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SOCIAL NORMS IN THE CORPORATE DEBT MARKET

European Evidence

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ABBREVIATIONS

BPS	Basis points
CSP	Corporate Social Performance
CSR	Corporate Social Responsibility
ESG	Environmental, Social and Governance
EU	European Union
EURIBOR	Euro Interbank Offered Rate
IMF	International Monetary Fund
LIBOR	London Interbank Offered Rate
OECD	Organization for Economic Cooperation and Development
S&P	Standard & Poor's
SIFMA	Securities Industry and Financial Markets Association
SRI	Socially Responsible Investments
UN	United Nations
WBCSD	World Business Council for Sustainable Development
YTM	Yield to Maturity

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ABSTRACT

The purpose of this thesis is to study the relationship between corporate social responsibility and the cost of debt and to investigate if social norms play a role in the corporate debt market. This is done by researching the impact of CSR on the interest rate spread of bank loans and yield spread of corporate bonds in Europe. The sample includes 1711 bank loans, 742 Euribor-denominated and 969 Libor-denominated, and 645 corporate bonds of 18 European countries in the period 2003 - 2017. The relationship is tested with OLS regression investigating four measures of CSR with a set of explanatory variables to control for company specific criteria as well as loan and bond characteristics.

The empirical findings suggest that for Euribor-denominated bank loans the different ESG scores, except for the governance aspect, decrease the interest rate spread by an average of 4% with a 10-point increase in the respective score. Furthermore, companies with the highest CSR score pay up to 30% lower interest rate, with all four aspects having statistical significance. For Libor-denominated loans, this impact disappears, and it seems as if the relationship with corporate social responsibility vanishes. This opposing results for Euribor and Libor loans are interesting, because this kind of research has not been conducted previously, and signals that CSR is only prevalent in the Eurozone private debt market as opposed to debt markets in other currencies

In the public debt market, yield spreads of corporate bonds experience a similar decrease as Euribor loans for the environmental and social aspect, although the governance aspect has the opposing effect and increases the yield. To conclude, the private and the public debt market appear to have a similar relationship with CSR, though only applicable to Euribor loans. This confirms the stakeholder and risk mitigation theory for the overall, social and environmental score, and the overinvestment theory for the governance aspect.

The results highlight that lenders in general value corporate social responsibility as risk mitigating and view it as a long-term investment. This provides information to companies on how they can decrease their cost of debt by implementing specific aspects of corporate social responsibility in their business activities.

KEY WORDS: CSR, ESG, cost of debt, bank loans, corporate bonds

1. INTRODUCTION

The importance of social responsibility is gaining greater attention by companies in order to reflect the social aspect of the firm culture. Being environmentally friendly, treating employees well and enhancing the greater social good are just a few examples of how companies can act socially responsible and have positive reputation. On the other hand, so-called sin firms, active in industries like tobacco, weapons and alcohol, are on the opposite side and do not behave after social norms. Corporate Social Responsibility (CSR), sustainability, Corporate Social Performance (CSP), triple bottom line and ESG are used synonymously (Menz 2010), and all of these terms refer to the same issue throughout this thesis.

The reason for companies to follow the socially responsible path are diverse. Firms expect better reputation and thereof higher sales and profit. Employees reward their employer for treating them well by being more productive and loyal. Customers feel more confident buying products or services from socially responsible companies, and society supports “green” firms who engage in eco-friendly production. Another reason is better risk management, as stronger sustainability can decrease different kind of risks. For example, companies incorporating high environmental standards within its business also lower pollution of nature. BP’s Deepwater Horizon oil spill in 2010 or Foxconn’s confession of child labor in their factories shed negative light on the companies damaging their reputation. BP’s stock lost 50% in value over the months after the catastrophe (Mejri & De Wolf 2013). Events like these occur regularly and eventually hurt the companies’ performance.

In terms of cost-efficiency, introducing a CSR culture is cost intensive in the short-term, but expected to pay off in the long-term, not only in terms of sales and profits, but also risk-wise. Companies assume that investing in social norms will influence future profits and decrease risk. Based on this assumption, the cost of debt is directly influenced, as lower future risk and higher profitability are both expected to decrease interest rates. The main goal for equity investors is a company’s profitability and future growth of company value, whereas creditors are only interested in a firm’s repayment ability and solvency (Erragragui 2018). This is specifically an important issue in this thesis, as it explains a

potential difference in the impact of CSR on the cost of debt and equity. Debtholders are more sensitive to the downside risk than equity investors and as CSR builds firm reputation and is expected to be positive to avoid downside risk, CSR has a relationship with the cost of debt. This issue is tackled in the thesis and will be examined in detail throughout the paper.

Previous literature regarding the impact of social norms on the cost of equity is extensive, especially in the form of Socially Responsible Investing (SRI), whereas research on the effect on the cost of debt is scarce. Thus, the focus of the thesis is a rather new topic and might give some new results to better understand the role of social norms in the corporate debt market.

1.1. Purpose of the study

The purpose of the thesis is to evaluate whether corporate social responsibility has any implication on the cost of private and public debt in Europe. More precisely, do banks and lenders reward companies for being socially responsible or is this issue not incorporated in the interest rates.

To investigate this effect, the impact of four different responsibility measures, the overall CSR, the environmental, the social and the governance aspect, on the interest rate spread of bank loans and the yield spread of corporate bonds in 18 European countries is empirically researched. In order to also evaluate if very high or low CSR performance has different implication, the top and bottom 25% scores of the four aspects are examined.

1.2. Contribution

By now there has been done little research on the relationship between CSR and the cost of debt. The vast amount of papers focuses on the US public and private debt market, whereas just a selected number of research has been done in the European market. This thesis contributes to existing literature by focusing on the European private and public debt market investigating a company's overall CSR performance, as well as the three

pillars Environmental, Social and Governance. The sample period 2003-2017 covers the financial crisis 2007/08 and the European sovereign debt crisis, and thereby provides information on whether there has been any impact of this turbulent times on social responsibility. Furthermore, a novelty of this thesis is the comparison of the cost of bank loans and corporate bonds. Do banks incorporate CSR information differently than bond investors in their lending rates, based on their superior knowledge and difference in decision making?

1.3. Research Hypotheses

The hypotheses of this thesis center on the issue of socially responsible companies and their cost of private and public debt. The first hypothesis is based on the assumption that there is a negative relationship between CSR and lending rates:

H1: Cost of debt decreases with higher levels of overall CSR and the three ESG aspects.

Several theories of corporate social responsibility support this hypothesis, as they view strong responsibility as risk mitigating and as a positive impact on long-term profitability. Based on previous literature there is mixed evidence on the relationship, as evaluated in more detail in chapter 3, but the hypothesis is backed by combining theoretical background and previous research.

In previous literature, there has not been done research on the difference between bank loans and corporate bonds with regards to CSR. Banks possess superior information knowledge compared to public lenders, thus there might be an asymmetric impact on the cost of loans and bonds. Based on this, the second hypothesis investigates whether bank loans and corporate bonds differ in their interest rates:

H2: CSR has an asymmetric impact on the cost of bank loans and corporate bonds.

1.4. Structure of the thesis

In the second chapter the theoretical framework behind the central issues of the thesis is evaluated. The term Corporate Social Responsibility, its historical evolution and perspectives are described, as well as the CSR theories to better understand how it can impact the cost of debt. Furthermore, the corporate debt market is covered, aiming to give an overview of characteristics of bank loans and corporate bonds, how they differ and what influences their interest rates. Afterwards the third chapter reviews previous literature on the impact of CSR on the cost of private and public debt, and the cost of capital. The data description and the methodology will follow in the fourth chapter and form the foundation for the empirical part that follows in the fourth chapter. In the final chapter, the conclusion finalizes the thesis.

2. THEORETICAL BACKGROUND

The purpose of this chapter is to clarify the theoretical framework to develop a better understanding of the topics focused on in the empirical part. In the first four chapters, CSR, its historical evolution and its different aspects and perspectives will be examined. Thereafter, the cost of debt in its different forms and the corporate debt market will be explained.

2.1. Corporate Social Responsibility (CSR)

In 1998, the World Business Council for Sustainable Development (WBCSD) decided to provide a common understanding of CSR in a two-year-program. Hence, in 2000 a commonly accepted definition of CSR was developed in a discussion forum with international participants of the WBCSD council: “Corporate social responsibility is the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life.” (World Business Council for Sustainable Development 2000)

The term “sustainable economic development” in this context is diverse, as it spans a large amount of different aspects. On the one hand it is the environmental factor, as being eco-friendly clearly contributes to sustainable development, but on the other hand it includes inconspicuous parts such as corruption or bribery, as these clearly have an impact on the sustainable development as well. Generally speaking all the factors that belong to this definition are called ESG and will be examined in more detail in Chapter 2.3.

Based on the WBCSD definition, CSR also includes the interaction of a firm with its “[...] employees, their families, the local community and society at large [...]” (World Business Council for Sustainable Development 2000), who all belong to the group of stakeholders of a company. Thus, the stakeholder theory plays an important role in the CSR universe and is further explained in Chapter 2.4.1.

Companies motivation of implementing CSR into its business activities are diverse, as they may aim to enhance legitimacy, reputation and brand image, improve the relationship to stakeholders, or to increase employees' satisfaction through better safety and health standards. Besides the goal of better financial performance and higher profits through the implementation of a social responsibility culture, firms also try to make the world a better place. (Izzo and Magnanelli 2017) Since the financial crisis 2008, trust is an important issue that arose in the financial world and is another component of social capital. Market participants need to have trust and confidence in the system and its counterparties for a well-functioning financial market (Lins et al. 2017).

2.2. The historical evolution of CSR

Corporate responsibility and social norms in the financial world have its roots from the 1950s. Bowen (1953) is seen as the founder of the term Corporate Social Responsibility in his book "Social Responsibilities of the Businessman", where it is suggested that social responsibility should be inherited in strategic planning and managerial decision-making by business executives. In the 1960s, academics make it clear that awareness of CSR is rising and short-term investments to strengthen ethical aspects with the company will lead to higher long-term profits (Davis 1960). In this period, the term social responsibility has been tried to be defined, as Davis (1960) suggests that CSR is composed of the socio-economic and the socio-human aspects. This first definition can be referred to as the ancestor of the ESG term. The next decade has been characterized by a shift, as social responsibility is no longer the executive's task but rather the company's task. (Davis 1973) First research papers were published examining CSR by known academics such as Friedman (1970), Moskowitz (1972) or Vance (1975). In the 1980s, the stakeholder theory by Freeman (1984) requires companies to value their relationship with all stakeholders, not only shareholders in order to ensure function business within all interest groups. CSR and ethics further move into the spotlight enhancing the public to expect increased awareness for this topic within firm's operations.

After the turn of the millennium and the stronger globalization through the introduction of the internet, Corporate Social Responsibility becomes a global matter. The European

Union, the OECD and the United Nations all implement their suggestions in guidelines and reports, such as the OECD Guidelines for Multinational Enterprises, the UN Global Compact and the ISO26000 standard by the EU. Throughout the next years, especially during crisis periods like the financial crisis 2008, CSR gained greater attention and importance for companies. This statement is highlighted by facts, as 88% of participating CEOs from all over the world believe that integrating CSR in financial markets is essential to move forward based on the latest UN Global Compact – Accenture Strategy CEO study 2016. In a survey by Nielsen Global Survey 2014 on Corporate Social Responsibility, 55% of the participants are willing to pay more for products and services if they are offered by socially responsible firms. This figure increased by 10 percentage points since the last survey in 2011 and is expected to rise further in the future. (Nielsen Global Survey 2014) Given this positive movement, CSR becomes more important within the firm culture and decision making, as it is rewarded by the customer base. The company does not only have the incentive to act responsible but can also increase sales and profits due to their ability to charge more for their goods and services.

Social responsibility in the financial markets is experiencing enormous growth, which can be put into perspective by examining the Socially Responsible Investment trend over the last years. SRI is an investment approach that includes environmental, social and governance factors in their investment portfolio. Based on a SRI study by Eurosif, SRI strategies have been growing enormously, with a combined investment volume of EUR 11 trillion in 2011, to EUR 16 trillion in 2013, to EUR 23 trillion in 2015. In the period 2011 to 2015, the volume of SRI more than doubled. (Eurosif 2014; Eurosif 2016) As SRI also includes investing in corporate bonds, the increased importance of CSR is expected to be incorporated in the yield of the bonds.

