

Article

Do CSR Ratings Affect Loan Spreads? Evidence from European Syndicated Loan Market

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Abstract: We investigate whether corporate social responsibility (CSR) ratings affect the syndicated loan spreads paid by European listed firms. By performing ordinary least squares (OLS) pooled regressions on a sample of 1101 syndicated loans granted to European companies, we find evidence that borrowers' CSR ratings have a significant impact on loan spreads. However, the relationship between CSR ratings and loan spreads is quite complex. Low CSR-rated firms pay higher loan spreads than better CSR-rated firms, but high CSR ratings are not always rewarded by lenders. The benefits of a high CSR rating level are significant only for firms located in countries that pay great attention to sustainability issues. Overall, our work provides a key to reconciling the mixed results obtained in the empirical literature, as we find evidence of a significant lack of homogeneity within the European Union countries regarding the relationship between CSR performance and the cost of debt financing.

Keywords: corporate social responsibility; CSR rating; bank loan spread; European syndicated loan market

1. Introduction

The topics of corporate social responsibility (CSR) and sustainable growth have been investigated by the academic research for many years. Recently, the aforementioned themes have also entered the agenda of the policymakers, at least in the European Union. In late 2016, the European Commission established the EU High-Level Group on Sustainable Finance (HLEG) to help develop an overarching and comprehensive EU roadmap on sustainable finance. In its final report, released in January 2018, the HLEG argued that “the primacy of banks among lenders in assessing the credit risk of individual loans makes them particularly important for financing the origination of sustainable assets and for lending in support of the transition to a more sustainable economy” [1] (p. 67). In addition, in May 2020, the European Banking Authority (EBA) released a document defining the guidelines on loan origination and monitoring. In this document the EBA states that institutions “should take into account the risks associated with ESG factors on the financial conditions of borrowers” [2] (p. 26). A final unequivocal statement of political will is provided by the priorities set out by Ursula von der Leyen in the *Political guidelines for the next European Commission 2019–2024* [3].

Given these premises, we aim to investigate the relationship between the cost of bank loans and corporate social performance (CSP) in the European context. Understanding the attitude of banks toward the CSP of their borrowers allows us to draw important implications both for policymakers and for firms' managers. If banks do not consider CSP in the assessment of borrowers' credit risk, or, even worse, if banks apply greater spreads to borrowers with better CSP, then companies will be less inclined to bear the costs of CSR engagement. On the other hand, if banks reward borrowers who exhibit better CSP with lower loan spreads, then the managers of borrower firms will receive clear

indications about the investment policies to be set in the long term, and at the same time, they will be able to more easily justify the increase in costs originating from CSR engagement.

Our study aims to verify whether CSR ratings, a measure of CSP provided by a specialized rating agency, affect syndicated loan spreads charged to European listed firms. Our results suggest that banks consider CSR rating levels when they assess borrowers' creditworthiness. We find that CSR ratings are on average negatively related to loan spreads. However, by decomposing the average effect, we show that this relationship is more complex. Unlike existing studies investigating the European context [4–6], we explicitly examine potential nonlinearities in the relationship between CSR rating and the cost of debt financing, and we find that the country's environmental, social and governance (ESG) performance significantly affects the CSR rating–loan spread link. In high ESG-rated countries, a firm's loan spread declines as its CSR rating improves. In low ESG-rated countries, there seems to exist a U-shaped relationship between CSP and cost of debt financing: both high and low CSR-rated firms pay higher spreads than those with median CSR ratings. This implies that high CSR ratings do not automatically lower firms' credit risk. Our results also hold considering potential endogeneity issues, lender characteristics, borrower's credit quality, and crisis periods.

Our work fits into the literature that investigates the relationship between CSP and corporate financial performance (CFP). The literature on this topic is large (for a review, see Brooks & Oikonomou [7]), but only a limited stream of studies investigates the impact of CSP on firms' credit risk. Moreover, most available studies are focused on US firms [8–11] and find weak evidence that greater CSP leads to decreases in credit risk and credit spreads. The results obtained by examining US firms cannot be mechanically extended to European capital markets. Looking at the problem through the lens of institutional theory and the Varieties of Capitalism (VoC) theory, we know that the institutional context affects CSR activities and CSP [12]. Furthermore, in the US market-based system, companies are able to raise capital through large and liquid securities markets. In the credit-based system of Continental Europe, companies face rather thin capital markets and meet their financial needs mainly through bank loans. A study by the European Commission revealed that only 1498 of the more than 50,000 companies with assets over 10 million euros had access to the bond market [13]. Given that the European financial system is predominantly bank-based, banks are the key player to consider when investigating whether a borrower's CSR commitment can offer any contribution to the reduction of credit risk. The few articles investigating the relationship between CSP and credit risk in the European market are focused on the bond market [4,5]. Therefore, the relationship between CSP and the cost of bank debt in the European context is still largely unexplored.

