of Debt})$ and $1.00 \times (\text{sales}/\text{total assets})$. A score of less than 1.8 indicates the company is likely to go bankrupt, whereas a score of more than 3 indicates that the company is unlikely to go bankrupt. However, for the purpose of this research the variable is log-transformed and can therefore not be interpreted as such.

Size – The Size is measured as the logarithm of Total Assets (TA) (Gerwanski, 2020). According to the literature, bigger firms are better in withstanding negative shocks in their cash flow and thus less likely to default in certain circumstances (Goss & Roberts, Petersen & Rajan, 1994). Moreover, research indicates that larger organizations have better access to external capital, as well as reduced information asymmetry and cheaper monitoring expenses (Goss & Roberts, Graham et al., 2008). Therefore, they are expected to have a negative relation with CoD.

Interest Coverage Ratio (ICR) - Finally, the Interest Coverage Ratio is included, which is determined as the ratio of profits before interest and taxes to interest expenditures (Raimo, Caragno, Zito, Vitolla & Mariani, 2021). It is commonly used to measure a firm's capacity to service its debt and businesses with a greater interest coverage ratio are seen as less risky and benefit from reduced borrowing costs (Lorca, Sánchez-Ballesta & García-Meca, 2011; Kordsachia, 2019). A negative correlation between interest coverage and the cost of debt is therefore expected. For the purpose of this research, the variable is log-transformed.

3.1.1.3.2 Loan Characteristics

Based on the research by Goss and Roberts (2011) and Nandy & Lodh (2012), several loan related characteristics are included in the regression model.

Maturity – The maturity represents the facility’s tenor measured in months. It is expected to be positively correlated with CoD; a longer maturity increases insecurity about a firm’s ability to pay back the loan.

Secured status: This dummy variable indicates if the granted loan was secured by collateral. De dummy equals 1 if secured, and zero otherwise. Earlier research has shown firms pledging collateral are often perceived as low-quality firms (Booth & Booth, 2006). Therefore, a positive relationship is expected.

Facility amount: Represents the total facility amount measured in millions (\$).

Loan concentration: The loan concentration is measured as $\text{Log of Loan amount}/(\text{Loan amount} + \text{Total Debt})$

3.2 Methodology

3.2.1 Model development

The majority in studies analyzing the relationship of CoD with other determinants follow a linear regression approach. Therefore, this study continuous in the same direction. The regression will be controlled by including variables regarding both financial health and loan characteristics. The analyzed data refers to the after-crisis period from 2010 to 2021, covering the most up-to-date observations. Since the dataset includes both time series and cross-sectional dimensions, a panel data set is constructed. A pooled multiple-omitted-least-squares regression (OLS) model is developed using the CoD as dependent variable and ESG related variables as primary independent variables (Goss & Roberts, 2011; Kordsachia, 2019). Furthermore, the models are adjusted for heteroskedasticity using robust standard errors, as will be clarified in section 3.2.2.

Again, in line with earlier studies, this research controls for industry- and year-related fixed effects. As such, the study's approach accounted for historical trends across sectors and unobserved innovation within industries over time, which is consistent with the notion that ESG materiality can be affected by industry affiliation, since industries which e.g., rely on natural resources have different ESG concerns and thereby different measures. However, it must be

taken into account that endogeneity remains a concern; biases could occur from correlations between omitted firm characteristics and the error term. The overall model to be used is represented in the next equation (1).

$$(1) \text{ All – in Spread Drawn (CoD)}_{i,t} = \int (\text{ESG}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} + (\text{industry, year, loan purpose, loan type}) \text{ fixed effects}_{i,t})$$

The following equation is further utilized to perform the regressions belonging to the second hypothesis. Equation 2.1 shows which firm- and loan specific variables are included in the upcoming regressions. To summarize, *liquidity, size, z-score, ICR, MtB, RoA* and *leverage* are the firm specific independent variables, whereas *leverage, amount, secured, maturity* and *loan concentration* are loan specific. To provide a more comprehensive and clearer overview, equation 1 will be further utilized, only specifying which variables have changed, as each Pillar will be analyzed separately.

$$(2.1) \text{ CoD}_{i,t} = \beta_0 + \beta_1 \text{ESGScore}_{i,t} + \beta_2 \text{Liquidity}_{i,t} + \beta_3 \text{Size}_{i,t} + \beta_4 \text{Zscore}_{i,t} + \beta_5 \text{ICR}_{i,t} + \beta_6 \text{MtB}_{i,t} + \beta_7 \text{RoA}_{i,t} + \beta_8 \text{Leverage}_{i,t} + \beta_9 \text{Amount}_{i,t} + \beta_{10} \text{Secured}_{i,t} + \beta_{11} \text{Maturity}_{i,t} + \beta_{12} \text{Concentration}_{i,t} + \beta_{13} i. \text{industry}_i + \beta_{14} i. \text{year}_t + i. \text{year}_t + \beta_{15} i. \text{loan purpose} + \beta_{16} i. \text{loan type}_t + \varepsilon_{i,t}$$

$$(2.2) \text{ CoD}_t = \int (\text{ESG controversies}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} + \text{fixed effects}_{i,t})$$

$$(2.3) \text{ CoD}_t = \int (\text{Environmental pillar}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} + \text{fixed effects}_{i,t})$$

$$(2.4) \text{ CoD}_t = \int (\text{Social pillar}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} + \text{fixed effects}_{i,t})$$

$$(2.5) \text{ CoD}_t = \int (\text{Governance pillar}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} + \text{fixed effects}_{i,t})$$

In order to define the effect of the differences between high-and low-quality borrowers, a dummy variable is created, representing a value of one if a firm is rated higher than its median. Just as with earlier findings and general interpretation, a high-quality borrower is defined as a borrower which is rated \geq BBB, representing the lower median grade (Lopez, 2001). Furthermore, the interaction term with ESG is included within the model, constituting the possibility to investigate its moderating effect on socially responsible behavior.

$$(3.1) CoD_t = \int (ESG Score_{i,t} + Credit Rating_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

$$(3.2) CoD_t = \int (ESG Score_{i,t} + Credit Rating_{i,t} + ESG Score_{i,t} * Credit Rating_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

$$(3.3) CoD_t = \int (ESG Controversy_{i,t} + Credit Rating_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

$$(3.4) CoD_t = \int (ESG Controversy_{i,t} + Credit Rating_{i,t} + ESG Controversy_{i,t} * Credit Rating_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

To investigate the third hypothesis, which focusses on how reporting affects both ESG performance and the CoD, the reporting variable is converted into a dummy variable for the purpose of suiting this model best. Each year, the median of ESG disclosure is calculated and then assigned a value of one to businesses with a higher reporting score than the median and zero for firms with a ESG disclosure score beneath the median. Then, in the main regression, an interaction term is introduced between ESG performance and the constituted dummy variable (see Equation 2). The analysis anticipates the ESG reporting scope score will have a considerable influence on the link between ESG performance and debt costs (Dhaliwal, Li, Tsang, & Yang, 2011; Dunne & McBrayer, 2019; Lyon & Maxwell, 2011; Plumlee, Brown, Hayes & Marshall, 2015; Reverte, 2012).

$$(4.1) CoD_{i,t} = \int (ESG Score_{i,t} + Reporting Dummy_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

$$(4.2) CoD_{i,t} = \int (ESG Score_{i,t} + Reporting Dummy_{i,t} + ESG Score_{i,t} * Reporting Dummy_{i,t} + Firm characteristics_{i,t} + Loan characteristics_{i,t} + fixed effects_{i,t})$$

The last hypothesis is based on a dummy variable indicating if a firm includes a remuneration policy for its managers once certain ESG related goals are achieved. The value of 1 indicates a firm incorporates such policy, and zero otherwise. Before including this variable in the model as independent variable, it was tested for endogeneity with ESG performance. Nevertheless, test results showed endogeneity did not occur. Therefore, the following model is incorporated:

$$5.1 \text{ CoD}_{i,t} = \int (\text{ESG Score}_{i,t} + \text{Policy Dummy}_{i,t} + \text{Loan characteristics}_{i,t} + \text{fixed effects}_{i,t})$$

$$5.2 \text{ CoD}_{i,t} = \int (\text{ESG Score}_{i,t} + \text{Policy Dummy}_{i,t} + \text{ESG Score}_{i,t}$$

$$* \text{Policy Dummy}_{i,t} + \text{Firm characteristics}_{i,t} + \text{Loan characteristics}_{i,t} \\ + \text{fixed effects}_{i,t})$$

3.2.2 Preliminary analysis

After data selection, the observations are checked for outliers. Therefore, the data is adjusted for these outliers if this was redeemed necessary. The ESG variables did not contain observable outliers and were therefore not winsorized or transformed into a logarithm. In cases where the variable is transformed into a logarithm, it is marked with var^a . In addition, some variables are winsorized at the 1st and 99th percentile in order to exile biases due to outliers. These variables are market with var^b .