2.3. CSR and its perspectives

Within the literature, Corporate Social Responsibility is most commonly split into the three subdivisions Environmental, Social and Governance, often referred to as ESG. They build the framework for a company's social responsibility. Within the environmental aspect, issues such as climate change, resource depletion (e.g. water), pollution and

deforestation are included. The social component focuses towards working conditions (e.g. child labour, slavery), the interaction with local communities, conflict management, health and safety issue, employee relations and diversity in all its aspects. Finally, the third pillar governance is related to executive compensation, issues including bribery and corruption, political engagement (e.g. political lobbying, donations), board diversity and structure, and the company's tax strategy.

The World Business Council for Sustainable Development (2000) on the other hand views five aspects as the key components of CSR: Human rights, Employee rights, Environmental protection, Community involvement and supplier relations. Although in a later forum, the WBCSD adds more aspects, these five build the framework. In general, the WBCSD declares that there is no clear definition of what these five pillars include, as countries have different legislations, but they try to give a common understanding of what shall be included. Human rights consist of child or slave labor as well as general human rights like breathing fresh air or drinking clean water. Within the Employee rights aspect issues like working conditions or also opportunities to improve skills are included. Environmental protection is self-describing as it includes all different kinds of how to be environmentally friendly. Community involvement is constituted of investments in the local community such as charity events or donations. Lastly, supplier relation is the way a company interacts with its suppliers and contractors.

In comparison these two frameworks of CSR components include similar issues, only deteriorating in their allocation and methodology. Throughout the paper, the ESG framework will be used, as it is the most commonly accepted one within the CSR universe.

2.4. CSR Theories

There are several theories on CSR and how it impacts a company's financial performance and risk. These theories play a key role in explaining a potential impact of CSR on the cost of debt. The shareholder and stakeholder view both have contradicting arguments with respect to social responsibility. Similarly, the risk mitigation and the legitimacy

theory assume a positive linkage, whereas the overinvestment and agency conflict theory assume a negative linkage between CSR and firm performance.

2.4.1. Shareholder vs. Stakeholder view

Friedman (1962) states that shareholder wealth maximization is the absolute goal of a company, and therefore the company only needs to be socially responsible to the shareholders, and explicitly nobody else. Advocates of this theory argue that activities related to CSR use corporate resources that should actually be consumed to generate profit for the shareholders. Taking into consideration social and environmental issues only produce unnecessary costs that negatively impact the target of increasing the share price (Menz 2010). This theory predicts that improving a firm's social responsibility stimulates shareholder value maximization. Furthermore, Friedman (1962) represents the view that shareholders themselves should decide the level of social responsibility, as the executive's sole task is to focus on business.

The stakeholder approach has been first examined by Freeman (1984), where the author defines this view and many subsequent studies build their model upon his framework. Freeman's theory (1984) postulates that the real success of a company is achieved by satisfying all its stakeholders. There are stakeholders who demand social responsibility and base their decision-making on this issue. According to the stakeholder theory, satisfying these stakeholders through implementing positive ethical norms in the firms results in greater success. They increase customer loyalty, employee satisfaction, support by local community and the government, and finally to higher profits in the long-term. (Oikonomou et al. 2014)

2.4.2. Risk mitigation theory

If CSR issues are priced in the corporate debt market, then the key is to evaluate what drives lenders to incorporate social norms in the interest rates. The risk mitigation view represents the idea that initiatives enhancing social responsibility reduce firm risk. In fact, Lee and Faff (2009) confirm this view in their studies, where they find that firms with

high CSR scores have lower idiosyncratic risk and lower returns. If ESG activities indeed influence a company's risk, then this will accurately be reflected in the cost of debt.

One example of how social irresponsibility can significantly increase idiosyncratic risk and thereby influence the cost of debt is the BP oil spill accident. The yield spread on the BP corporate bond increased to 7.57%, which is higher than "junk bonds" at that time. Furthermore, Fitch downgraded BP's rating from AA to BBB. The firm suffered not only through loss of reputation, but also faced liquidity problems. Although BP was able to stay in business, insolvency or bankruptcy could have happened as well. (Oikonomou et al. 2014) Likewise, debtholders are expected to take into account problems that might arise from unethical and socially irresponsible behavior by incorporating this increased risk factor in their lending rates. Such behavior can be found in so-called sin firms, which are companies engaging in business like alcohol, tobacco or gambling. Jo and Na (2012) indeed find that if these corporates have higher levels of CSR, than firm risk decreases, thereby confirming the risk mitigation theory.

2.4.3. Overinvestment theory

Implementing and maintaining strong social responsibility within a firm is costly and it needs to be evaluated whether these costs exceed the benefits of high CSR with negative consequences on the financial performance. The overinvestment theory focuses on this issue and states that having very high levels of CSR are considered overinvestments, as due to the substantial increase in costs profitability decreases. Based on this theoretical approach, companies with the highest CSR scores are expected to have higher cost of debt due to poorer financial performance. To test this theory, in the empirical part of this thesis it is examined if the top CSR companies indeed have higher lending rates. (Goss and Roberts 2011)

2.4.4. Agency conflict theory

The agency theory assumes that managers overinvest in corporate social responsibility for personal benefits, as they expect better public reputation and stronger support by

society. Barnea and Rubin (2010) find that firm value increases with higher levels of CSR, but above a specific point, harms firm value, due to overinvesting at the expense of shareholders. Above this level, managers extract positive reputation only for themselves whereas shareholders suffer due to a decrease in profits. (Barnea and Rubin 2010) The agency theory is an extension to the overinvestment theory and provides additional reasoning for why extreme high social responsibility might increase the cost of debt.

2.4.5. Legitimacy theory

The term legitimacy can be defined as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.” (Suchman 1995) Within the business context of a company and based on this definition, corporates are only able to perform their business successfully if they act and operate within the limits of what society views as a socially acceptable behavior, basically a company’s attitude towards CSR (O’Donovan 2002). The legitimacy theory is closely tied to the stakeholder theory and assumes that there exists a social contract between a company and its society. In this context it is essential to define the society of a company as it can widely deteriorate. Smaller companies that do business only within a region or one country shall limit their social activities only to regional matters, whereas multinational corporates need to target their CSR initiatives to global and worldwide matters. (Lanis and Richardson 2012) The legitimacy theory is concerned with the level of information about social responsibility companies share in their different kinds of reports, as they will focus only on positive facts of their CSR culture and try to avoid mentioning any controversial topics that could harm the business. Due to this assumption the theory views CSR reports with caution. (O’Donovan 2002; Erragui 2018)

2.5. Corporate debt market

As of the second quarter in 2018, the global debt market amounts to \$247 trillion, almost 3.5 times the size of the equity market of \$71 trillion. (Institute of International Finance 2018) The most recent report by SIFMA estimates the global bond market at around \$100

trillion, of which 28% is attributable to EU 28 countries, compared to a share of 17% by these countries in the global equity market. (SIFMA 2018) Thereby only the bond market itself is larger than the equity market. Taking into account all these statistical facts, the debt market is far the most important source of external financing for firms. Still equity markets (i.e. stock markets) are more commonly followed by analysts and have a stronger presence in the academic literature. The lack of attention of the debt market due to its sheer size provides an important incentive for this paper, as new contributions in this sector are of importance in order to better understand the global debt markets.

The corporate debt market can be split into the private and the public debt market. Within this thesis, the private debt market is characterized by the financing process between lender and borrower is held private, meaning that the public is not able to participate in the financing. The most common form of private debt are bank loans. Either the loan is provided by only one bank or by several banks, which is called a syndicated loan. The public debt market on the other hand is the financing process where the public can participate, with a bond being the most usual instrument. If a company issues a bond, everybody can theoretically participate in the financing process. There are similarities and differences between the characteristics in how interest rates in these two debt markets are set and will be examined in more detail in the next two chapters.

2.5.1. Bank loans

A fundamental issue is to evaluate what are the main influencing contributors in a bank's decision of setting the interest rates of their loans. Generally, the process can be split into company-specific, loan-specific and economic factors. Unarguably, the credit-worthiness of a company is the primary issue, representing the ability of a customer to pay back the loan. In order to quantify this ability, banks try to assign a credit rating to their clients, which is done by so-called rating agencies. Large companies usually get rated by rating agencies, like Moody's, Fitch and Standard & Poor's. This is where the CSR issue has an important role, as a company's social norms has an impact on the credit risk. For example, the borrower might have to pay penalties for causing environmental catastrophes, like BP's oil spill accident, or loses important customers due to child labor, which has another

impact on a decline in revenue. Just to put the importance of the environmental aspect into perspective, Weber et al. (2010) find that in 10% of all credit losses of German banks environmental risks were involved.

Loan-specific criteria mainly incorporate the loan amount, the maturity and the secured position. Regarding the loan size, higher amount could mean higher losses for the banks in the event of bankruptcy. In terms of maturity, longer time-period usually results in stronger probability of loan failure, thus rates are expected to get higher with longer maturity. Finally, if a loan is secured, the chance of repayment in the case of insolvency is higher than an unsecured loan. Thus, unsecured loans have on average higher interest rates.

Finally, macroeconomic factors such as the level of Gross Domestic Product (GDP) and inflation represent the current state of the economy. (Gambacorta 2008). In order to control for this risk, this paper uses the spread of the bank loan interest rate over the Euribor or Libor. Both represent the current state of the economy.

As throughout this paper, Euribor and Libor as base rates are examined separately, it is important to understand what the characteristics of these two interbank rates are in order to explain potential differences in the empirical results. The Euribor, the Euro Interbank Offered Rate, is the interest rate at which around 42 selected European banks in the European Monetary Union, the so-called Eurozone, are prepared to lend to each other. The Euribor is determined by several factors, such as supply and demand, economic growth and inflation. The Euribor is only published in one currency, the Euro. (Eisl et al. 2017)

The Libor, the London Interbank Offered Rate, is comparable to the Euribor, although it is the rate at which selected banks on the London money market lend to each other. The Libor is published in ten currencies, namely British Pound, US Dollar, Japanese Yen, Swiss Franc, Canadian Dollar, Australian Dollar, Euro, Danish Krone, Swedish Krona and New Zealand Dollar. The number of banks who set this rate differ based on the currencies, for the Swedish Krona it is for example only 6 banks, whereas for the US Dollar it is 18 banks. (Eisl et al. 2017)

The main difference between the two base rates is the currency issue. Any deviation between bank loans using Euribor and using Libor as base rates can be mostly explained by the underlying currency. Although in the sample of this paper, around 8% of the Libor-denominated bank loans are issued in Euro, this share is minor and has limited impact on potential differences in the results. To conclude, Euribor-denominated bank loans are issued in Euro and Libor-denominated bank loans are issued in other currencies, mainly US Dollar and British Pound.

Banks' lending decisions are based on a variety of information that may not be easily available for outsiders. In fact, banks do possess superior information about companies, as they need it to make decisions about the ability to repay debt. As a result, the loan market is seen as informational efficient. When firms seek outside investments in the form of bank loans, they are willing to provide information in exchange of funds. Altman et al. (2006) find that the syndicated loan market is more informational efficient than the bond market, as it is able to predict the default of a company earlier than the bond market.

2.5.2. Corporate bonds

The price of a coupon-paying bond is simply the sum of the discounted cash-flows, computed as

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

where P_0 is the current price of the bond, C are the coupon payments, PV is the par value of the bond, r is the discount rate and n is the number of periods. The most important concept for bond investors is the yield of a bond. It represents the return on the investment. When an investor buys a bond at its par value, then the yield is equal to the coupon interest. Any deterioration from the par value incurs a change in the yield. The relationship between a bond price and the yield is inverse, an increase in the bond price results in a decrease of the yield, and vice versa. The most used and quoted measure to evaluate the rate of return of a bond is the Yield to Maturity (YTM), which signals the return for the

investment if the bond is held until maturity. It represents the annual return of the investment, if all payments are scheduled and if the bond is held until the last payment. The YTM resamples the discount rate in Equation (1), where the bond price equals all future cash-flows. As a result, Yield to Maturity also takes into account the time value of money, as well as can be compared with bonds with different maturity and coupon payments, and therefore is often considered as the best measure of the return of a bond. (Fabozzi 2013: 31-49)

To understand how bond yields are priced, it is essential to examine the main factors considered by investors in the bond market, which are the issuer type, the creditworthiness and the bond's terms and conditions. (Fabozzi 2013: 131)

In general, the main two types of bond issuers are governments and corporation. The difference between these two is that government bonds are considered safer investments due to their higher reliability of paying back debt, although some countries might have greater problems than others. The yield spread is considered the most used measure to indicate the difference between these two issuer types and is computed by the difference in the yields of bonds with similar characteristics. The creditworthiness of a bond represents the issuer's ability to repay the debt and is usually quantified with the credit rating by a rating agency. The bond's terms and conditions are characterized by factors like the maturity, embedded options and secured status. (Fabozzi 2013: 104-106)

2.6. Credit rating

As mentioned in the previous two chapters, the credit rating of a company comprises most risk factors and is performed by credit rating agencies, most commonly by Standard and Poor's, Fitch or Moody's. The credit rating is assessed by a letter system which differs slightly between these three, but basically follows the same principle. As the Standard & Poor's ratings are used in this research, the rating system will be explained based on this example. S&P uses a letter system with D being the worst rating and AAA being the best. D-rated firms are on the verge of default, thus are the riskiest investment, whereas AAA indicates the safest form, usually only assigned to the strongest and safest governments

in the world, such as Germany. Most commonly, these ratings are divided into non-investment, or speculative, and investment grade. Non-investment grade companies bear a greater risk of default and have higher cost of debt, and investment grade firms bear lower risk with lower cost of debt. The rating agencies assess the credit rating based on firm-specific and macroeconomic risk factors. Standard & Poor's incorporates in their corporate credit rating country and industry risk, as well as firm characteristics like capital structure, financial policy and liquidity. (Fabozzi 2013) For debt investors, the rating plays the single most important role in their decision and is a key factor in determining the interest rate of a bank loan or the yield rate of a corporate bond.