To the best of our knowledge, the only study that includes European companies in an international sample of syndicated loans is Hoepner et al. [6], although their sample includes only 195 loans granted to European borrowers. The authors claim to find no conclusive evidence that firm-level sustainability influences the interest rates charged to borrowing firms by banks. Moreover, their findings do not support the view that the country's sustainability rating moderates the CSP–loan spread link. Unlike Hoepner et al. [6], we find evidence of a significant relationship between CSP and the cost of bank debt, although this relationship is not uniform throughout the European countries, but is conditional on the borrower's country ESG rating. In line with Stellner et al. [5], we claim that the benefits resulting from CSR investments are context driven. A detailed knowledge of the cross-country differences affecting the CSP–CFP link is particularly important to understand how banks reward CSP when they evaluate the creditworthiness of their borrowers.

In addition, banks not only play a dominant role in the European financial system, but they also differ significantly from other economic agents. Given their continuous monitoring activity and long-term customer relationship with firms, banks are considered "quasi-insiders" of firms. Therefore, banks can assess firms' creditworthiness better than other entities. This element allows us to analyze how more informed lenders evaluate borrowers' CSP.

We emphasize that the loan market may incorporate CSR information differently than the bond market. There has been a remarkable increase in sustainable investing. Sustainable investing is an

investment approach that considers CSR-related factors in portfolio management. According to the Global Sustainable Investment Alliance [14], investors representing over half of all professionally managed assets in Europe adopt some form of screening based on sustainability filters. Given the increase in sustainable investing, bonds issued by socially responsible companies may be, at least in part, purchased by investors who do not make their investment decisions on the basis of mere economic convenience. Since many fund managers must consider the CSR commitment of firms issuing bonds in order to comply with their investment mandate, firms engaged in CSR could have a stable advantage in terms of greater demand in the bond market. In contrast, this benefit could be more uncertain in the syndicated loan market because lender banks are not contractually required to consider firms' CSR engagement. Thus, in line with the existing literature [8], we assume that banks have no social agenda to promote.

Our study offers several contributions. First, we contribute to the debate on the CSP–CFP relationship by adding insights about the information that lenders take into account when they decide which loan spread to charge to their borrowers. Our findings provide support for a significant relationship between CSP and CFP. However, CSP remains a second-order determinant of loan spreads compared to credit ratings and other financial and accounting variables.

Second, we provide empirical evidence of the CSP–credit risk link in the European market, which is characterized by a different institutional context with respect to the markets investigated until now by the existing literature, mainly focused on the US market. Our study fills this gap and provides evidence that CSR ratings significantly affect the cost of bank debt.

Third, our results highlight the importance of cross-country heterogeneity to depict a comprehensive picture of the CSP–CFP relationship in the European context. We document that the European Union cannot be considered as a homogeneous area, because we find that the cross-country differences in the attention to ESG issues affect the relationship between CSP and the cost of debt financing. These results are undocumented for European firms in the CSR literature, and they are partially at odds with findings from the U.S. context [15].

Finally, we provide evidence of significant nonlinearities in the CSP–CFP relationship. These findings are consistent with the view that country awareness and sensitivity toward ESG issues may be able to constrain companies from making excessive and wasteful investments in CSR.

Overall, our work provides a key to reconcile the contradictory results obtained from literature with reference to the European firms.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the research hypotheses. Section 4 describes the data and methodology. Section 5 shows our main results. Section 6 refers to the robustness checks and additional results. Section 7 provides a discussion of our results. Finally, Section 8 concludes.

2. Literature Review

There has always been some skepticism among practitioners and researchers about the value of CSR. For practitioners, a signal of a changed attitude about the role of CSR comes from the following [16]: “Beyond the attempt to deceive customers and regulators, the [Volkswagen] scandal also highlights the failure of traditional valuation models—such as discounted cash flow—to capture the full range of risks companies face today. It also underlines the potential benefit of assessing companies with alternative data sets that highlight environmental, social, and governance (ESG) signals, flagging risks that traditional analytical tools aren't designed to identify”.