Table 1

This table shows the summary statistics of the variables included in further analysis, prior to being merged to the loan-specific observations. The CoD, Liquidity, Size, MtB and ICR are both transformed into a logarithm and winsordized at a 1st and 99st percentile. CoD is measured as the all-in spread drawn reflects the proxy of the CoD and is obtained from the DEALSCAN database, which represents the costs related to a facility within the syndicated loan market. *Secured* represents a dummy variable with a value of 1 once the loan is secured and zero otherwise. Both *Credit Rating* and *Reporting* have a value of 1 once they exceed the median, reflecting firm-quality and high non-financial reporting respectively. Remuneration has a value of 1 if a company does include a remuneration policy. EP, SP and GP represent the Environmental Pillar, the Social Pillar and the Governance Pillar respectively. More information about the definitions of the variables can be found in appendix A

	N	Mean	SD	Median	Min	Max
<i>CoD</i> ^{ab}	4815	5.144	0.508	5.106	3.689	6.477
Liquidity ^b	3296	.72	0.479	.607	.034	8.049
Size ^{ab}	3973	8.221	1.446	8.09	4.404	13.472
MtB ^b	3968	.45	0.521	.397	-.972	2.043
Leverage	3842	.344	0.209	.326	0	2.365
<i>Z – Score</i> ^{ab}	3158	.949	0.775	1.02	-1.599	3.17
ICR ^{ab}	3308	1.866	1.316	1.743	-1.262	7.146
Loan Concentration	3504	.475	0.257	.461	.005	1
Maturity	4792	50.986	17.815	60	1	101
Secured	4815	.377	0.485	0	0	1
Credit Rating	4815	.55	0.498	1	0	1
ESGP	2905	42.095	18.862	39.34	1.45	94.34
ESGC	4815	.88	0.325	1	0	1
EP	2295	36.374	25.849	31.52	.1	98.55
SP	2905	44.347	20.830	42.11	.6	97.81
GP	2905	50.22	21.965	51.26	.52	97.84
Reporting	3456	.473	0.499	0	0	1
Remuneration	3449	.32	0.466	0	0	1

As for the summary statistics, results are in line with earlier research. For starters, Goss and Roberts (2011) found a mean for the log-transformed all-in spread drawn of 4.620 over the period between 1991 and 2006. The standard deviation is smaller in comparison to what Goss and Roberts (2011) found (0.864), which would only be beneficial for the reliability of the results. Following Goss and Roberts, the mean loan spread is estimated to be 195 basis points, which is in line with former banking studies.⁶ The correlation matrix is shown in Appendix B to help understand the interaction of the selected variables and to ensure they are not heavily correlated, meaning exceeding the rule of thumb value of 0.7. Notably, none of the pairwise correlations between the model's independent variables surpasses 0.7. To confirm these assumptions, a Variance Inflated Factor (VIF) test is used to ensure the absence of multicollinearity. In a multivariate regression model, multicollinearity occurs when there are substantial intercorrelations between two or more independent variables. When a researcher or analyst tries to figure out how well each independent variable can be utilized to predict or comprehend the dependent variable in a statistical model, multicollinearity can lead to skewed or misleading conclusions. In line with James, Witten, Hastie & Tibshirani (2013), this paper considers multicollinearity to be plausible once the VIF value exceeds 5. Confirming original predictions, the VIF test result indicates multicollinearity is not a concern, since all variables have a score of less than five.

Table 2

This table shows the results from the VIF (Variance Inflation Factor) test to check for multicollinearity within the regression variables, calculated for the variables individually

	VIF	1/VIF
Z-Score	3.910	0.256
Size	2.500	0.400
ICR	2.470	0.404
MtB	2.420	0.413
Concentration	2.300	0.434
Leverage	2.190	0.457
ESG Performance	2.090	0.479
Reporting	1.650	0.607
Secured	1.370	0.730
ESG Controversy dummy	1.280	0.781
Liquidity	1.270	0.790
Rating	1.250	0.802
Maturity	1.100	0.908
Policy	1.080	0.929
Mean	1.920	

⁶ $e^{(5.144+0.5*0.508^2)} = 195.00$

To control the fixed effects, a dummy representing the accompanying year and a dummy representing its Global Industry Classification Standard (GICS) – industry number are included to adjust for fixed effects, in line with prior research (Goss & Roberts, 2011; Kordsachia, 2019; Gerwanski, 2019). To account for the variety in loans, a dummy variable is included representing 32 potential purposes one loan can have (Appendix A). This reasoning is also followed for Loan Type and will thus be controlled for within the analysis. Using the main regression described in equation 2.1, the impact of ESG performance on the cost of debt is analyzed in regard of this matter. At first, an analysis is conducted using alternative model versions with variable fixed-effects settings based on the regression design. Specifically, the models given in Appendix B range from complete exclusion of industry- and time-fixed effects across year dummies (model 1) to complete inclusion of industry- and time-fixed effects (model 3 and 4). Furthermore, the table includes the joined fixed effects between year and industry (model 4). The same approach is used considering the loan specific fixed effects. Since the specification with both the time- and industry interaction- and the loan type and purpose interaction effects resulted in the best model fit, measured by the highest adjusted R-squared, model 4 is used as a reference in the analysis that follows.

Additionally, the Hausman test is used to determine if the fixed effects model is preferable to the random effects model. The results indicate the use of fixed effects is favored, as evidenced by the null hypothesis being rejected (Chi=42.55, p0.000). Finally, the OLS regression model presupposes homoskedasticity, which implies the error terms' variance is constant. To test this assumption, the Breusch-Pagan test is used to identify if heteroskedasticity occurs between the variances of the error terms. Results indeed indicate heteroskedasticity (Chi=30.89, p0.000), implying the error term's variance is not constant (White, 1980). Thus, to account for heteroskedasticity, all tested models are performed using White's robust standard errors.

4. Results

4.1 Primary results

4.1.1 ESG performance

Table 3

This table shows the results of the first hypothesis. Model 1 includes the ESG Score, model 2 the ESG Controversies Score, model 3 the Environmental Pillar, model 4 the Social Pillar and model 5 the Governance Pillar. The subscripts *, ** and *** reflect the levels of significance, in which *, ** and *** represent 10%, 5% and 1% respectively. The t-values are corrected for firm-level clustering and heteroskedasticity and are included within the parentheses.