3. LITERATURE REVIEW

Although literature on the impact of Corporate Social Responsibility on the cost of capital is extensive, the bulk amount is about the cost of equity (e.g. Kempf and Osthoff 2007; Hong and Kacperczyk 2009; El Ghoual et al. 2011). In order to assess the linkage between CSR and the cost of debt, it is also necessary to examine how the cost of equity is affected by social responsibility, as it might partially explain how the cost of debt reacts.

The keyword linked to the cost of equity is Socially Responsible Investing (SRI), investments based on social responsibility aspects. Kempf and Osthoff (2007) combine a long-short strategy based on the top and bottom ESG ratings and find that this approach yields positive significant returns in the period 1992 to 2003. In contrary view, Hong and Kacperczyk (2009) find that stocks of sin firms have higher expected returns than comparable, not sinful companies. El Ghoual et al. (2011) research the impact of CSR on the cost of equity of US firms. The findings conclude that companies with better CSR scores profit from cheaper equity financing with factors such as better employee relations and environmental policies being the strongest drivers of this decrease. To obtain robust results, El Ghoual et al. (2011) furthermore show that sin companies engaging in tobacco and nuclear power production experience a substantial increase in the cost of equity. Revelli and Viviani (2015) examine 85 SRI research studies spanning a period of 20 years and conclude that socially responsible investing leads to positive, negative and neutral excess returns across global markets. Lins et al. (2017) in a very recent paper find that SRI overperforms significantly in periods of low trust, such as the financial crisis. In the European stock markets, Auer (2016) investigates whether strategies based on the overall ESG score, as well as the three pillars, yields positive excess returns. The findings suggest that it is still possible for SRI to outperform in the period after 2011 in Europe.

Literature on the cost of debt is limited although the debt market is by far larger than the equity market. Orlitzky et al. (2003) study 52 CSR studies that focus on the impact on the financial performance, whereby they find that none is linked to the cost of debt. Thus, it is surprising that research is scarce which enables this thesis to contribute new findings.

In the following chapters the existing literature about the relationship between CSR and the cost of debt is investigated, with the first chapter using the accounting measure of cost of debt computed as interest expenses divided by total debt, the second chapter using the interest rate on bank loans and the third examining the yield of corporate bonds. The fourth chapter focuses on academic research on the determinants of interest rates and bond yields. The final chapter concludes the literature review by summarizing previous research.

3.1. Social norms in the corporate debt market

La Rosa et al. (2018) investigate the relationship of CSR and the cost of debt by examining the accounting-based (i.e. interest rate) and market-based (i.e. corporate rating) cost of debt. The sample is composed of 1228 listed European non-financial firms in the period 2005 – 2012. The findings suggest that better responsibility performance decreases the interest rate, and consistent with it, better performance increases the rating. Smaller companies with higher CSR ratings have even cheaper access to debt than comparable larger companies, as they are perceived as innovative and forward looking with enormous potential of enhancing long-term profitability due to their social investments. In addition, La Rosa et al. (2018) evaluate if this relationship holds even in times of a crisis by researching the impact of CSR during the financial crisis 2008 and find that the results for both types of cost of debt are not statistically significant anymore. La Rosa et al. (2018) conclude that companies focus solely on maintaining profitability during turbulent times to keep business alive and social norms are of secondary importance.

Erragragui (2018) evaluates the relationship of CSR and the cost of debt by focusing on the environmental and governance aspect on the accounting cost of debt. The research includes 214 US firms in the period 2000 - 2011. The results show that environmental strengths lower and environmental concerns increase the cost of debt. For Erragragui (2018) the key finding and positive contribution is the so-called “governance paradox”, as results show that governance strengths reduce interest rates, but governance concerns have no significant negative impact on the cost of debt. Erragragui (2018) suggests that negative governance performance is regarded as less informative, as many companies try

to avoid including controversial topics in their reports, also called the “legitimacy theory” (O’Donovan 2002).

Ye and Zhang (2011) research the linkage of social norms and the cost of debt in China by examining around 1700 firms in 2007 and 2008. The finding of the empirical part concludes that there exists a U-shaped relationship between CSR and cost of debt. If a firm’s social responsibility is in between the sub-optimal and the super-optimal CSR level, it decreases the cost of debt. If the responsibility level is extremely low (i.e. sub-optimal) or extremely high (i.e. super-optimal), the cost of debt increases. Ye and Zhang (2011) thereby support both the risk-mitigation and the overinvestment theory and suggest that both are present in the Chinese debt market.

Izzo and Magnanelli (2017) examine the link between CSR and the accounting cost of debt by including a sample of 332 worldwide firms in the period 2005 until 2009. The main conclusion is that social responsibility is only marginally incorporated in the decision process by banks and furthermore high levels of CSR increase the cost of debt consistent with the overinvestment theory. Izzo and Magnanelli (2017) justify the results by the assumption that the debt market does not rely on the information from sustainability reports provided by the companies, and thus do not take into account this information in setting the cost of debt.

La Rosa et al. (2018), Erragragui (2018), Ye and Zhang (2011) and Izzo and Magnanelli (2017) use as the measure for cost of debt interest expenses divided by the total outstanding debt of a company, and do not differentiate between private (i.e. bank loans) and public (i.e. corporate bonds) debt. Other researchers go more into detail and research the impact of CSR on private debt (Goss and Roberts 2011; Hoepner et al. 2014; Kim et al. 2014) and on public debt (Sharfman and Fernando 2008; Menz 2010; Oikonomou et al. 2014; Ge and Liu 2015; Stellner et al. 2015), as will be discussed in the following chapters.

3.2. Social norms in the private debt market

Goss and Roberts (2011) research as one of the first the impact of CSR on private company debt and whether socially responsible firms get cheaper loans from banks. They examine if banks differentiate between issuing debt to companies with low and high CSR activities. They measure the impact of ESG rating on the interest rate of 3996 bank loans of US firms. Goss and Roberts (2011) value the role of banks as “quasi-insiders” having superior information and relationship with the companies. Their studies conclude that companies with low CSR performance pay up to 18 basis points more, whereas companies with higher than average CSR scores do not experience better loan terms. Banks see CSR concerns as risks for the company and therefore charge higher lending rates with less favorable terms. Companies being on the top of CSR initiatives on the other hand are considered by the banks as overinvestments without contributing additional value. Thus, they do not experience better loan conditions. Goss and Roberts (2011) see CSR as a second-order determinant for interest rate spreads, as the economic impact is modest.

In their paper, Kim et al. (2014) investigate the effect of company’s responsibility on the interest rates of bank loans. Their dataset includes 12 545 syndicated loan facilities of 513 firms from 19 worldwide countries in the period 2003 - 2007. Besides examining a firm’s CSR performance, the paper also investigates the bank’s responsibility behavior. The empirical results suggest that companies get rewarded with lower interest rate spreads if they are more responsible. In numerical terms, loan spreads decrease by 24.80% with a one standard deviation increase in the CSR score. This effect is even stronger if the borrower and the lending bank both have similar levels of CSR. Like Goss and Roberts (2011), Kim et al. (2014) conclude that banks have superior information and are more effective in assessing CSR.

Hoepner et al. (2014) study the implication of corporate and country sustainability on the cost of bank loans of worldwide companies, with focus on the social and environmental aspect. Their dataset includes 470 bank loan agreements in the period 2005 to 2012 covering 28 countries. The findings suggest that country sustainability has significant impact on the cost of bank loans, as higher social responsibility decreases the interest rates. Hereby it is noteworthy that the impact of the environmental pillar is almost twice as much as the social one. Firm-level sustainability on the other hand has no significant

impact on lending rates, whereby Hoepner et al. (2014) provide controversial results to other existing literature.

The relationship between CSR and loan spreads of syndicated bank loans are researched by Bae et al. (2018), consisting of 5810 U.S. bank loans in the period of 1991 - 2008. Their focus is whether CSR strengths and concerns both influence the cost of private loans in terms of firm risk. Bae et al. (2018) expect banks to better judge if a firm's CSR activities add additional value to the company's business. They find that strengths lower firm risk, thereby reducing loan spreads, whereas concerns show the opposite effect. After controlling for credit ratings, concerns lose significance, although CSR strength still appear to have positive impact. Thus, Bae et al. (2018) conclude that rating agencies include the CSR aspect in their process of providing a credit rating and thereby influence the cost of debt and lending banks view a firm's CSR strengths as informationally valuable.

3.3. Social norms in the public debt market

The relationship between Corporate Social Responsibility and the public corporate debt market is measured in the literature with two determinants: the bond yield spread and the credit rating. Although bond ratings do not per se give information about how much the company pays for the bond, it is the main determinant in evaluating the cost of the corporate bond.

Oikonomou et al. (2014) research the relationship of CSR and the cost of corporate bonds of U.S. firms. Their sample comprises 3240 corporate bonds issued by 742 firms within the time period 1993 - 2008. In their paper, the authors split the social responsibility into several subsections to evaluate the impact of each aspect on the bond yield spread. Issues such as support for local communities, higher levels of product safety and quality, and avoiding controversies of a firm's workforce, have a statistically significant positive impact on the yield spread, meaning a decrease in the cost of debt. If looking at the overall level, good CSR performance is rewarded and negative is penalized with lower and higher corporate bond yield spreads, respectively. Oikonomou et al. (2014) suggest corporations

to be aware that social norms do have an impact on the debt financing, and thus should be incorporated in strategy and management planning.

Ge and Liu (2015) study in their paper the linkage between CSP and yield spread on new bond issues on the US primary bond market. They investigate 4260 public bond issues in the USA in the period 1992 - 2009. In a first step, they find that better CSR performance results in better credit ratings for the respective company. After controlling for the credit rating, the results suggest that good Corporate Social Performance indeed is associated with lower yield spread. Similarly, poor CSR scores are linked with higher yield spread. They conclude that firms with better social norms and ethics can raise public debt for a lower cost. Additionally, they view that social norms may be valued different by private lenders (i.e. banks) and public lenders (i.e. bond investors). Ge and Liu (2015) thereby complement the hypotheses by Goss and Roberts (2011) that banks have superior information and their attitude towards social responsibility differs from the corporate bond market.

Stellner et al. (2015) use the rating approach and investigate the impact of CSR on the credit rating of Eurozone corporate bonds. They find that companies with strong CSR performance are rewarded with better ratings if the country itself has strong ESG performance in an international comparison. The findings of this study can be strongly linked with Hoepner et al. (2014), who find this kind of relationship in the private debt market.

Menz (2010) studies CSR and its implication on the yield spread of 498 corporate bonds issued in Euro covering a period of 38 months from July 2004 to August 2007. Applying different empirical models, no significant relationship between CSR and yield spreads is found. Menz (2010) argues that credit rating is of strongest interest for lenders and to some extent already incorporate information about CSR activities. With including an extra CSR rating to the model, it does not add any value to explaining yield spreads.

With the focus on only one aspect of ESG, the environmental term, Sharfman and Fernando (2008) examine its link with the cost of capital for 267 US firms. Companies engaging in increased environmental risk management experience a higher cost of debt. The

authors explain this finding by claiming that investments in environmental responsibility above the necessary to be economically efficient and that higher risk management activity does increase leverage.