CoD	Model 1	Model 2	Model 3	Model 4	Model 5
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ESG S	-0.00184**				
	(-1.96)				
ESG C		0.00343			
		(0.20)			
EP			-0.00169**		
			(-2.36)		
SP				-0.00145*	
				(-1.77)	
GP					-0.0000653
					(-0.14)
Liquidity	-0.0486	-0.0657	-0.0764**	-0.0606	-0.0657
	(-1.52)	(-1.47)	(-2.02)	(-1.35)	(-1.47)
Size	-0.102***	-0.113***	-0.117***	-0.112***	-0.113***
	(-2.87)	(-3.22)	(-3.09)	(-3.26)	(-3.25)
Z-score	-0.144***	-0.177***	-0.158***	-0.175***	-0.177***
	(-3.99)	(-5.09)	(-4.23)	(-5.20)	(-5.08)
ICR	-0.0642***	-0.0728***	-0.0721***	-0.0702***	-0.0726***
	(-3.90)	(-4.49)	(-4.12)	(-4.36)	(-4.48)
MtB	-0.0103	-0.00619	-0.00219	-0.00142	-0.00459
	(0.36)	(0.03)	(0.10)	(0.07)	(0.02)
RoA	0.00545	0.0727	0.0580	0.0551	0.0733
	(0.36)	(0.41)	(0.31)	(0.31)	(0.41)
Leverage	0.217*	0.247**	0.225	0.223*	0.219*
	(1.79)	(2.45)	(1.45)	(1.82)	(1.79)
Amount	-0.0257**	-0.0214**	-0.0173	-0.0223**	-0.0215**
	(-2.53)	(-2.01)	(-1.39)	(-2.07)	(-2.02)
Secured	0.0700**	0.0642**	0.0744**	0.0631**	0.0643**
	(2.35)	(2.13)	(2.24)	(2.10)	(2.13)
Maturity	0.0000786	-0.0000973	-0.000630	-0.0000929	-0.0000973
	(0.11)	(-0.14)	(-0.90)	(-0.13)	(-0.14)
Loan Concentration	0.0845	0.0940	0.000260	0.0880	0.0934
	(0.91)	(1.11)	(0.00)	(1.03)	(1.10)
Controls					
Industry and year	Yes	Yes	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes	Yes	Yes
N	1924	1924	1566	1924	1924
adj. R2	0.405	0.403	0.430	0.405	0.403

Table 3 presents evidence in favour of the alternative hypothesis H1a (model 1). The dependent variable, CoD, measured as the logarithm of the all-in spread drawn, seems to be negatively affected by ESG performance, since the accompanying coefficient entails a value of -0.00184** with a p-value that remains significant at a 5% level. For the purpose of interpretation, it has to be kept in mind the dependent variable is measured as a logarithm. Direct interpretation is therefore not possible, as is not possible to transform the standard deviations of the log-transformed dependent variable back to raw units (Goss & Roberts, 2011). The negative coefficient (-0.00184**) implies a one-unit increase in *ESG Score*, decreases the dependent

variable with approximately -0.184%⁷. The average spread within this sample, measured in basis points over LIBOR, is 195.00⁸. Imagine a 1 unit increase in terms of ESG Score based on a loan worth 1.000.000 dollars. *Ceteris paribus*, the spread would decrease to a value of 194.64 basis points. The difference between the two is equal $195.00 - 194.64 = 0.36$ basis points. Resulting, the borrower saves 0.0036 percent, equal to approximately 3600 dollars. Depending how big the ESG related changes are, the model would suggest a small economic significance. However, as results indicate a negative relation with the dependent variable, results are in line with previous studies concerning this matter (Goss and Roberts, 2011; Kordsachia, 2019; Raimo, Caragnano, Zito, Vitolla & Mariani, 2021). Nevertheless, the controversies dummy variable remains insignificant at all three levels. The positive relationship of 0.00343 does indeed indicate the expected (bad) influence of a high controversy score on CoD, but because of its insignificance the study does not provide evidence for any economic significance.

As mentioned in chapter 2.2.1, the three different pillars of ESG – Environmental Pillar, Social Pillar and Governance Pillar – are investigated separately. Results only perform significant outcomes for the Environmental Pillar (5% level) and the Social Pillar (10% level). The coefficients both indicate a negative relationship, meaning a one-unit increase in environmental performances reduces the CoD with 0,169% and 0,145% respectively (Model 3 and 4).⁹ In terms of economic relevance (despite the significant results for ESG Score) of the environmental pillar and the social pillar, the effect would only constitute a relatively small economic incentive to invest in a one-unit increase in their scores. However, economic significance depends on how costly it is to improve one's score.

The 1% significant firm-specific control variables (*Size*, *Z-score* and *ICR*) all confirm the expected negative relation with the cost of debt. All three variables are transformed into the logarithm to control for the skewed observations and to fit the linear regression model best. *Liquidity*, *MtB*, *RoA*, *Maturity* and *Loan Concentration* all remain insignificant for all three levels of significance (1%, 5%, 10%). *Liquidity*, *MtB* and *Leverage* all three indicate the expected negative relationship. However, since they lack significance, they are not taken into account as reliable coefficients in terms of their true effect. In addition, *RoA* indicates a direction

⁷ $\Delta\% = 100 * (e^{\beta} - 1)$.

⁸ Because of the underestimation for the mean of the log transformed *all-in spread drawn*, it has to be corrected first using the following formula $e^{5,144+0,5*(0,508^2)}$ (Goss & Roberts, 2011; Yang, 2020).

⁹ $\Delta\% = 100 * (e^{\beta} - 1)$.

which is opposed to what is expected, meaning it has a positive coefficient. However, since the coefficient is close to zero, it is possible the real effect is actually negative.

In terms of loan specific characteristics, both *secured* and whether *amount* remain significant at a 5% level (0.0700 and -0,0257 respectively). The coefficients both indicate the suspected relationship with CoD, confirming earlier research. Since *Secured* is a dummy variable, interpretation follows a slightly different reasoning with respect to continuous variables. The coefficient carries a value of 0,0700, which – following Halverson & Palmquist’s (1980) approach – tells us that a secured borrower pays 14.13 basis points more with respect to the average spread.¹⁰ Furthermore, the amount lend to a firm negatively affects the CoD, with a coefficient of -0.0257. Since *Amount* is also transformed into a logarithm, the interpretation holds the same reasoning as for other variables that are continuous and logarithmic transformed variables. Therefore, if *Amount* increases with 1%, the CoD decreases by 0.026%.¹¹ The negative relationship could be explained by the rationale that a higher amount lend already indicates bigger trust in the firm; a creditor would not lend big amounts of money to too high-risk profiled companies.

Shifting towards the more detailed effects on the individual pillars, most of the relationships remain stable and show both the same significance level as association. However, two effects are different using the equation with the *Environmental Pillar*. As a begin, liquidity turns significant at a 5% level whereas in the other models the variable lacks any significance, indicating liquidity is more sufficient in the context of environmental-related issues. Next to that, both *Loan Amount* and *Leverage* turn insignificant at even a 10% level, which is different from the other models.

Concluding, there is evidence suggesting ESG performance is indeed negatively affecting the borrowing costs, meaning borrowing is cheaper for firms that are more socially responsible inclined. These results are in line with earlier findings (Izzo & Magnanelli, 2017; Goss & Roberts, 2011; Raimo, Caragno, Zito, Vitolla & mariani (2021)). Nevertheless, earlier research also, and sometimes even especially, found a positive relationship between high controversy scores of ESG and one’s borrowing cost (Goss & Roberts, 2011). This research could not find significant evidence confirming these findings, and therefore confirms the outcomes of Gao et

¹⁰ $100 * (e^{0.0700} - 1) = 7,25\%$; $195 * 1.0725 - 195 = 14.13$

¹¹ $100 * (1.01^{-0.0257} - 1) = 0.026$

al., (2016). As for the environmental pillar, findings are in line with earlier research, implying the environment has a significant effect on the CoD (Chiesa et al., 2021; Echholtz et al., Hamrouni, 2019). Moreover, *Liquidity* only remains significant under the environmental pillar, indicating liquidity is a more important determinant regarding environmental matters. The social pillar also reveals a negative significant relationship at a 10% level, which is in line with Hasan et al., (2017).