3.4. Determinants of interest rate spreads and corporate yield spreads

The measures for the cost of debt in the private and the public corporate debt market are the interest rate spread and the corporate yield spread, respectively. Therefore, it is essential to evaluate what factors determine these two to form reliable models and find key control variables for the empirical research.

The International Monetary Fund (2013) suggests that the three main components of interest rate pricing are the bank's funding costs, the return on equity and the credit margin. With respect to the first item, the cost of funding is basically the interest rates for banks to borrow money, especially from other banks or central banks, and is commonly regarded as the interbank rate. In Europe, these are usually the Euribor or the Libor and represent the current economic conditions and its outlook. The return on equity represents the borrower's profitability and thereby its ability to repay debt with its own profits. Finally, the credit margin is mostly seen as the credit rating of a company as it incorporates a firm's risk in all its aspects. (IMF 2013)

Secondly, Gabbi and Sironi (2005) conclude that for pricing yields the rating of the corporate bond by a rating agency is the single most important factor as it incorporates almost all different types of a company's risk. Rating agencies thereby have strong influence on the pricing in the corporate bond market and need to act responsibly. Nevertheless, the financial crisis 2008 has shown that these agencies do not always behave responsibly. An additional determinant are state taxes as examined in previous literature (Elton et al. 2001; Gabbi and Sironi 2005; Liu et al. 2009), although this research has been done in the US market, and is not applicable on the European market, and therefore is omitted.

3.5. Conclusion on prior empirical research

Based on the previously discussed literature, it can be concluded that social responsibility has an impact on the cost of debt, although the extent and magnitude of the relationship is mixed. La Rosa et al. (2018) and Erragragui (2018) to some extent find that the accounting interest rate on debt decreases with higher CSR scores. Likewise, Kim et al. (2014) and Bae et al. (2018) suggest the same results for bank loans, whereas Goss and Roberts (2011) only evaluate that low social responsibility increases interest rates on bank loans, but high CSR has no significant impact. Oikonomou et al. (2014), Ge and Liu (2015), and Stellner et al. (2015) conclude that high responsibility lowers corporate bond yields. Sharfman and Fernando (2008), Ye and Zhang (2011), and Izzo and Magnanelli (2017) confirm in their studies the overinvestment theory, as companies with very high CSR performance experience an increase in cost of debt. Finally, Menz (2010) and Hoepner et al. (2014) find no significant relationship of these two factors.

4. DATA AND METHODOLOGY

To examine the impact of Corporate Social Responsibility on the cost of debt, several data resources are included for the empirical research. In the following subchapters, the description of data and the methodology will be provided.

4.1. Data

The sample is composed of non-financial listed companies from 18 European countries in the period 2003 - 2017. The countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the UK. In line with previous research, financial firms are excluded from this sample as they play the key role in debt financing and have different regulations (Ge and Liu 2015; La Rosa et al. 2018).

In order to quantify the level of CSR within a company it is essential to score them on a scale. In this thesis, Thomson Reuters Datastream ASSET4 database will be used which has CSR scores ranging from 0 to 100, with 100 being the highest possible CSR score. The database computes the overall CSR score by weighting the environmental, social, governance and economic component based on their weights. As the economic perspective is of secondary importance in the CSR universe and in academics, it is omitted. Nevertheless, the overall calculated CSR score by ASSET4 is kept, as investors and banks still see this score as an average picture of a firm's responsibility. Besides this overall CSR rating, scores for the three ESG components Environmental, Social and Governance, similarly rated on a scale from 0 to 100, are included in this research. Scores are constructed through the collection of 400 company-level ESG measures from publicly available sources, such as Annual Reports, CSR reports, Sustainability reports and NGO websites. The final sample dataset includes 1094 listed non-financial European firms for which ESG ratings are available.

The data selection for bank loans is retrieved from the Thomson Reuters LPC DealScan database (Goss and Roberts 2011; Kim et al. 2014). The database provides detailed

information about loans, including the interest rate margin over a base rate, starting and end date, tranche amount, loan type and purpose, whether it is secured or not, and rating information. The initial dataset for non-financial firms from the sample countries in the period 1.1.2003 to 31.12.2017 consists of 38 191 loans, and after correcting for the companies with ESG scores of 5975 loans. Interest rates in this database are given as spreads over a base rate, most commonly Euribor and Libor. As these two base rates are also the most used ones in empirical research in finance in Europe, all loans with other base rates are excluded. Furthermore, the dataset needs to be corrected for availability of all variables, which provides a final sample of 1711 bank loans, of which 742 have Euribor as a base rate, thus are Euribor-denominated, and 969 have Libor as a base rate, thus are Libor-denominated. Appendix 2 provides a detailed composition of the loan sample by country and industry.

With a closer look at the sample, the difference between Euribor and Libor loans can be examined. Euribor loans are in most of the cases denominated in Euro and Libor loans denominated in other currencies, with British Pound and US Dollar being the most frequently used. This is a key issue to explain possible differences in the interaction of the two base rates and the CSR variables.

Information on corporate bonds is derived from Thomson Reuters Datastream and the data is composed of corporate bonds by non-financial firms from the aforementioned countries issued between 01.01.2003 and 31.12.2017. The initial dataset consists of 6106 new bond issuances in this period, after matching this data with the companies for which ESG data is available, 1690 corporate bond issues remain. In order to have a complete sample where data on all variables is available, the final data sample is composed of 645 bonds. Appendix 2 illustrates the final sample splitting it by country and industry.

Information for firm-specific variables is derived from Thomson Reuters Worldscope database, providing one of the largest datasets about financial information in the world. Exchange rates are derived from the Statistical Data Warehouse of the ECB. Data for the yield of German government bonds is derived from the Deutsche Bank Eurosystem. The database calculates daily yields for government bonds with annual coupons with maturity

of 1 year until 30 years derived from the term structure of interest rates using the Svensson method (Svensson 1994) as suggested by Schich (1997).

The final sample is presented in Appendix 2 and depicts it by splitting the data by country and by industry. Almost two thirds of Libor bank loans are from the United Kingdom, whereas Euribor loans are distributed more equally. As for corporate bonds, the largest share is held by France, suggesting that France is the largest European market for public debt. Industry-wise, the sample is split rather equally, providing some more information on which industries are more active in the private or public debt market. The most active industries in the public debt market are services, technology and manufacturing, whereas in the private debt market the bank loan issues are dominated by a broad range of industries.

Table 1 presents the descriptive statistics for the four CSR scores by country and industry. In Panel A, the countries with the highest average scores are Austria, Finland, France and Hungary, and with the lowest average scores Denmark, Greece and Norway. Panel B presents the scores for industries. Industries with high average scores are Agriculture, Chemicals and Construction, whereas low ones are Healthcare, REITS and Wholesale. By taking a closer look at the environmental aspect, unsurprisingly the Oil and Gas industry is one of the lowest, whereas agriculture is the top, suggesting that in this industry firms have interest in applying strong environmental standards. By examining the governance score, it is in both Panels the lowest of the four, which is in line with the results from Chapter 5.

Table 1. Descriptive statistics by country and industry.

	ESG score	Environmental score	Social score	Governance score
<i>Panel A: Country</i>				
Austria	85.40	85.77	84.02	55.13
Belgium	75.98	77.08	68.33	59.42
Denmark	59.51	67.87	68.77	39.26
Finland	82.77	85.76	76.50	62.23
France	82.00	84.97	84.43	62.63
Germany	67.95	74.84	73.61	37.58
Greece	32.99	41.68	57.86	16.23
Hungary	89.33	92.80	92.90	50.40
Ireland	67.38	64.47	59.58	71.81
Italy	75.66	71.54	79.26	58.76
Netherlands	77.49	73.29	77.99	63.85
Norway	60.56	58.87	60.65	61.81
Poland	68.63	73.78	72.50	41.18
Portugal	74.27	86.51	82.62	27.95
Spain	77.57	80.32	81.04	53.68
Sweden	75.67	73.20	77.87	54.09
Switzerland	76.25	73.69	77.43	65.91
United Kingdom	70.53	63.02	68.02	74.99
Total	73.46	72.25	74.14	61.55
<i>Panel B: Industry</i>				
Aerospace and Defence	70.11	74.20	71.40	52.96
Agriculture	91.22	89.27	91.59	84.15
Automotive	73.41	75.79	75.46	58.45
Beverage, Food, and Tobacco Processing	76.23	77.63	76.96	58.23
Chemicals, Plastics & Rubber	81.00	85.78	81.03	55.47
Construction	82.66	82.98	82.88	63.72
General Manufacturing	71.86	75.37	71.31	59.57
Healthcare	68.64	66.60	69.84	47.89
Entertainment & Leisure	69.37	65.05	70.86	67.05
Mining	79.14	75.56	77.89	68.10
Oil and Gas	71.96	62.72	74.35	66.24
REITS	63.48	69.32	58.22	64.14
Retail & Supermarkets	69.35	65.35	70.77	62.16
Services	75.83	70.48	77.12	69.82
Technology	72.50	69.05	74.32	62.27
Transportation	73.38	69.80	70.66	67.86
Wholesale	54.66	55.86	67.08	37.85
Total	73.46	72.25	74.14	61.55

4.2. Methodology

The methodology is based on two models, the model for the public debt market (i.e. corporate bonds) and the private debt market (i.e. bank loans). All continuous variables are winsorized at the 1% and 99% level in order to avoid outliers to significantly affect the estimation results (Goss and Roberts 2011; Oikonomou et al. 2014). For better

comparability, the same regression methods, pooled OLS regression, are used in both models, as has been done in previous research (Menz 2010; Oikonomou et al. 2014; Hoepner et al. 2014; Stellner et al. 2015). Pooled OLS regression is preferable if each observation is independent of any other, which is the case in bank loan and bond issuances, as they are issued separately and not repeated periodically or in constant interval. All regression models are controlled for heteroscedasticity in the error terms by using White-Hinkley robust standard errors.

The relationship between CSR and the cost of bank loans is examined with the following model (Goss and Roberts 2011; Kim et al. 2014; Bae et al. 2018),

$$(2) \quad \text{interestspread}_{i,j,t} = \beta_1 * \text{ESG}_{i,t-1} + \beta_2 * \text{Env}_{i,t-1} + \beta_3 * \text{Soc}_{i,t-1} + \beta_4 * \text{Gov}_{i,t-1} + \gamma_5 * \text{size}_{i,t-1} + \gamma_6 * \text{leverage}_{i,t-1} + \gamma_7 * \text{profitability}_{i,t-1} + \gamma_8 * \text{MTB}_{i,t-1} + \gamma_9 * \text{int_cov}_{i,t-1} + \gamma_{10} * \text{sales_growth}_{i,t-1} + \delta_{11} * \text{loansize}_{i,j,t} + \delta_{12} * \text{maturity}_{i,j,t} + \delta_{13} * \text{rating}_{i,j,t} + \delta_{14} * \text{secured}_{i,j,t} + \delta_{15} * \text{loantype}_{i,j,t} + \delta_{16} * \text{loanpurpose}_{i,j,t} + \varepsilon_{i,j,t} ,$$

where $\text{interestspread}_{i,j,t}$ indicates the natural logarithm of the interest rate spread over the Euribor or Libor at time t for loan j by company i . Two separate models will be regressed for the two base rates. The interest spread is quoted in bps. Spreads are log transformed due to positive skewness, since interest rates lower than the base rate are unlikely (Goss and Roberts 2011). CSR and firm-specific control variables are described in chapters 4.2.1 and 4.2.2, respectively. With regards to bank loan-specific control variables, $\text{loansize}_{i,j,t}$ is the natural logarithm of the loan amount in Euro, $\text{maturity}_{i,j,t}$ the maturity of the loan in months, $\text{rating}_{i,j,t}$ the long-term S&P rating of the loan at the time of issue, scaled from 0 (no rating, or SD rating) to 20 (AAA rating), for the transformation methodology see Appendix 1. $\text{Secured}_{i,j,t}$ is a dummy variable for the status of the loan. If the loan is secured, the dummy variable equals 1, and 0 if it is unsecured. $\text{Loantype}_{i,j,t}$ is an indicator variable for the type of loan, such as Revolver, Bridge Loan and other loans. Term Loan is the omitted variable. Finally, $\text{loanpurpose}_{i,j,t}$ indicates the purpose of the loan, which are working capital, acquisitions, back-ups and other purpose. General purpose is the omitted variable.

To test the association between CSR and the yield spread of corporate bonds, the following model, based on previous literature (Oikonomou et al. 2014; Ge and Liu 2015; Cooper and Uzun 2015), is used,

$$(3) \quad \begin{aligned} \text{yieldspread}_{i,j,t} = & \beta_1 * \text{ESG}_{i,t-1} + \beta_2 * \text{Env}_{i,t-1} + \beta_3 * \text{Soc}_{i,t-1} + \beta_4 * \\ & \text{Gov}_{i,t-1} + \gamma_5 * \text{size}_{i,t-1} + \gamma_6 * \text{leverage}_{i,t-1} + \gamma_7 * \text{profitability}_{i,t-1} + \gamma_8 * \\ & \text{MTB}_{i,t-1} + \gamma_9 * \text{int_cov}_{i,t-1} + \gamma_{10} * \text{sales_growth}_{i,t-1} + \delta_{11} * \\ & \text{issuesize}_{i,j,t} + \delta_{12} * \text{maturity}_{i,j,t} + \delta_{13} * \text{rating}_{i,j,t} + \varepsilon_{i,j,t} , \end{aligned}$$

where $\text{yieldspread}_{i,j,t}$ is the natural logarithm of the difference between the corporate bond yield and the German Treasury bond yield with comparable maturity (Ge and Liu 2015) at time t for bond j by company i . The German Treasury bond can be considered the safest sovereign bond in Europe and is used in different previous literature to measure yield spreads. (Blanco et al. 2005; Caporale et al. 2018) Spreads are log transformed due to positive skewness, since interest rates lower than the base rate are unlikely (Goss and Roberts 2011). CSR and firm-specific control variables are described in chapters 4.2.1 and 4.2.2, respectively. In terms of bond specific control variables, $\text{issuesize}_{i,j,t}$ represents the natural logarithm of the par value of the issued bond in Euro, $\text{maturity}_{i,j,t}$ the number of months until maturity of the bond and $\text{rating}_{i,j,t}$ the long-term S&P rating of the bond at the time of issue, scaled from 0 (no rating, or SD rating) to 20 (AAA rating), for the transformation methodology see Appendix 1.

4.2.1. CSR control variables

The ESG scores are based on a scale from 0-100. 100 indicates the highest score, thus perfect positive social responsibility, and vice versa. In another model in the empirical part, these scores are transformed into percentile ranks, as has been done in previous research. (Ioannou and Serafeim 2012; Cheng et al. 2014; Stellner et al. 2015; La Rosa et al. 2018). In the research, all CSR control variables are lagged, as this information was the latest available at the time of the debt issue, similarly to previous research (Oikonomou et al. 2014; Stellner et al. 2015; Ge and Liu 2015).

ESG_{i,t-1}: To proxy for the level of corporate social responsibility of a company, the overall ESG score is used and includes all different aspects of CSR.

Env_{i,t-1}: The Environmental score measures a firm's attitude towards the environment and its management practice to avoid environmental risk. The score is based on the three main categories Emission Reduction, Product Innovation and Resource Reduction and are computed by several indicators.

Soc_{i,t-1}: The Social score provides information about a company's relationship with the society at large and is composed of the six pillars Employment Quality, Health & Safety, Training & Development, Diversity & Opportunity, Human Rights, Community, and Product Responsibility.

Gov_{i,t-1}: The Corporate Governance score indicates the firm's responsibility to governance, and is divided into Board Functions, Board Structure, Compensation Policy, Vision & Strategy, and Shareholder Rights.

4.2.2. Firm-specific control variables

All firm-specific control variables are euro-denominated and lagged, as this information was the latest available at the time of the debt issue, similarly to previous research (Oikonomou et al. 2014; Stellner et al. 2015; Ge and Liu 2015). To control for company characteristics that are expected to have an impact on the cost of debt, following variables are used in the methodology, *size_{i,t-1}* is the natural logarithm of total assets, *leverage_{i,t-1}* indicates the level of leverage of the company, calculated as total debt divided by total assets, *profitability_{i,t-1}* is measured by the return on total assets, *MTB_{i,t-1}* is the market-to-book ratio, *int_cov_{i,t-1}* is the interest coverage ratio, EBIT divided by interest expenses, representing a company's ability to pay interests by its earnings, and *sales_growth_{i,t-1}* is the sales growth in percentage over the financial year.

Industry fixed effects: To control for industry-specific characteristics, dummies for the different sectors are included.

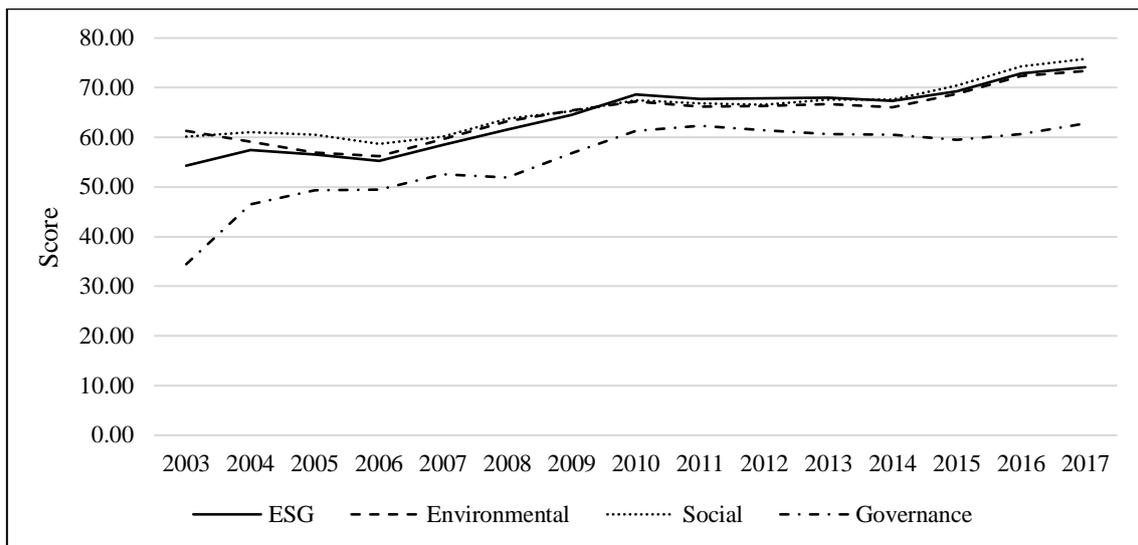
Year fixed effects: Years are fixed covering the period 2003 to 2017 to control for time-varying effects as interest rates and yields differ throughout the periods.

Country fixed effects: Country-specific effects are fixed to control for cross-sectional effects.

5. EMPIRICAL RESULTS

In the period 2003 to 2017, Figure 1 provides evidence that firms attitude toward social responsibility improved, as scores in all four classes increased in that time significantly. The financial crisis in 2008 and 2009 had no negative impact on the social responsibility effort of companies, suggesting that although firm's profit did suffer from these turbulent times, they continued their path to implement higher social norms in their firm culture. Although in the period 2010 to 2014, where European countries still suffered from the post-financial crisis effects and the European Sovereign debt crisis emerged, scores remained stable without continuing the rise from the previous years. From 2015 on, CSR scores started to increase again reaching the peak throughout the sample period.

Figure 1. ESG score evolution.



The environmental and social aspects have higher average scores than the governance aspect, suggesting that these two enjoy greater attention and importance by companies. This might be explained by the fact that corporates expect greater advantage from the environmental and social perspective than from the latter one. The empirical analysis might give answers as smaller impact of the governance pillar on the cost of debt would confirm the lack of attention.

5.1. Model for bank loans

The summary statistics in Table 2 show that 742 Euribor-denominated and 969 Libor-denominated bank loans are examined. Euribor loans have an average spread of 137bps, 17% of the loans are secured with a mean maturity of 55 months. Libor loans are characterized by an average spread of 173 bps, which is consistent with prior literature (Goss and Roberts 2011; Bae et al. 2018). On average, Euribor loans have a lower spread than Libor loans, lower ESG scores, shorter maturity and better credit ratings. In general, it can be concluded that variables of the two base rates differ and suggests examining them separately continuously throughout the empirical research.

Table 2. Summary statistics for bank loans.

Variable	EURIBOR						LIBOR					
	<i>N</i>	Mean	Median	Min	Max	S.D.	<i>N</i>	Mean	Median	Min	Max	S.D.
<i>Panel A: ESG characteristics</i>												
ESG score	742	68.96	81.96	3.85	97.42	28.06	969	68.87	76.91	3.91	98.08	25.47
Environmental score	742	72.92	86.55	8.67	97.39	26.45	969	63.47	70.49	8.74	97.37	26.70
Social score	742	71.79	84.13	4.74	99.25	26.40	969	67.69	73.45	6.52	98.60	23.70
Governance score	742	49.04	48.87	1.97	96.30	26.49	969	67.31	74.01	2.63	96.45	24.06
<i>Panel B: Loan characteristics</i>												
Spread (bps)	742	137.0	90.0	5.0	1600.0	147.6	969	173.4	140.0	11.5	1100.0	141.2
Loan size	742	20.13	20.21	15.07	24.31	1.35	969	19.88	19.87	15.07	23.85	1.38
Maturity	742	54.59	59.00	3.00	323.00	24.19	969	50.77	59.00	4.00	143.00	22.06
S&P Rating	742	6.61	8.00	0.00	18.00	6.29	969	4.36	0.00	0.00	17.00	5.67
Secured loan	742	0.17	0.00	0.00	1.00	0.37	969	0.25	0.00	0.00	1.00	0.44
<i>Panel C: Firm characteristics</i>												
Firm size	742	15.98	15.98	11.85	19.74	1.26	969	15.31	15.15	11.78	19.47	1.50
Leverage	742	31.49	30.19	0.29	116.54	15.71	969	27.67	27.04	0.00	108.71	15.74
Return on Assets (%)	742	5.63	5.00	-14.94	75.92	6.43	969	6.61	6.12	-53.22	100.83	10.29
Market/Book	742	2.42	1.96	-13.47	19.66	2.44	969	2.13	2.01	-110.53	56.62	8.62
Interest Coverage (%)	742	8.87	4.63	-29.36	881.00	37.47	969	29.18	4.96	-84.06	5563	259.44
Sales growth (%)	742	8.04	5.76	-42.80	276.21	23.56	969	35.65	6.07	-48.20	23319	749.37

This table reports the summary statistics for Euribor-denominated and Libor-denominated bank loans, respectively. Panel A provides information about the overall ESG score and its three pillars, Panel B a summary of loan-specific variables and Panel C variables used to control for firm characteristics.

Table 3 provides the correlation matrix for bank loans. The issue of multicollinearity arises if variables are highly correlated and thereby could bias regression results. In Panels A and B, the high correlation between the ESG score and the three sub-aspects Environmental, Social and Governance is expected, as the overall score is based on the three pillars. Thus, separate regressions will be conducted for the overall score and the three

sub-scores. The correlation between the three ESG components is in comparison smaller and should not cause problems of multicollinearity. For sake of validity, besides combining the three pillars in one model, separate models will be examined consisting of only one of these three. Evaluating the correlation between the CSR measures and the spread, the overall ESG score and the categories Environmental and Social have a negative relationship with the spread, suggesting that higher CSR rating decreases the interest rate.