4.1.2 Credit Rating

As for the second hypothesis, it is investigated whether there is a difference between high-quality firms and low-quality firms, measured in terms of their long-term credit ratings. A dichotomous variable is created indicating a value of 1 for the high-quality firms and zero otherwise. The implementation of this new variable resulted in several shifts in interpretable results. To start with, the independent variable *ESG Score* decreased in effect to a value -0.00177 and only remains significant at a 10% level. Moreover, the *Rating* dummy indicates the expected and significant relationship with the cost of debt since the coefficient carries a negative value with at least 95% certainty (-0.0657**). Resulting, the borrowing costs for high-quality firms are, compared to the mean, 6.359 percent less compared to low-quality firms, which comes down to a reduction of 12.4 basis points.¹² The inclusion of the interaction term is introduced to measure the interaction effects in model 2. As expected, the interaction term between *ESG score* and *Rating* has a negative coefficient, implying the collective effect of ESG performance and a higher firm-quality is bigger than when assessed separately. The negative coefficient indicates the CoD decreases more once the firm-quality is high. However, the coefficient remains insignificant, which indicates the alternative hypothesis cannot be accepted in that *Rating* has a moderating effect on the perception on *ESG Score*. Next to it, model 1 shows significant results for *ESG Score* and *Rating* (10% and 5% respectively). After including the interaction term in model 2, both turn insignificant, implying the interaction term captured some of the separate effects. Furthermore, previous findings considering the controversies score are confirmed in model 3 and 4, since both coefficients reveal a positive, though insignificant relationship with the CoD. The same reasoning holds regarding the interaction term in model 4, implying firms with higher controversy scores are rewarded stronger (in terms of a lower CoD) once there is an increase in firm quality (from 0 to 1), taking away the separate effect of the positive controversy coefficient. This implies rating is valued stronger than the controversy

¹² $100 * (e^{-0.0657} - 1) = -6,36\%$; $-195.00 * 0.964 + 195.00 = 12.4$

score. However, the interaction term in model 4 again remains insignificant. Because both model 2 and 4 reveal an insignificant interaction, the alternative hypothesis cannot be accepted; the results imply there is no significant difference in how a low- or high-quality firm is treated regarding their ESG performance, which is contradictory to what is expected (Goss & Roberts, 2011; Jiraporn, Jiraporn, Boeprasert & Chang, 2014).

Table 2

This table shows the results of the second hypothesis. ESG represents the ESG Score or the ESG Controversies Score, explained hereafter. Model 1 and model 2 used the ESG Score. The second model includes the interaction term between ESG Score and Rating. Model 3 and 4 follow the same structure, using the ESG Controversies Score. The subscripts *, ** and *** reflect the levels of significance, in which *, ** and *** represent 10%, 5% and 1% respectively. The t-values are corrected for firm-level clustering and heteroskedacity and are included within the parentheses.

	ESG Score		ESG Controversies	
	Model 1	Model 2	Model 3	Model 4
ESG	-0.00177* (-1.89)	-0.00153 (-1.34)	0.00577 (0.33)	0.0211 (0.77)
Rating	-0.0657** (-2.16)	-0.0442 (-0.74)	-0.0679** (-2.21)	-0.0448 (-1.07)
ESG x Rating		-0.000511 (-0.45)		-0.0288 (-0.81)
Liquidity	-0.0613 (-1.38)	-0.0627 (-1.41)	-0.0656 (-1.46)	-0.0652 (-1.45)
Size	-0.107*** (-3.18)	-0.106*** (-3.16)	-0.108*** (-3.13)	-0.108*** (-3.13)
Z-score	-0.172*** (-5.17)	-0.173*** (-5.18)	-0.175*** (-5.06)	-0.174*** (-4.99)
ICR	-0.0684*** (-4.38)	-0.0684*** (-4.37)	-0.0705*** (-4.48)	-0.0708*** (-4.48)
MtB	0.00406 (0.20)	0.00423 (0.20)	0.00446 (0.21)	0.00522 (0.25)
RoA	0.0757 (0.44)	0.0753 (0.43)	0.0838 (0.48)	0.0796 (0.46)
Leverage	0.248** (2.04)	0.247** (2.03)	0.256** (2.52)	0.257** (2.52)
Amount	-0.0223** (-2.08)	-0.0221** (-2.07)	-0.0216** (-2.02)	-0.0215** (-2.01)
Secured	0.0648** (2.16)	0.0649** (2.16)	0.0648** (2.15)	0.0651** (2.16)
Maturity	-0.000116 (-0.16)	-0.000117 (-0.16)	-0.000104 (-0.14)	-0.000110 (-0.15)
Loan Concentration	0.0829 (0.98)	0.0832 (0.99)	0.0923 (1.09)	0.0924 (1.09)
Controls				
Industry and year	Yes	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes	Yes
N	1924	1924	1924	1924
adj. R2	0.408	0.408	0.406	0.406

interaction, the alternative hypothesis cannot be accepted; the results imply there is no significant difference in how a low- or high-quality firm is treated regarding ESG performance, which is contradictory to what is expected (Goss & Roberts, 2011; Jiraporn, Jiraporn, Boeprasert & Chang, 2014).

4.1.3 Reporting

The third hypothesis investigates the effect of the ESG reporting on the CoD, and whether there is an interaction effect. Independently, the coefficients are expected to affect the dependent variable negatively. However, to investigate whether reporting has a moderating effect on how ESG performance influences the COD - i.e. if negative, the coefficient implies complementation, if positive, it implies substitution - an interaction term with reporting and ESG reporting is included. This research expects to find a positive, and therefore a complementary relationship, in line with previous research (Eliwa, Aboud & Saleh, 2021; Sengupta, 1998; Fortin & Pittman, 2004).

To start with, the coefficient of ESG performance (Table 5; model 1) has a negative relation with financing costs, which is in line with earlier findings within both this study and previous research. The coefficient contains a value of -0.00105 but remains insignificant. Reporting independently remains significant at a 10% level and reveals a positive relationship with the financing cost, meaning that the high-disclosing firms would cope with higher CoD. This would constitute reasoning for why *brown washing* occurs, stating devoted CSR reporting is penalized by a higher CoD. However, the second model demonstrates a positive relationship between ESG performance and the CoD for the first time, which can be attributed to the inclusion of the interaction term, capturing parts of its individual effect. Nevertheless, the standalone reporting coefficient reveals a strong positive relationship – with a coefficient of 0.471, which remains significant at a 1% level. More importantly, the interaction term between ESG performance and reporting reveals a negative relationship, also remaining significant at a 1% level (-0.00621). The negative coefficient indicates that if both reporting and ESG performance score high, the costs of financing are less compared to below-median reporting scores. The significant interaction term demonstrates evidence in favour of the positive effect of high ESG disclosure on lower cost of debt compared to companies which have low ESG disclosure. This could be attributed to the lower information asymmetry, indicating a risk mitigation which is reflected in the price.

Concluding, model 1 in table 5 reveals, after the inclusion of the reporting dummy, a different set of relationships. ESG performance and reporting seem to constitute two different effects, with model 1 implying it is okay to engage in ESG, but not to report about it. Model 2, however, indicates that reporting about ESG related matters only makes sense once the ESG performance score is also high. The reduction in CoD which can be attributed to the theory of information asymmetry and positive valuation of true ESG engagement by lending institutions. Since the interaction term is significant at a 1% level, it indicates a complementary relationship between reporting and performance, which is in line with earlier findings (Eliwa et al., 2015). These findings support the substantive management theory, in that ESG factors and disclosing about it complement each other because of a true change in behaviour.

Table 3

This table shows the results of the third and fourth hypotheses. All four models are using ESG Score. Model 1 and 2 contain the results of Reporting; model 1 includes ESG Score and Reporting individually and model 2 also includes the interaction term. Model 3 and 4 follow the same structure, using the Remuneration Policy instead of Reporting. The subscripts *, ** and *** reflect the levels of significance, in which *, ** and *** represent 10%, 5% and 1% respectively. The t-values are corrected for firm-level clustering and heteroskedacity and are included within the parentheses.