Table 3. Correlation matrix for bank loans.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<i>Panel A: EURIBOR</i>															
ESG score (1)	1.00														
Environmental score (2)	0.86	1.00													
Social score (3)	0.88	0.74	1.00												
Governance score (4)	0.71	0.50	0.52	1.00											
Spread (5)	-0.11	-0.14	-0.10	0.01	1.00										
Loan size (6)	0.27	0.29	0.28	0.15	-0.33	1.00									
Maturity (7)	0.03	0.00	0.03	0.03	0.15	-0.17	1.00								
Rating (8)	0.22	0.22	0.23	0.08	-0.31	0.42	-0.18	1.00							
Secured loan (9)	0.01	-0.05	0.02	0.02	0.42	-0.14	0.20	-0.19	1.00						
Firm size (10)	0.50	0.55	0.52	0.27	-0.29	0.60	-0.16	0.49	-0.16	1.00					
Leverage (11)	0.04	0.07	0.00	0.03	0.16	-0.07	0.07	-0.10	0.17	0.03	1.00				
Return on Assets (12)	0.10	0.01	0.02	0.06	0.01	-0.01	0.06	0.01	0.08	-0.12	-0.12	1.00			
Market/Book (13)	-0.07	-0.11	-0.09	-0.07	-0.03	-0.08	-0.01	-0.06	0.05	-0.15	0.05	0.18	1.00		
Interest Coverage (14)	0.02	0.00	0.00	0.01	-0.07	0.04	-0.04	-0.04	-0.04	-0.03	-0.11	0.12	0.08	1.00	
Sales growth (15)	-0.12	-0.11	-0.19	-0.06	0.07	-0.13	0.03	0.02	0.13	-0.10	0.00	0.08	0.05	0.02	1.00
<i>Panel B: LIBOR</i>															
ESG score (1)	1.00														
Environmental score (2)	0.81	1.00													
Social score (3)	0.86	0.67	1.00												
Governance score (4)	0.63	0.32	0.44	1.00											
Spread (5)	-0.13	-0.09	-0.12	0.05	1.00										
Loan size (6)	0.28	0.28	0.27	0.04	-0.31	1.00									
Maturity (7)	-0.07	-0.02	-0.10	-0.10	0.14	-0.10	1.00								
Rating (8)	0.26	0.27	0.24	0.10	-0.22	0.42	-0.05	1.00							
Secured loan (9)	-0.15	-0.05	-0.15	-0.12	0.38	-0.14	0.29	-0.10	1.00						
Firm size (10)	0.44	0.48	0.43	0.10	-0.30	0.64	-0.10	0.54	-0.13	1.00					
Leverage (11)	-0.08	-0.01	-0.01	-0.07	0.09	0.05	0.15	0.12	0.12	0.08	1.00				
Return on Assets (12)	-0.03	-0.10	-0.08	-0.05	-0.11	0.07	0.05	-0.03	0.03	-0.09	-0.21	1.00			
Market/Book (13)	0.04	0.02	0.02	-0.02	-0.10	0.01	-0.01	-0.02	-0.04	0.03	-0.13	0.03	1.00		
Interest Coverage (14)	-0.05	-0.05	-0.07	-0.03	-0.02	-0.02	0.00	-0.06	-0.02	-0.07	-0.16	0.34	0.01	1.00	
Sales growth (15)	-0.03	-0.07	-0.02	0.01	-0.01	0.02	0.02	-0.03	-0.01	-0.01	-0.03	0.00	0.00	0.00	1.00

This table reports the correlation coefficients for all variables. In Panel A, all bank loans with the base rate Euribor, and in Panel B with the base rate Libor are reported.

The relationship between the interest rate spread and loan size, rating, firm size, market-to-book ratio and interest coverage is negative, featuring that larger loans by larger

companies with higher rating, higher market-to-book ratio and higher interest coverage should result in lower interest rates. Furthermore, the positive correlation between spread and maturity, secured status and leverage suggests that loans that are secured with longer maturity and higher leverage result in higher interest rates. These findings are in line with prior studies (Goss and Roberts 2011) and are similar for Euribor and Libor bank loans.

Table 4 reports empirical results of the regression for interest rate spreads on bank loans with Euribor and Libor base rate. For Euribor-denominated loans, model (1) reports that overall ESG scores have a negative sign and are statistically significant, thus strong social responsibility within a firm decreases the interest rate. Due to the logarithmic transformation of the interest rate spread, the interpretation is indirect. If the independent variable changes by 1 with all other variables remaining constant, the dependent variable percentage change is the exponent of the coefficient minus 1, thus $\% \Delta y = 100 * (e^{\beta} - 1)$, as has been used in prior research (Oikonomou et al. 2014).

Using this approach and holding all other variables equal, if the overall ESG score of the company increases by 10 points, for example from 75 to 85, then the interest spread is expected to decrease by 4.9%. Models (3) and (4) can be interpreted similarly, where a 10-point increase of the Environmental score lowers the spread by 3.9% and the same increase of the Social score decreases the spread by 3.7%. These two aspects seem to lose their significance in model (2) where the three scores are combined in one regression, although the social score is significant at the 10% level. The Governance responsibility score has no impact on loan spreads, neither in model (2) and (5). In all the models of Euribor-denominated loans the control variables have similar coefficients and significance. In general, larger loans, higher S&P rating, shorter maturity and unsecured loans lower the interest rate. Furthermore, larger firms with lower leverage, higher market-to-book and higher interest coverage pay less for their loans. The adjusted R-squares between 67% and 68% as well as the general findings are similar to Goss and Roberts (2011) and Kim et al. (2014).

Table 4. ESG scores and interest rate spreads.

	EURIBOR					LIBOR				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>ESG characteristics:</i>										
ESG score	-0.0049*** (-4.572)					0.0004 (0.467)				
Environmental score		-0.0024 (-1.563)	-0.0039*** (-3.274)				0.0001 (0.094)	0.0005 (0.604)		
Social score		-0.0024* (-1.674)		-0.0037*** (-3.466)			-0.0004 (-0.329)		0.0004 (0.491)	
Governance score		0.0005 (0.339)			-0.0016 (-1.33)		0.0019* (1.665)			0.0017* (1.735)
<i>Loan characteristics:</i>										
Loan size	-0.0916*** (-3.053)	-0.0955*** (-3.158)	-0.0935*** (-3.092)	-0.0946*** (-3.116)	-0.0889*** (-2.881)	-0.0426** (-2.105)	-0.0397* (-1.953)	-0.0427** (-2.107)	-0.0429** (-2.119)	-0.0402** (-1.984)
Maturity	0.1543** (2.354)	0.1533** (2.321)	0.1506** (2.274)	0.1491** (2.244)	0.1375** (2.029)	0.0687 (1.454)	0.0687 (1.455)	0.0683 (1.443)	0.0698 (1.48)	0.0696 (1.48)
S&P Rating	-0.0396*** (-6.952)	-0.0402*** (-6.989)	-0.0409*** (-7.115)	-0.0397*** (-6.884)	-0.0405*** (-6.935)	-0.0178*** (-3.639)	-0.0185*** (-3.795)	-0.0177*** (-3.629)	-0.0176*** (-3.592)	-0.0184*** (-3.802)
Secured loan	0.4266*** (4.635)	0.414*** (4.516)	0.4007*** (4.383)	0.4175*** (4.566)	0.3922*** (4.353)	0.4513*** (7.909)	0.4481*** (7.88)	0.4496*** (7.868)	0.4507*** (7.892)	0.4473*** (7.872)
<i>Firm characteristics:</i>										
Firm size	-0.059 (-1.634)	-0.0666* (-1.831)	-0.0714** (-1.97)	-0.0774** (-2.203)	-0.1033*** (-2.975)	-0.1695*** (-7.208)	-0.1717*** (-7.315)	-0.1704*** (-7.417)	-0.1696*** (-7.232)	-0.1734*** (-7.782)
Leverage	0.0085*** (4.271)	0.0088*** (4.474)	0.0089*** (4.479)	0.0089*** (4.423)	0.0091*** (4.481)	0.0065*** (4.349)	0.0066*** (4.463)	0.0066*** (4.393)	0.0065*** (4.324)	0.0066*** (4.427)
Return on Assets (%)	-0.0054 (-0.953)	-0.0073 (-1.31)	-0.0073 (-1.332)	-0.0075 (-1.361)	-0.008 (-1.442)	-0.0132*** (-5.132)	-0.0132*** (-5.206)	-0.0131*** (-5.097)	-0.0132*** (-5.135)	-0.0133*** (-5.209)
Market/Book	-0.0299** (-2.284)	-0.0307** (-2.347)	-0.0308** (-2.368)	-0.0308** (-2.329)	-0.0312** (-2.317)	-0.0163*** (-3.052)	-0.0161*** (-3.059)	-0.0163*** (-3.041)	-0.0163*** (-3.047)	-0.0162*** (-3.076)
Interest Coverage (%)	-0.0093*** (-5.354)	-0.0094*** (-5.505)	-0.0094*** (-5.519)	-0.0095*** (-5.557)	-0.0096*** (-5.638)	-0.001* (-1.852)	-0.001* (-1.884)	-0.001* (-1.857)	-0.001* (-1.844)	-0.001* (-1.872)
Sales growth (%)	-0.0003 (-0.193)	-0.0002 (-0.102)	0.0003 (0.177)	-0.0005 (-0.274)	0.0003 (0.147)	0.001 (1.517)	0.0011 (1.632)	0.001 (1.564)	0.001 (1.52)	0.0011* (1.662)
<i>Fixed effects:</i>										
Loan Type	Yes									
Loan Purpose	Yes									
Year	Yes									
Industry	Yes									
Country	Yes									
Intercept	6.7481*** (9.976)	6.9443*** (10.108)	6.9392*** (10.288)	7.0339*** (10.406)	7.1492*** (10.262)	7.2356*** (13.794)	7.1604*** (13.473)	7.2455*** (13.73)	7.2399*** (13.817)	7.1873*** (13.896)
R ²	0.7102	0.7075	0.7064	0.7064	0.7023	0.6620	0.6631	0.6620	0.6620	0.6630
Adjusted R ²	0.6800	0.6760	0.6757	0.6757	0.6713	0.6360	0.6364	0.6361	0.6360	0.6372
N	742	742	742	742	742	969	969	969	969	969

The dependent variable is the natural logarithm of interest rate spreads over Euribor and Libor, respectively. Models (1) use the overall ESG score as an independent variable, Models (2) the three pillars environmental, social and governance combined, and Models (3) – (5) use only one of these in each. All models are controlled for heteroskedasticity by using White-Hinkley robust standard errors. T-statistics are reported in parenthesis. ***, ** and * denote the significance level at 1%, 5% and 10%, respectively.

For Libor-denominated interest rate spreads, corporate social responsibility seems to have no significant impact on the cost of debt. Examining the overall ESG, Environmental and Social score, these variables are statistically not significant. The Governance aspect is significant at 10% in models (7) and (10) and is positive. This indicates that firms with

higher Governance responsibility pay more for their bank loans, suggesting that banks penalize the firm for overinvesting in this pillar. The control variables provide similar results like the Euribor loans, except that return on assets is significant and has a negative relationship. Thus, more profitable firms pay a lower interest rate. The adjusted R-squares of around 63% are slightly lower than in the Euribor models.

The findings suggest that Euribor loans seem to satisfy the first hypothesis as higher CSR scores, except the Governance score, decrease the interest rate. The insignificance of the governance aspect can be explained by the lack of attention by firms as shown in Figure 1. For Libor loans, there appears to be no significant relationship between CSR and interest rates, and the first hypothesis is rejected.

The mixed results for Euribor and Libor loans provide new information as this has not been researched previously. It appears as if CSR is present in the Eurozone loan market, where loans are most often issued in Euro with Euribor as the base rate, whereas this information is not incorporated in the loan market of other currencies in Europe, specifically US Dollar, Pound Sterling, Swiss Franc and Swedish Krona. This finding is new in the empirical research as no previous literature has tested whether Euribor and Libor as base rates influence the impact of CSR on bank loans. Although a few papers focus on similarities and differences of these two interbank rates (Eisl et al. 2017), they do not mention any potential linkage to social responsibility.

In Table 5, ESG scores are divided into top and low quantiles by creating dummy variables. If the score is in the top 25% of the sample, then the variable High score equals 1, and 0 otherwise. The same is applicable for the Low score variable, which is 1 if the ESG score is in the lowest 25% of the sample. This procedure is followed to examine whether banks incorporate if companies have very low or very high social responsibility. In case of the Euribor loans, models (1) to (5) report results of the impact of the lowest and top CSR scores and its impact on the interest rate spread. In model (1) it can be interpreted that top CSR companies pay 15.38% less on their bank loans than others, and the bottom pays 10.95% more. For the three pillars, models (2) to (5) suggest that high scores of all

three aspects decrease the spread by up to 30%, and low scores of the environmental aspect increase the spread.

Table 5. High and low ESG scores and interest rate spreads.

	EURIBOR					LIBOR				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>ESG characteristics:</i>										
High ESG score	-0.167*** (-2.945)					-0.1136** (-2.206)				
Low ESG score	0.1116* (1.786)					-0.0747 (-1.558)				
High Environmental score		-0.1066* (-1.664)	-0.1692*** (-2.649)				0.051 (0.95)	0.0375 (0.722)		
Low Environmental score		0.1515** (2.106)	0.1279** (1.977)				0.0357 (0.65)	-0.0101 (-0.208)		
High Social score		-0.28*** (-4.564)		-0.3107*** (-5.246)			-0.0574 (-1.025)		-0.0185 (-0.351)	
Low Social score		-0.1134* (-1.656)		-0.062 (-0.991)			-0.0449 (-0.859)		-0.0682 (-1.486)	
High Governance score		-0.1106* (-1.82)			-0.1361** (-2.194)		0.1807*** (3.519)			0.1736*** (3.649)
Low Governance score		-0.1078 (-1.485)			-0.0475 (-0.698)		0.0224 (0.43)			0.0161 (0.314)
<i>Loan characteristics:</i>										
Loan size	-0.09*** (-2.946)	-0.0843*** (-2.835)	-0.0894*** (-2.92)	-0.0814*** (-2.705)	-0.093*** (-3.033)	-0.047** (-2.305)	-0.0443** (-2.199)	-0.0423** (-2.067)	-0.045** (-2.217)	-0.0444** (-2.216)
Maturity	0.1497** (2.248)	0.1318** (2.094)	0.1463** (2.216)	0.126* (1.96)	0.1361** (2.021)	0.0753 (1.587)	0.0677 (1.446)	0.0673 (1.417)	0.0706 (1.495)	0.0696 (1.497)
S&P Rating	-0.0389*** (-6.771)	-0.0411*** (-7.278)	-0.0415*** (-7.238)	-0.0412*** (-7.237)	-0.0392*** (-6.708)	-0.0174*** (-3.615)	-0.0196*** (-4.024)	-0.0181*** (-3.698)	-0.0178*** (-3.624)	-0.0188*** (-3.912)
Secured loan	0.4092*** (4.46)	0.3631*** (4.118)	0.3732*** (4.178)	0.3808*** (4.32)	0.3837*** (4.26)	0.4522*** (8.016)	0.4586*** (8.074)	0.4482*** (7.856)	0.4464*** (7.829)	0.462*** (8.112)
<i>Firm characteristics:</i>										
Firm size	-0.0761** (-2.135)	-0.0666* (-1.866)	-0.0685* (-1.924)	-0.0949*** (-2.758)	-0.1112*** (-3.203)	-0.1607*** (-7.101)	-0.1701*** (-7.438)	-0.1699*** (-7.501)	-0.171*** (-7.554)	-0.1723*** (-7.9)
Leverage	0.009*** (4.461)	0.0101*** (5.161)	0.009*** (4.545)	0.0103*** (5.188)	0.0091*** (4.431)	0.0064*** (4.262)	0.0068*** (4.62)	0.0066*** (4.433)	0.0064*** (4.28)	0.0068*** (4.573)
Return on Assets (%)	-0.0069 (-1.24)	-0.0082 (-1.52)	-0.0076 (-1.352)	-0.0097* (-1.841)	-0.008 (-1.451)	-0.013*** (-5.016)	-0.0134*** (-5.211)	-0.013*** (-5.057)	-0.0134*** (-5.233)	-0.0134*** (-5.204)
Market/Book	-0.0297** (-2.228)	-0.032** (-2.502)	-0.0295** (-2.243)	-0.031** (-2.428)	-0.0325** (-2.43)	-0.0158*** (-2.928)	-0.0172*** (-3.186)	-0.0163*** (-3.056)	-0.0163*** (-3.047)	-0.0174*** (-3.236)
Interest Coverage (%)	-0.0093*** (-5.634)	-0.0096*** (-6.404)	-0.0093*** (-5.624)	-0.0102*** (-6.484)	-0.0093*** (-5.69)	-0.0011** (-2.022)	-0.001* (-1.68)	-0.001* (-1.861)	-0.001* (-1.824)	-0.0009* (-1.686)
Sales growth (%)	0.0001 (0.055)	-0.0003 (-0.165)	0.0002 (0.123)	0 (0.017)	0.0001 (0.058)	0.001 (1.576)	0.0011* (1.705)	0.001 (1.556)	0.001 (1.601)	0.0011* (1.775)
<i>Fixed effects:</i>										
Loan Type	Yes									
Loan Purpose	Yes									
Year	Yes									
Industry	Yes									
Country	Yes									
Intercept	6.6982*** (9.349)	6.7584*** (9.794)	6.6361*** (9.519)	7.0601*** (10.421)	7.3041*** (10.439)	7.2153*** (13.616)	7.3539*** (13.303)	7.2564*** (13.251)	7.3641*** (13.783)	7.3764*** (14.061)
R ²	0.7071	0.7193	0.7077	0.7135	0.7037	0.6644	0.6679	0.6622	0.6626	0.6670
Adjusted R ²	0.6760	0.6877	0.6767	0.6832	0.6723	0.6383	0.6404	0.6358	0.6363	0.6410
N	742	742	742	742	742	969	969	969	969	969

The dependent variable is the natural logarithm of interest rate spreads over Euribor and Libor, respectively. Models (1) use the highest and lowest quantile of the overall ESG score as independent variables, Models (2) the highest and lowest quantiles of the three pillars environmental, social and governance combined, and Models (3) – (5) use only one of these in each. All models are controlled for heteroskedasticity by using White-Hinkley robust standard errors. T-statistics are reported in parenthesis. ***, ** and * denote the significance level at 1%, 5% and 10%, respectively.

As for Libor-denominated bank loans, only the variable high ESG score and high governance score are statistically significant. The first has the expected coefficient, whereas firms in the top 25% of governance responsibility pay around 16.50% more on their interest rate, which is an opposing result to the Euribor models. In both models, the “governance paradox” as described by Erragragui (2018) holds and is consistent with the findings by Erragragui (2018).

The results of Table 5 for strong and poor CSR performance generally confirm the findings from Table 4, as for Euribor loans positive social responsibility lowers the interest rate, and Libor loans in most models have no significant relationship with ESG scores.

5.2. Model for corporate bonds

The summary statistics of the corporate bond sample is shown in Table 6, where the overall ESG score and the Environmental and Social pillar appear to be on a same level, whereas the Governance score is almost 20 points lower.

Table 6. Summary statistics for corporate bonds.

Variable	<i>N</i>	Mean	Median	Min	Max	S.D.
<i>Panel A: ESG characteristics</i>						
ESG score	686	85.33	91.47	7.03	97.03	16.36
Environmental score	686	84.71	91.18	8.84	95.60	16.45
Social score	686	86.22	92.11	7.17	97.59	15.54
Governance score	686	67.19	71.43	7.69	97.94	21.98
<i>Panel B: Bond characteristics</i>						
Spread (bps)	686	148.79	121.59	-203.00	1577.91	135.52
Bond size	686	12.91	13.12	8.89	14.91	0.90
Maturity	686	120.63	96.00	12.00	1200.00	109.98
S&P Rating	686	4.86	0.00	0.00	17.00	6.44
<i>Panel C: Firm characteristics</i>						
Firm size	686	16.69	16.78	12.03	19.66	1.39
Leverage	686	29.72	28.12	0.01	150.26	13.89
Return on Assets (%)	686	5.55	4.95	-21.55	51.02	6.01
Market/Book	686	3.32	2.10	-40.04	235.02	14.68
Interest Coverage (%)	686	10.55	5.81	-31.44	288.67	22.71
Sales growth (%)	686	7.60	2.86	-29.85	2750.40	105.40

The average spread of 149 bps is comparable with the bank loan spread, and in line with previous research (Ge and Liu 2015). The mean maturity is 120 months, or 10 years, which is significantly longer than for bank loans.

Table 7 reports the correlation matrix of key variables used in the analysis. The correlation between the overall ESG score and its pillars is as expected strongly positively correlated, to control for multicollinearity separate regressions will be conducted. The correlation between the three ESG components is smaller and should not cause problems of multicollinearity. Nevertheless, in addition to combining these three, separate models will be regressed including only one of the three. The correlation between the CSR scores and the spread is mostly negative, except for Governance, which is in line with the expectation that high social responsibility decreases the cost of public debt. Additionally, the yield spread correlates negatively with the bond size, the S&P rating, firm size, return on assets and interest coverage, and positive with leverage, which is all consistent with the predictions and prior research results (Ge and Liu 2015).

Table 7. Correlation matrix for corporate bonds.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ESG score (1)	1.00													
Env score (2)	0.82	1.00												
Soc score (3)	0.89	0.75	1.00											
Gov score (4)	0.67	0.42	0.48	1.00										
spread (5)	-0.16	-0.17	-0.16	0.03	1.00									
Bond size (6)	0.25	0.19	0.22	0.20	-0.11	1.00								
Maturity (7)	0.10	0.10	0.12	0.01	0.01	0.13	1.00							
S&P rating (8)	0.18	0.15	0.15	0.09	-0.24	0.21	0.09	1.00						
Firm size (9)	0.43	0.44	0.41	0.27	-0.18	0.47	0.25	0.32	1.00					
Leverage (10)	-0.05	-0.07	-0.05	0.08	0.07	0.00	-0.02	-0.04	0.00	1.00				
Return on Assets (11)	0.10	0.02	0.08	0.03	-0.26	-0.04	-0.05	-0.03	-0.14	0.02	1.00			
Market/Book (12)	-0.01	-0.03	0.01	0.00	0.00	-0.08	-0.02	-0.05	-0.13	0.11	0.18	1.00		
Interest Coverage (13)	0.02	-0.01	0.03	-0.09	-0.17	-0.09	-0.08	-0.01	-0.21	-0.36	0.34	0.03	1.00	
Sales growth (14)	-0.05	-0.03	-0.04	-0.06	0.01	-0.12	-0.03	-0.03	-0.03	-0.05	0.14	0.00	0.03	1.00

The regression results in Table 8 provide findings on the impact of CSR on yields of corporate bonds. Although the overall ESG score has a negative coefficient, thus seems to decrease the yield, it is statistically not significant. Examining the three ESG components on the other hand provide insights. If combining the pillars, higher environmental scores decrease, whereas higher governance scores increase the yield spread. Splitting

these three aspects in models (3) to (5) show that stronger environmental and social responsibility decrease, and stronger governance responsibility increases the cost of debt. Based on the results in Table 8 it can be concluded that lenders value a company's environmental and social engagement and reward them with cheaper debt financing, but punish companies investing into governance responsibility as it may be seen as unnecessary costs that do not add any value to the company.

Table 8. ESG scores and yield spreads.

	(1)	(2)	(3)	(4)	(5)
<i>ESG characteristics:</i>					
ESG score	-0.0038 (-1.309)				
Environmental score		-0.0063** (-1.975)	-0.0065*** (-2.803)		
Social score		-0.0051 (-1.214)		-0.0057* (-1.747)	
Governance score		0.0057*** (2.766)			0.0024 (1.207)
<i>Loan characteristics:</i>					
Bond size	-0.0965** (-2.003)	-0.0996** (-2.068)	-0.0983** (-2.025)	-0.0953** (-1.975)	-0.1036** (-2.139)
Maturity	-0.0094 (-0.132)	0.0182 (0.262)	0.0047 (0.066)	-0.0056 (-0.08)	-0.0133 (-0.189)
S&P Rating	-0.0155* (-1.914)	-0.0155* (-1.953)	-0.0156* (-1.937)	-0.0159** (-1.967)	-0.0154* (-1.9)
<i>Firm characteristics:</i>					
Firm size	0.0189 (0.469)	0.0376 (0.941)	0.0364 (0.897)	0.0265 (0.654)	-0.0114 (-0.314)
Leverage	-0.002 (-0.525)	-0.0023 (-0.606)	-0.002 (-0.522)	-0.0022 (-0.568)	-0.0019 (-0.486)
Return on Assets (%)	-0.039*** (-4.205)	-0.0387*** (-4.255)	-0.0387*** (-4.231)	-0.0384*** (-4.157)	-0.0429*** (-4.73)
Market/Book	0.0223* (1.898)	0.0224* (1.907)	0.0222* (1.887)	0.0225* (1.912)	0.0224* (1.935)
Interest Coverage (%)	-0.0013 (-0.469)	-0.0003 (-0.103)	-0.0012 (-0.416)	-0.0011 (-0.395)	-0.0013 (-0.477)
Sales growth (%)	-0.0032 (-0.897)	-0.003 (-0.867)	-0.0037 (-1.047)	-0.0032 (-0.896)	-0.0019 (-0.531)
<i>Fixed effects:</i>					
Bond Type	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes
Intercept	4.8482*** (3.827)	4.8468*** (3.977)	4.8587*** (3.844)	4.75*** (3.731)	5.0305*** (4.008)
R ²	0.3793	0.3929	0.3840	0.3818	0.3786
Adjusted R ²	0.3155	0.3283	0.3208	0.3183	0.3147
N	444	444	444	444	444

The dependent variable is the natural logarithm of yield spreads over German Treasury bonds. Model (1) uses the overall ESG score as an independent variable, Model (2) the three pillars environmental, social and governance combined, and Models (3) – (5) use only one of these in each. All models are controlled for heteroskedasticity by using White-Hinkley robust standard errors. T-statistics are reported in parenthesis. ***, ** and * denote the significance level at 1%, 5% and 10%, respectively.