	Reporting		Remuneration Policy	
	Model 1	Model 2	Model 3	Model 4
ESG S	-0.00105 (-0.58)	0.00349 (1.52)	-0.00210** (-2.22)	-0.00227** (-2.38)
Reporting	0.0773* (1.72)	0.471*** (3.15)		
ESG S x Reporting		-0.00621*** (-3.01)		
Remuneration Policy			0.0633** (2.26)	0.0376 (0.52)
ESG S x Remuneration Policy				0.000498 (0.43)
Liquidity	-0.0931 (-1.59)	-0.0778 (-1.43)	-0.0607 (-1.37)	-0.0611 (-1.37)
Size	-0.148*** (-2.76)	-0.140*** (-2.68)	-0.111*** (-3.27)	-0.111*** (-3.27)
Z-score	-0.160*** (-3.51)	-0.132*** (-3.00)	-0.189*** (-5.75)	-0.188*** (-5.79)
ICR	-0.0585*** (-3.19)	-0.0577*** (-3.22)	-0.0705*** (-4.43)	-0.0707*** (-4.45)
MtB	0.00137 (0.04)	-0.00577 (-0.18)	0.00357 (0.17)	0.00362 (0.17)
RoA	0.00486 (0.02)	-0.0751 (-0.30)	0.0955 (0.56)	0.0983 (0.58)
Leverage	0.228* (1.93)	0.228* (1.94)	0.240** (2.01)	0.240** (2.02)
Amount	0.00518 (0.28)	0.0135 (0.71)	-0.0203* (-1.86)	-0.0205* (-1.89)
Secured	0.0914* (1.90)	0.0817* (1.72)	0.0671** (2.25)	0.0669** (2.24)

Maturity	0.000250 (0.28)	-0.000144 (-0.17)	-0.0000486 (-0.07)	-0.0000567 (-0.08)
Concentration	-0.155 (-1.44)	-0.182* (-1.72)	0.106 (1.26)	0.106 (1.26)
Controls				
Industry and year	Yes	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes	Yes
N	760	760	1912	1912
adj. R2	0.510	0.523	0.400	0.400

4.1.4 Remuneration policy

The last hypothesis expects a policy inducing ESG related performances is negatively correlated with the CoD. The interaction term is included, to control for potential interaction effects between ESG performance and the remuneration policy. Model 3 demonstrates the expected and earlier confirmed negative relationship, as ESG Performance shows a negative relationship (-0.00210) with the CoD at a 5% significance level. Next to that, the remuneration policy variable demonstrates a significant positive relationship at a 5% level, suggesting firms with such policy are deemed to have a higher CoD. It could be the case the inclusion of such policy is a proxy for another firm characteristic. It is plausible firms including such policy are coping with high agency problems and low trust in its management (Stapledon, 2004). The latter could have numerous reasons, potentially justifying the positive impact of such policy on the CoD. This would have to be investigated further, beyond the scope of this thesis. After inclusion of the interaction term in model 4, Remuneration Policy turns insignificant, with a smaller coefficient (0.0633 vs. 0.0376 respectively). It appears to be the interaction term captured parts of its direct effect. The positive value of accompanying coefficient indicates an interaction effect of the policy, implying the inclusion of such policy decreases the negative effect ESG performance has on the CoD, compared to situations in which such policy is not incorporated. However, the interaction term remains strongly insignificant, represented by the low T-value, and thus does not provide reliable evidence in terms of this reasoning. Only model 3 provides significant results for Policy Remuneration. Though it is suspected the enforcement of managerial ethical behavior influences the cost of debt, these findings provide results implicating the opposite, in line with the reasoning of Garvey et al. (2016).

4.2 Robustness tests

4.2.1 Endogeneity concerns

The evidence for ESG's impact on the cost of debt may be skewed by missing factors related to both ESG practices and debt costs. Additionally, a firm's decision to engage in ESG initiatives may not be independent of its cost of debt, raising issues about reverse causality in our research (Waddock & Graves, 1997). It is possible factors that determine the ESG performance also affect the CoD. If so, it would constitute a certain bias, since the coefficients of the independent variables are then correlated with the error term. For instance, enterprises with superior management may be more likely to make socially responsible investments while simultaneously receiving a loan at a favorable interest rate, particularly from banks with low sustainability loan portfolios. The bias may result in simultaneous variation in borrower ESG scores and loan spreads, confounding the causal interpretation of the primary findings. To address the endogeneity problem, instrumental variables are included in the model in line with earlier research (Goss & Roberts, 2011; Kordsachia, 2019; Cheng, Ioannou & Serafeim, 2014). The first instrument is the annually measured average per State, based on the idea that geographical influences might determine whether to incorporate stronger ESG values (Goss & Roberts, 2011). The second instrument is based on the political appetite of a particular state, divided in whether the political preferences are democratic or republic, as is suggested by other researchers (Goss & Roberts, 2011; Rubin, 2006). The research of Rubin (2006) concluded democratic states are often more engaged with ESG factors compared to republican states. After controlling for the instruments, the main variable ESG Performance now remains significant at a 1% level and demonstrates a stronger relationship in comparison to earlier models. In addition, both the coefficients of the Market to Book ratio and the Leverage ratio are significant at a 1% level. Earlier models revealed no significance at all. The adjusted R-squared confirms improvement of the model with a value of 0.604 instead of around 0.4, implying a better explanatory power. By using the Durbin-Wu-Hausman test, the significance use of the instruments is confirmed. Therefore, by including the instruments, parts of the undiscovered biases are removed. Nevertheless, the coefficients still indicate a relationship in the same direction, meaning the implications remain robust.

The second model shows how the main model is affected by the inclusion of different measures for liquidity, leverage and the growth ratio. Liquidity turns – contrary to what is expected – positive, however insignificant. Therefore, it is not confirmed this proxy does indeed constitute a positive relationship with the CoD. The results revealed the same implications as with the earlier used ratios for the Market to Book ratio and Leverage. The third and fourth model demonstrates the effect if Credit Rating is the dependent variable, as is suggested by several

studies (Kordsachia, 2019; Attig, El Ghouli, Guedhami & Suh, 2013; Raimo et al., 2021). The indicated relationships indicate expected relations, and therefore do not constitute a reason for doubt.

Table 4

This table shows the results of the robustness tests. Model 1 includes instrumental variables (State and Political Preference). The model reveals stronger relationships for ESG Score, MtB, Leverage, Size, ICR, and Amount (only focusing on the variables with significant results). Model 3 and model 4 have a Credit Rating as dependent variable for ESG Score and ESG Controversies Score (model 3 and 4 respectively). Model 5 and 6 are the results of a probit model, therefore only revealing the results of the second stage regression. The subscripts *, ** and *** reflect the levels of significance, in which *, ** and *** represent 10%, 5% and 1% respectively. The t-values are corrected for firm-level clustering and heteroskedacity and are included within the parentheses.

	Spread		Credit Rating		Secured	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Spread	Spread	Rating	Rating	Secured	Not secured
ESG S	-0.00490*** (-3.82)	-0.00195** (-2.09)	-0.0000982 (-0.25)		0.000433 (0.61)	-0.00187** (-3.23)
ESG C				0.000727 (0.16)	-0.0000854 (-0.18)	-0.0576* (-1.91)
Liquidity	0.0166 (1.11)	0.242* (1.92)	0.00451 (0.52)	0.0119 (1.54)	-0.0425* (-1.84)	-0.0200 (-0.86)
MtB	-0.0675*** (-5.07)	0.00424 (0.21)	0.00593 (0.81)	0.00157 (0.25)	-0.0519*** (-2.65)	-0.0291 (-1.50)
Leverage	0.156*** (2.91)	0.00351 (0.67)	0.0101 (0.31)	-0.0403 (-1.02)	0.0778 (0.95)	0.212*** (2.61)
Size	-0.0438*** (-2.92)	-0.108*** (-3.13)	0.0179* (1.84)	0.0177* (1.87)	-0.0563*** (-3.39)	-0.0618*** (-2.23)
Z-Score	-0.0475** (-2.20)	-0.186*** (-5.31)	0.00581 (0.53)	0.00976 (1.04)	0.0327 (0.92)	-0.0934*** (-2.68)
ICR	-0.0804*** (-7.55)	-0.0712*** (-4.45)	0.0117** (2.41)	0.00833** (2.23)	-0.0736*** (-4.36)	-0.0917*** (-5.38)
RoA	0.139 (0.84)	0.0626 (0.36)	0.00781 (0.10)	0.0102 (0.18)	-0.0601 (0.27)	-0.0310 (-0.14)
Amount	-0.0602*** (-6.16)	-0.0223** (-2.11)	0.00122 (0.47)	0.000577 (0.24)	-0.0268* (-1.76)	-0.0627*** (-4.09)
Secured	0.151*** (8.15)	0.0646** (2.18)	-0.00763 (-0.90)	-0.00666 (-1.05)		
Maturity	-0.000496 (-0.75)	-0.000112 (-0.16)	-0.0000271 (-0.18)	-0.0000939 (-0.63)	-0.00266*** (-2.69)	-0.00119 (-1.24)
Concentration	0.0639 (1.23)	0.0834 (1.01)	-0.0126 (-0.56)	-0.0118 (-0.73)	-0.122 (-1.28)	0.275*** (3.24)
Rating Dummy					-0.231 (-1.07)	-1.174*** (-6.46)
Lambda					-0.233*** (-4.14)	-0.373** (-2.32)
N	2001	1924	2284	2929	2027	2656
adj. R2	0.604	0.407	-0.010	0.024	0.447	0.609