Table 9 examines the implication of high and low corporate responsibility on the yield of corporate bonds. Comparable to Table 5, companies with high scores are in the top 25%, and low scores are in the bottom 25% of the sample. Model (1) implies that public lenders seem not to value very high responsibility, as the coefficient is positive, but not significant. Poor responsibility performance on the other hand strongly increases the yield spread, with a coefficient of 0.1898 being significant at 5%. Thus, if companies overall ESG score is in the lowest quartile, they pay 19% more on the yield spread than the rest. As for the sub-categories, companies with a high environmental score pay 17% to 19% less and with a low score around 14% more. With respect to the social component, high scores have a negative coefficient, but only at a 10% significance level in model (4).

Interesting enough, the governance aspects has the exact opposite impact than all other pillars. High governance responsibility significantly increases the yield spread by around 18% and provides similar results like the Libor bank loans in Table 5. The “governance paradox” by Erragui (2018) is present in this model as strong performance impacts the yield whereas poor performance has no statistically significant impact.

As a result, companies with very high environmental and social responsibility performance pay lower yield spread, and firms with a low overall ESG score, low environmental score and high governance score pay higher yields on their bonds. As the loan and firm control variables report similar results to Table 8, it will not be discussed in more detail.

Table 9. High and low ESG scores and yield spreads.

	(1)	(2)	(3)	(4)	(5)
<i>ESG characteristics:</i>					
High ESG score	0.0174 (0.207)				
Low ESG score	0.1898** (2.154)				
High Environmental score		-0.1744** (-1.99)	-0.1927** (-2.246)		
Low Environmental score		0.1276 (1.329)	0.1452* (1.653)		
High Social score		-0.11 (-1.241)		-0.1647* (-1.866)	
Low Social score		0.1048 (1.131)		0.1229 (1.342)	
High Governance score		0.1875** (2.175)			0.1773* (1.961)
Low Governance score		-0.0547 (-0.605)			0.0329 (0.382)
<i>Loan characteristics:</i>					
Bond size	-0.0886* (-1.825)	-0.0702 (-1.444)	-0.0785 (-1.6)	-0.0867* (-1.8)	-0.0977** (-2.033)
Maturity	-0.0024 (-0.033)	0.0031 (0.045)	-0.0121 (-0.173)	-0.0091 (-0.129)	-0.0022 (-0.031)
S&P Rating	-0.016** (-1.969)	-0.0159** (-2.007)	-0.0162** (-2.038)	-0.0162** (-2.009)	-0.0146* (-1.813)
<i>Firm characteristics:</i>					
Firm size	0.0144 (0.382)	0.0221 (0.556)	0.0269 (0.664)	0.0144 (0.373)	-0.0121 (-0.338)
Leverage	-0.0018 (-0.477)	-0.0016 (-0.424)	-0.0022 (-0.58)	-0.0018 (-0.476)	-0.0013 (-0.346)
Return on Assets (%)	-0.0384*** (-4.137)	-0.0381*** (-4.248)	-0.0396*** (-4.408)	-0.0385*** (-4.198)	-0.0418*** (-4.558)
Market/Book	0.021* (1.775)	0.021* (1.876)	0.0214* (1.873)	0.0219* (1.917)	0.0224* (1.942)
Interest Coverage (%)	-0.0015 (-0.534)	-0.0015 (-0.518)	-0.002 (-0.728)	-0.0011 (-0.391)	-0.0014 (-0.501)
Sales growth (%)	-0.0033 (-0.94)	-0.0037 (-1.075)	-0.0037 (-1.046)	-0.0038 (-1.045)	-0.0022 (-0.626)
<i>Fixed effects:</i>					
Bond Type	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes
Intercept	4.3887*** (3.416)	4.0455*** (3.129)	4.4087*** (3.391)	4.2438*** (3.179)	4.8784*** (3.889)
R ²	0.3811	0.3975	0.3869	0.3853	0.3817
Adjusted R ²	0.3164	0.3299	0.3227	0.3210	0.3170
N	645	645	645	645	645

The dependent variable is the natural logarithm of yield spreads over German Treasury bonds. Model (1) uses the highest and lowest quantile of the overall ESG score as independent variables, Model (2) the highest and lowest quantiles of the three pillars environmental, social and governance combined, and Models (3) – (5) use only one of these in each. All models are controlled for heteroskedasticity by using White-Hinkley robust standard errors. T-statistics are reported in parenthesis. ***, ** and * denote the significance level at 1%, 5% and 10%, respectively.

5.3. Relationship between bank loans and corporate bonds

To answer Hypothesis 2, this chapter investigates whether corporate social responsibility has an asymmetric impact on the private (bank loans) and the public (corporate bonds) debt market. By comparing the results in Table 4 and Table 8, similarities between the impact of CSR on private and public debt can be examined. Although for the overall ESG score the coefficient is negative for Euribor loans and positive for Libor loans, it is statistically not significant for latter. The same coefficient in the corporate bond model is negative, although not significant. This suggests that overall CSR of a firm is only incorporated in bank loans and only for those with Euribor as base rate. Regarding the environmental component, Euribor loans and corporate bonds seem to react similar, both coefficients being negative, whereas for Libor loans it is not significant. This same relationship can be examined by the impact of the social score. The governance aspect is opposed to all previous linkages, as the coefficient in the models for corporate bonds and Libor loans is positive and significant, and not significant for Euribor loans. Further investigating in Table 5 and Table 9 the relationship between high and low ESG scores and the cost of debt, the previous linkage is confirmed. Euribor loans and corporate bonds react similar on the overall ESG score, the environmental and the social pillar, and Libor loans and corporate bonds on the governance pillar.

To conclude, the overall ESG, the environmental and the social score has comparable impact on Euribor loans and corporate bonds, and the governance pillar comparable linkage of Libor loans and corporate bonds. These findings suggest that although specific components are incorporated different by private and public lenders, in general both debt markets behave similar with regards to information about corporate social responsibility. Thus, hypothesis 2, that CSR has asymmetric impact on bank loans and corporate bonds, is rejected. Although the hypothesis is not formally tested, it is a conclusion of the comparison between the regression models for bank loans and corporate bonds and the rejection is based on these results. Considering other control variables, loan and bond size, rating and return on assets have negative relationship with both spreads, whereas the relationship between other variables and the two debt markets diminishes.

6. CONCLUSION

Corporate Social Responsibility has its roots from the 1950s, gradually increasing its importance in the financial markets and experiencing strong growth throughout the last decade. Numerous CSR guidelines by institutions like the United Nations, OECD and European Union highlight this statement, trying to regulate the SRI trend, that doubled in investment volume in four years.

This thesis examines the impact of corporate social responsibility on the cost of private (i.e. bank loans) and public (i.e. corporate bonds) debt by investigating non-financial listed companies from 18 European countries in the 15-year period 2003 – 2017, covering 1711 bank loans, of which 742 are Euribor-denominated and 969 Libor-denominated, and 645 corporate bonds. Previous research suggests that there is a relationship between CSR and bank loans as well as corporate bonds. Preceding literature provides contradicting results, as some find that better responsibility decreases the cost of debt, confirming the risk mitigation theory, and others conclude that higher CSR increases interest rates, thereby confirming the overinvestment theory.

The impact is estimated by a pooled regression using OLS and provides new findings that in general align with previous research. By first examining Euribor-denominated bank loans it can be concluded that better performance of overall CSR, the environmental and the social pillar decrease the interest rate spread by on average 4% with a 10-point increase in the respective score, if all other variables held equal. A 10-point change is of higher explanatory power than a 1-point change, due to a score scale of 0 to 100. After examining the top and bottom CSR performing loans, high scores in all four categories decrease the interest rate spread significantly, with the social score having the largest impact by lowering the cost by 30%. Low scores of the aspects ESG and environmental increase the spread, whereas the other aspects lose significance, thereby confirming the presence of the risk mitigation theory.

In a next step, the relationship between CSR and Libor loans diminishes as only the governance component is significant, and higher scores increase the spread. Investigating

high and low scores as in the Euribor model, top ESG scores decrease, and high governance scores increase the interest rates spread, showing that investing in the governance aspect is seen as unnecessary costs. All other CSR variables are not significant.

With regards to the public corporate debt market, yield spreads on corporate bonds are examined, showing that strong performance of the overall ESG, the environmental and the social score decrease the yield spread, holding also in the top and bottom scores. Strong performance in the governance pillar on the other hand increases the spread, again confirming the overinvestment theory of this pillar.

Banks are the main lenders in the private debt market and are said to have superior information about companies as quasi insiders and thereby are expected to incorporate non-financial information more effectively than other lenders. Although the private and public debt market behave differently in some aspects, this thesis suggests that the two debt markets in general value corporate social responsibility similarly in their cost of debt. This relationship mainly holds for Euribor bank loans, as for Libor loans only the governance pillar behaves similarly with bonds. One key finding of the empirical study reveals the asymmetric impact of CSR on Euribor and Libor loans, as the first are influenced stronger and significantly in most categories by ESG, and the latter, Libor loans, have no significant relationship with ESG in general. Therefore, it can be concluded that corporate social responsibility is existing only in the Eurozone debt market, but not in European debt markets in other currencies, mainly US Dollar and British Pound.

The results of this thesis confirm the contradicting view of previous research, as some CSR aspects decrease, and others increase the cost of debt, confirming both the risk mitigation and the overinvestment theory. Practical implications of this research are that companies can reduce the interest expenses significantly by focusing on certain aspects of CSR and thereby strengthen the income statement. It is still important to balance between the costs of incorporating responsibility policies and its future positive outcomes.

At this point, future research might provide better insights, especially on what the relationship between the financial advantages of strong CSR and the cost of implementing it

is. Another idea for future research would be to examine on how much of CSR information is already incorporated in the credit rating as in previous literature it is suggested that the rating already includes CSR. Nevertheless, as proposed by this thesis, by controlling for rating, CSR has a significant impact on the cost of private and public debt. By examining how much of this kind of information is absorbed by the rating could give greater insight in the relationship with the financial markets. In order to prove the finding in this thesis that bank loans issued in different currencies, represented by Euribor and Libor as base rates, behave asymmetrically to CSR, stronger focus on examining worldwide private debt markets in different monetary unions could provide better understanding.

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Appendix 1. Credit rating transformation (Afonso et al. 2012)

	Characterization	S&P rating	Transformed Code
Investment grade	Highest credit quality	AAA	20
	Very high credit quality	AA+	19
		AA	18
		AA-	17
		A+	16
	High credit quality	A	15
		A-	14
		BBB+	13
	Good credit quality	BBB	12
		BBB-	11
BB+		10	
Speculative grade	Speculative	BB	9
		BB-	8
		B+	7
	Highly speculative	B	6
		B-	5
		CCC+	4
	Substantial credit risk	CCC	3
		CCC-	2
		CC	1
	Very high levels of credit risk	SD	0
Default	D	0	
No rating		0	

Appendix 2. Data sample by country and industry

	Bank Loans			Corporate Bonds
	EURIBOR	LIBOR	Total	
<i>Panel A: Country</i>				
Austria	8	0	8	14
Belgium	37	28	65	38
Denmark	11	8	19	19
Finland	17	4	21	23
France	169	28	197	201
Germany	215	73	288	57
Greece	4	8	12	1
Hungary	4	3	7	1
Ireland	9	0	9	3
Italy	43	7	50	40
Netherlands	39	29	68	30
Norway	2	34	36	15
Poland	3	4	7	2
Portugal	4	0	4	0
Spain	51	13	64	19
Sweden	36	20	56	38
Switzerland	38	79	117	41
United Kingdom	52	631	683	103
Total	742	969	1711	645
<i>Panel B: Industry</i>				
Aerospace and Defence	20	14	34	11
Agriculture	5	15	20	0
Automotive	36	30	66	19
Beverage, Food, and Tobacco Processing	50	52	102	60
Chemicals, Plastics & Rubber	64	43	107	48
Construction	82	63	145	35
General Manufacturing	106	100	206	81
Healthcare	71	79	150	24
Entertainment & Leisure	28	58	86	35
Mining	13	71	84	12
Oil and Gas	24	97	121	21
REITS	24	48	72	3
Retail & Supermarkets	47	65	112	26
Services	58	83	141	126
Technology	46	37	83	90
Transportation	30	105	135	40
Wholesale	38	9	47	14
Total	742	969	1711	645