4.2.2 Alternative model suggestion

Next, there are different measures for firm-quality. In this research, the credit ratings are included in the regression model and analysed by investigating both the individual as the interaction effect on the CoD. However, because of the potential selection bias, which can occur since not every company has ESG Scores, a probit model selected on whether the lender is protected yes or no, could help control for this potential problem (Goss & Roberts, 2011; Cheng et al., 2014; Booth & Booth, 2006). The dummy variable 'secured', is, according to other research, used as a proxy for firm quality (Goss & Roberts, 2011; Booth & Booth, 2006). A value of 1 indicates the firm provides collateral to ascertain the lender of its ability to pack back. As is mentioned in section 3.1.1.3, a firm that is obliged to provide collateral is assumed to be a low-quality firm, since extra security is redeemed necessary. Booth and Booth (2006), together with Goss and Roberts (2011) argue that by controlling for the selection bias, moral hazard is being mitigated.¹³ The selection equation (first stage) is a probit model in which secured status is regressed on company and loan variables. In line with Goss and Roberts (2011), the net working capital, operating income and retained earnings are added within the first regression. In addition, the Z score is removed from the selection model. The second step is an OLS regression of the log-spread on ESG performance, which includes controls for borrower and loan attributes. The inverse Mill's ratio is calculated and implemented in the second equation of which the coefficients for the second stage of Heckman's (1979) two-stage model are shown in table 6, model 5 and 6. The natural logarithm of the All-in spread drawn serves as the dependent variable. All regressions include indicator variables for the year, loan type, loan purpose, and industry and are run with robust standard error. the secured lambda is significantly negative, indicating the borrower who offers collateral has a lower cost of debt. As for the ESG Performance, for the secured borrower the coefficient turns insignificant but with a positive value. The coefficient of borrowers that are secured reveals a positive relationship, indicating secured borrowers are paying more as their ESG performance grows. This results reasons with the idea that ESG Performance comes with high investments, perhaps not in line with what should be the priority of the company. However, the coefficient remains insignificant. In line with models earlier in this research, the ESG Controversy score does not hold significant results (Table 6). Results change for model 6, in which the value of 1 indicates non-secured borrowers. For this matter, both *ESG Performance* and *ESG Controversy* demonstrate a significant relationship (1%, 10% respectively). Regarding *ESG performance*, the results remain robust with a negative coefficient of -0.00187, implying *ESG Performance*

¹³ Moral hazard occurs if a party takes more risk than would be fit because this party does not bear all the costs accompanied with the risk (Marshall, 1977)

is accounted for in cases of non-secured borrowers. The latter could be attributed to the idea that unsecured companies are of higher quality, which could imply there is a switch in priority when determining which variables are suitable and how to weigh them to get to the proper interest rate, once a firm is labelled as high quality. In other words, not only financial items are relevant, but also the non-financial elements become of importance. This reasoning is in line with the results of the control variables. To elaborate, within model 5, liquidity (10%), size (1%), ICR (1%) Market to Book ratio (1%), amount (10%) and maturity (1%) show significant coefficients. Compared to model 6, in which maturity and liquidity turn insignificant, and ESG scores, leverage and rating turn significant, it could be lending institution put more weight to other (non)financial performances and lending characteristics. As for the amount, it is plausible a bank is not as concerned about the duration of the loan once it has determined the good quality of the firm. As for liquidity, which indicates its (mainly) short-term potential to unwind assets or attract financing, it makes sense banks put more weight to a lower-quality borrowers' liquidity.

Regarding the control variables; *Size*, *Z-Score* and the *ICR* remain robust for this matter, just as the *Amount*. *Leverage* demonstrates a stronger (positive) relationship with the cost of debt, stressing the importance of capital structure in financing costs decisions. The same holds for *Rating*, which remains significant at a 1% level and indicates a relatively strong negative relationship. Concluding, this method reveals stronger relationships for Leverage and Rating, while confirming earlier conclusions. Next to that, results remain robust and merely become stronger in both liability and relationship, attributable to controlling for the selection bias. But most importantly, it indicates the potential switch in determinants from the lenders' perspective once the borrower is not secured and therefore (potentially) high-quality.

5. Conclusion and Discussion

5.1 Discussion

By investigating the first hypothesis, a significant negative relationship between the *CoD* and *ESG performance*, the *Environmental Pillar* and the *Social Pillar* is confirmed. However, the coefficient of the governance pillar remains significant. ESG performance had the biggest impact with a coefficient of -0.00184 (t-statistics -1.96), followed by the environmental pillar with a coefficient of -0.00169 (t-statistics -2.36). The social pillar is significant at only a 10% significance level, while indicating a slightly weaker relationship with CoD (-0.00145). The

performed inverse relationships between *ESG Performance*, the *Environmental Pillar*, the *Social Pillar* and the CoD are consistent with prior studies. Kordsachia (2019), for example, found significant negative results for the relationship between ESG performance and the cost of debt. The negative impact of the environmental pillar on the lower costs of debt is in line with the findings of Jung, Herbohn & Clarkson, (2018), as they found high carbon emissions scores increase the CoD. Shad et al. (2020), also found a negative relation between environmental-friendly companies and lower costs of debt. The negative and robust relationship of ESG performance and CoD is in line with the stakeholder and legitimacy theory, implying firms want to be marked as a sustainable operator by society. The same holds for the negative coefficients of the environmental- and social pillar. In addition, companies that are found to be resilient to environmental and perhaps reputational dangers, can be considered to be less risky. Therefore, the risk mitigation interpretation is also of explanatory value. In line to what Eliwa et al., (2017) and Errgragui (2017) found, this study did not find significant relationships with the controversies score and the governance pillar and the costs of debt. Reason for insignificance regarding the controversy score could be attributed to the fact these companies might be well-performing, overshadowing the potential negative impact the company has on society. However, the insignificance has to be investigated more thoroughly. Potential reason for the minor and insignificant association between the *Governance Pillar* and the cost of debt may be explained by the significant relationship between the Environmental and Social pillars and the CoD. Reason for it could be that (professional) creditors look at the overall performance regarding ESG which implicitly determines if the governance structure is of good quality. Therefore, the risks regarding the governance structure are already incorporated and integrated within their assessment and not looked at separately. The importance of good governance quality in terms of the CoD is observed by multiple kinds of research, in which is argued that the resulting risk from e.g., low-quality management is withdrawn from the other individual aspects of ESG (Zhang, 2021).

As for the inclusion of the credit ratings, involving the second hypothesis, the results are only significant once the interaction term between ESG and ratings is excluded. The inclusion of the interaction term takes away the main effects of both ESG performance and rating and remains insignificant itself. These results indicate there is not necessarily a difference between high- and low-quality firms in how they are treated regarding their ESG performance. These results are in line with what other research found, implying low-quality firms are not even included within the market of syndication (Gottesman & Roberts, 2004).

Furthermore, reporting does seem to have an effect on how ESG performance is incorporated within the risk-assessment of a lending institution. Model 1 of *table 4* reveals a positive relationship between *Reporting* and the costs of debt. Reason for it could be banks see it as cheap-talk or greenwashing. After inclusion of the interaction term between ESG performance and reporting (indicating a high or low level of reporting about non-financial matters), both the individual predictor for reporting and the interaction term remained significant. Because of the significant moderating effect, the null hypothesis is rejected in that the scope of non-financial reporting has no effect on how ESG is incorporated within the risk assessment. The negative interaction effect emphasizes the reasoning that a firm that is engaged well in both ESG performance and reporting, is rewarded with a lower CoD. This could potentially be explained by the reduction of information asymmetry.

For the fourth hypothesis, the results regarding remuneration policy in *table 4* (model 3 and 4) do provide evidence in favor of the idea a remuneration policy affects the CoD. Model 3 only includes the *Remuneration Policy* as individual variable to investigate whether it affects the cost of debt. The model reveals a significant relationship for both *ESG performance* and *Remuneration Policy*, implying both affect the CoD, which rejects the null hypotheses. However, after including the interaction term, *Remuneration Policy* turns insignificant, together with the interaction term. Since *Policy x ESG* reveals an insignificant relationship, it is suspected the term captures parts of the individual effect of Policy. However, the insignificance also implies lending institutions merely look at the ESG performance itself. Therefore, it does not provide sufficient reasons to believe there is a difference in treatment between firms that do incorporate such policy and firms which do not. In other words; it does not seem *Remuneration Policy* is used as a (partly) proxy for good ESG performance, which is also indicated by the positive relationship. Moreover, the positive significance in model 3 could mean the inclusion of such policy only occurs if a firm is in a bad state in terms of agency problems, and therefore functions as a (partly) proxy for agency problems. However, it has to be investigated further through which channel the policy does affect the CoD.

Conclusion

Since there is growing interest towards the importance of incorporating sustainability in a firms' daily business operations, combined with a lack of variation in research related to this topic,

this thesis focuses on the post-crisis period from 2010 to 2021, including public firms from the US. This study primarily investigates the effect of ESG performance on the CoD, measured through the all-in spread drawn obtained from the DealScan database as a proxy for the Cost of Debt. ESG performance is measured through several sub-categories, involving the performance score, a controversy score dummy, the environmental pillar, the social pillar, and last the governance pillar.

The first hypotheses found significant and negative results for ESG performance (5%), the environmental pillar (5%), and the social pillar (10%). As for model concerning the environmental pillar, liquidity became significant, contrary to what the other models found. The negative coefficient implies higher liquidity lowers the CoD, indicating liquidity is more important once only environmental issues are taken into account. However, the controversy score dummy and the governance pillar remained insignificant. Therefore, within the borders of this research it is accepted ESG performance has a significant effect on the CoD, in which the environmental pillar and the social pillar are the main attributers.

The second hypothesis investigated the effect of the long-term credit rating score on the CoD, through ESG performance. More specifically, a dummy variable is created indicating whether a firm had a high-quality score (1) or a low-quality score (0). Contrary to the expectations, results did not provide evidence in favor of the alternative hypothesis, stating that there is a difference for high- and low-quality firms, since the interaction term revealed insignificant results. However, reason could be not enough low-quality firms are participants of the syndicated loan market.

Third, the effect of reporting versus ESG performance is investigated more thoroughly, again by including a dummy variable representing a high-reporting score (1) if the firm scored above-median in terms of non-financial reporting, and a zero otherwise. The results provided evidence in favor of the acceptance of the alternative hypothesis, supporting the idea that reporting does indeed constitute an effect on the CoD, through ESG performance. Meaning, if a firm is a high-reporting firm, it is penalized less severe, possibly due to the reduction of information asymmetry.

Last, the inclusion of a remuneration policy does affect the CoD, supporting the idea that the enforcement of ethical behavior does indeed positively contribute to better firm performance.

However, as it is found the interaction term is insignificant, it is more likely remuneration policy is an indicator for something different than good ESG practices.

To summarize, the study's primary findings confirm the initial hypothesis that ESG performance would result in lower financing costs and suggest that those tangible advantages are driven by the interaction impact of sustainability, and good reporting, while the inclusion of a remuneration policy regarding ESG targets has a standalone positive effect on the CoD. As such, the findings corroborate the theoretical basis for the stakeholder-, good management- and the legitimacy theory, combined with the risk-mitigation perspective.

Limitations and attributions

Despite the growing data availability regarding non-financial information such as ESG scores, it is still a relatively new subject, exposed to yearly changes. New legislation is in development and the still existing lack of uniformity creates space for unreliable information. Research is therefore needed in the coming years to see what the real effect is of this new legislation.

Furthermore, this research makes use of the DealScan database involving the syndicated loan market. Since these syndicated loans are granted for the longer term, this study did not control for autocorrelation. Autocorrelation however can play a part as the ESG scores throughout the years are unlikely to be not independent of each other. In line with this time-related issue, this research did not include a t-1 perspective in the right of the equations. Though these regressions are performed, it is not included for further analyses as the number of observations dropped substantially. Therefore, for further analysis, another proxy for CoD can be included to investigate whether time-related correlations affect the main results.

As mentioned previously, it is plausible the syndicated loan market does not include a lot of low-quality firms. Therefore, a more accounting-based method, using e.g., the interest coverage ratio as dependent variable, could help in including both every-year information and including a more evenly divided spectrum in high- and low-quality firms. Research could also include look at the marginal effects of credit ratings by using more categories. Such a method will help in providing a more thorough view of how the credit ratings truly affect the CoD in relation the ESG performance.

Next to that, the data used to investigate the effect of *reporting* coped with datapoints that were not as diversified as would have been expected when using percentages to indicate a certain score. It is suspected the source itself will grow throughout the years in how to analyze this matter. Therefore, this matter is also subject to more thorough future research. Also, other databases could be utilized to create a more thorough view, such as the ESG Disclosure Score available on the Bloomberg Terminal.

Next, the robustness test including Heckman selection analyses can be a useful tool, however this research uses a simplified version to give an implication of what future research could investigate further. In order to provide more honest results, coefficients could be adjusted for potential biases. The results do reveal interesting results regarding the switch in important determinants with regard to the CoD. Therefore, future research could address this topic.

However, despite the limitations, this research contributes to existing literature as it provides insight in how the prices in the syndicated loan market is affected by ESG performance; a topic in which research still remains behind. In addition, it not only investigates the effects of the ESG metrics provided by Thomson Reuters, it also takes other non-financial variables into account. By providing more insight on how reporting affects the CoD, not only scholars can benefit from this information, but also legislators are also granted more information on how green washing occurs and therefore on how to fill the gap. The more information available on this topic, the better the solutions can be formulated. Besides reporting, also *remuneration policy* is included. As stakeholders are looking for a way to incentivize companies towards behaving more sustainable, it is important to know how. As such, more information considering this topic contributes to the efficiency in motivating managers towards more sustainable operations.

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Appendix

Appendix A

Variable	Source	Definition
<i>Cost of Debt</i>	DEALSCAN	As a measure of the Cost of Debt, the all-in spread drawn is used as a proxy of CoD. It is measured as upfront fee + annual fee + utilization fee + spread over LIBOR (Ivashina, 2005). The variable is transformed into a logarithm since it revealed a more suitable distribution in terms of a linear regression analyses compared to the unadjusted variable. Therefore, despite the accompanying difficulty within the interpretation, the log-transformed model is used in the sequel of this research in order to get the most reliable results.
<i>ESG Score</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	The ESG Score is based on 400 measurements which are further converged to 178 ESG-specific datapoints. These points are again divided in 10 categories, each belonging to one of the pillars. All measurements are controlled for materiality, data availability and industry relevance
<i>ESG Controversies</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	The ESG Controversies score is based on 23 different pointers, which are extracted from publicly available (media) sources. An example is lawsuits
<i>Environmental Pillar</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	It consists out of three categories: Resource Use, Emissions and Innovation. The score is based on the weighted average of each category
<i>Social Pillar</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	It consists out of four categories: Workforce, Human Rights, Community and Product Responsibility. The score is based on the weighted average of each category
<i>Governance Pillar</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	It consists out of three categories: Management, Shareholders and CSR Strategy. The score is based on the weighted average of each category
<i>ESG Reporting (CGVSPD041)</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	The reporting scope entails the percentage of the company's activities covered in its environmental and environmental and social reporting. The data also contains information on the percentage of the company's activities covered in its environmental and social reporting. For the purpose of this research, the variable is transformed into a dummy variable in which the above-median company's get a value of one, and zero otherwise
<i>Policy Executive Compensation ESG Performance (CGCPDP0013)</i>	ThomsonReuters DATASTREAM/A SSET4 ESG data	The Executive Compensation holds if the company has an extra-financial performance-oriented compensation policy; the compensation policy includes remuneration for the CEO, executive directors, non-board executives and other management bodies based on ESG or sustainability factors. If yes, the dummy variable carries a value of one and zero otherwise.
<i>Credit Rating</i>	COMPUSTAT/ DATASTREAM	The long-term credit ratings are obtained from the Compustat database and are manually complemented with the Thomson Reuters Datastream database. Individual ratings are converted into the scale of S&P, as is retrieved as such from Compustat. Therefore, the Rating is based on a scale deferring from D (in default) to AAA (prime).
<i>Return on Assets (RoA)</i>	COMPUSTAT	Measured as the net income divided by the total assets. For the purpose of suiting this research best, it isn transformed into a logarithm
<i>Market/Book</i>	COMPUSTAT	As a proxy of growth opportunities, the Tobin's Q is used as a proxy (Dennis, Nandy & Sharpe, 2000). It is measured as Total Assets + Market Value Fiscal – Common Equity divided by Total Assets.

<i>Leverage</i>	COMPUSTAT	The financial leverage is calculated as the total debt divided by total equity
<i>Z-Score</i>	COMPUSTAT	The Z-score from Altman (further defined by Hillgeist, Keiting, Cram & Lundstend (2004)) is used as a proxy of financial distress and is measured using five financial ratios: 1.20 (Working Capital/Total Assets), 1.40 (Retained Earnings/Total Assets), 3.30 (Earnings Before Interest and Taxes/Total Assets), $0.60 \times (\text{Market Value of Equity/Book Value of Debt})$ and $1.00 \times (\text{sales/total assets})$.
<i>Size</i>	COMPUSTAT	The Size is measured as the logarithm of Total Assets (TA) (Gerwanski, 2020).
<i>ICR</i>	COMPUSTAT	The Interest Coverage Ratio is included, which is determined as the ratio of profits before interest and taxes to interest expenditures (Raimo, Caragno, Zito, Vitolla & Mariani, 2021)
<i>Maturity</i>	DEALSCAN	The maturity represents the facility's tenor measured in months, starting from the signing date to the expiration date
<i>Secured</i>	DEALSCAN	This dummy variable indicates if the granted loan was secured by collateral. The value of 1 indicates a secured loan, and zero otherwise`
<i>Facility amount</i>	DEALSCAN	Represents the total facility amount measured in million dollars
<i>Loan concentration</i>	DEALSCAN	The loan concentration is measured as $\text{Log of Loan amount} / (\text{Loan amount} + \text{Total Debt})$
<i>Loan Type</i>	DEALSCAN	The type of facility (32 potential categories): 364-Day Facility; Acquisition Facility; Blended Loan Asset; Bonding Facility; Bridge Loan; CAPEX Facility; Construction Facility; Delay draw Term Loan; Export Credit; FRN (Loan-Style); Guarantee; Lease; Mezzanine Tranche; Mortgage Facility; Murabaha; Other Loan; Revolve/Line < 1 Year; Revolver/Line >= 1 year; Revolver/Term Loan; Schuldschein; Standby Letter of Credit; Term Loan; Term Loan A; Term Loan B; Term Loan C; Term Loan D; Term Loan E; Term Loan F; Term Loan G; Term Loan H; Term Loan I; Undisclosed

Appendix B

This table shows the results from the pairwise correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Spread	Liquidity	Size	MB	Leverage	Z-score	ICR	Concentration	Maturity	Secured	Rating	ESG perform	ESG Controv	Reporting	Policy
-1	1.000	-0.018	-0.372	-0.255	0.258	-0.357	-0.401	0.002	0.119	0.451	-0.294	-0.367	0.160	-0.214	-0.046
-2		1.000	0.066	-0.049	0.232	-0.404	-0.238	-0.153	-0.154	-0.089	-0.008	-0.012	-0.010	0.025	0.052
-3			1.000	-0.233	-0.007	-0.318	-0.211	-0.574	-0.171	-0.277	-0.057	0.535	-0.437	0.393	0.205
-4				1.000	0.050	0.341	0.399	0.165	0.077	-0.068	0.112	0.001	-0.029	-0.018	-0.108
-5					1.000	-0.447	-0.552	-0.486	0.075	0.168	-0.222	-0.067	0.035	0.002	-0.001
-6						1.000	0.708	0.430	0.051	-0.178	0.280	-0.019	0.038	-0.103	-0.190
-7							1.000	0.453	-0.008	-0.190	0.295	0.046	-0.005	-0.048	-0.092
-8								1.000	0.108	0.089	0.070	-0.293	0.202	-0.239	-0.124
-9									1.000	0.145	-0.109	-0.065	0.092	-0.035	-0.039
-10										1.000	-0.246	-0.232	0.074	-0.169	-0.051
-11											1.000	0.102	-0.006	0.101	0.011
-12												1.000	-0.335	0.535	0.297
-13													1.000	-0.180	-0.110
-14														1.000	0.243
-15															1.000

Appendix C

This table shows the regression analysis with the CoD as dependent variable, accompanied with the main independent variables. Four models are used in which model 1 contains no control dummy variables, model 2 only year and industry dummies, model 3 only industry and purpose, and model 4 all four. Model four has the highest explanatory value and is therefore used in the sequel of this thesis. The subscripts *, ** and *** reflect the levels of significance, in which *, ** and *** represent 10%, 5% and 1% respectively. The t-values are corrected for firm-level clustering and heteroskedacity and are included within the parentheses.

	Model 1	Model 2	Model 3	Model 4
	CoD	CoD	CoD	CoD
ESG S	-0.00286*** (-3.29)	-0.00169** (-2.14)	-0.00308** (-3.66)	-0.00184** (-2.12)
Liquidity	-0.0588* (-1.95)	-0.0337 (-1.12)	-0.0511* (-1.76)	-0.0486 (-1.52)
Size	-0.119*** (-4.01)	-0.0898*** (-2.66)	-0.124*** (-4.27)	-0.102*** (-2.87)
Z-score	-0.170*** (-4.00)	-0.115*** (-2.97)	-0.161*** (-4.06)	-0.144*** (-3.99)
ICR	-0.0577*** (-3.63)	-0.0752*** (-4.57)	-0.0537*** (-3.66)	-0.0642*** (-3.90)
MtB	-0.0157 (-0.57)	-0.0174 (-0.56)	-0.0126 (-0.49)	-0.0103 (-0.36)
RoA	-0.0419 (-0.23)	0.158 (0.90)	-0.178 (-1.03)	-0.00545 (-0.03)
Leverage	0.207* (1.68)	0.271** (2.28)	0.209* (1.74)	0.217* (1.79)
Secured	0.146*** (4.55)	0.113*** (3.73)	0.0978*** (3.21)	0.0700** (2.35)
Amount	-0.00565 (-0.55)	-0.00748 (-0.77)	-0.0255** (-2.56)	-0.0257** (-2.53)
Maturity	-0.00116* (-1.89)	0.000137 (0.23)	-0.000796 (-1.15)	0.0000786 (0.11)
Loan concentration	0.0614 (0.60)	0.0605 (0.62)	0.0795 (0.84)	0.0857 (0.91)
controls				
Year	No	Yes	No	Yes
Industry	No	No	Yes	Yes
Purpose	No	Yes	No	Yes
Type	No	No	Yes	Yes
N	2027	2027	2027	2027
adj. R ²	0.173	0.290	0.258	0.400

Appendix D

This table shows the process of data gathering

Activity	Observations	Dropped
Total amount of observations including firm data and ESG information	23609	
Merge between company specific facilities and firm data	4482	19127
Merge between left observations, ESG Score and available Credit Rating	1924	2558
Merge between left observations and Controversies and available Credit Rating	1924	2558
Merge between left observations and Environmental Pillar and available Credit Rating	1566	2916
Merge between left observations and Social Pillar and available Credit Rating	1924	2558
Merge between left observations and Governance Pillar and available Credit Rating	1924	2558
Merge between left observations and Reporting Scope and available Credit Rating	760	3722
Merge between left observations and Remuneration Policy and available Credit Rating	1912	2570