Although the skepticism toward CSR has not completely disappeared, there is now a growing body of literature that identifies numerous positive effects of CSR commitment. CSR investments may become competitive advantages for firms, because they allow companies to build internal resources by improving their reputation and customer loyalty [17,18]. By engaging in CSR, firms can improve relationships with their stakeholders [19], resolve conflicts between various groups of stakeholders [20], and be less exposed to legal, reputational, and regulatory risks relating to controversial or irresponsible activities [9].

At the same time, CSR investments may be perceived as a signal of superior management skills [21]. CSR may likely lead to better economic and financial performance, because it is also connected to trustworthiness, integrity, non-opportunistic behavior, and the moral character of a firm [6].

The existing literature has proposed two different hypotheses explaining the CSP–CFP link: the *risk mitigation view* and the *overinvestment view* [8]. Under the *risk mitigation view*, superior CSP is regarded as a factor that improves the risk profile of a company. Companies that invest in CSR are able to strengthen their relationships with key stakeholders and to build internal resources and intangibles that provide stability and a buffer in times of downturn and should result in lower cash flow volatility. The better risk profile and the greater ability to repay the principal at maturity are rewarded by lenders with a lower spread charged to the borrower company [5]. Under the *overinvestment view*, investors regard investments in CSR as a waste of scarce resources. Excessive costs for handling the various relations with a high number of stakeholders may increase complexity and reduce profitability, leading to higher borrowing costs.

A growing literature focuses on the effect of only one dimension (environmental, social, or governance) of CSP on credit risk. See, for example, Nandy and Lodh [22]; Chava [23]; Kim et al. [24]; Cui et al. [25]. These studies are linked to our work, but we adopt a broader perspective, investigating the relationship between CSR ratings (the overall CSR performance) and loan spreads. Several studies find empirical evidence supporting the *risk mitigation hypothesis* by examining the impact of CSP on firms' financing costs. El Ghouli et al. [26] document that the cost of equity is lower for US firms with better CSR scores. In examining the impact of CSP on bond spreads and the ratings of US firms, Oikonomou et al. [9] show that CSP is negatively but weakly related to systematic firm risk, and that corporate social irresponsibility is positively and strongly related to financial risk. Jang et al. [27] find that higher ESG scores can help lower the cost of funding for the bond issuers of relatively small Korean firms. Salvi et al. [28] investigate the international bond market. They find that superior CSP strengths are associated with lower credit spreads, while a higher number of CSP-related controversies leads to an increase in the cost of corporate bonds. Truong and Kim [29] analyze the U.S. credit default swap market and show that CSR activities reduce credit risk in the long run more than in the short run. Gangi et al. [30] find that CSP has a significantly negative influence on the firms' risk of financial distress. In line with the risk mitigation view, Bae et al. [11] provide evidence that CSR matters to the pricing of US loan contracts, and that the absence of scrutiny by credit rating agencies exacerbates the lenders' negative view in case of poor CSP. Bouslah et al. [31] find that the impact of CSR dimensions on firms' risk is not uniform, and that, in general, the relation between firms' risk and CSR strengths and concerns is more significant for more transparent firms (included in the S&P 500 index) than for more opaque companies (not included in the S&P 500 index). Ge and Liu [32] show that the disclosure of better CSP leads to lower yield spreads. In addition, they document that firms with weaker CSP do not pay significantly different yield spreads than firms that do not disclose CSR information. Stellner et al. [5] find only weak evidence that superior CSP results in reduced credit spreads in the European corporate bond market. Moreover, they show that the relationship between CSP and credit risk is conditional on a country's ESG performance.

Compared to the above mentioned studies, the *overinvestment hypothesis* offers an alternative view, drawn from the agency theory. Under this view, a higher CSR engagement pushes firms' investments over the optimal level. From the shareholder perspective, by engaging in CSR activities, firms divert resources from the maximization of shareholder wealth [33,34]. At the same time, CSR activities may increase firms' fixed costs and the volatility of earnings, leading to an increase in firms' default risk [35].

In addition, given the existence of principal–agent conflicts of interest, managers can use CSR activities to improve their own reputation at the expense of shareholders [36]. In this view, CSR investments can be assimilated to other agency costs, such as the purchase of unnecessary corporate jets [8,37]. Other researchers, drawing from neoclassical economic theory, argue for a negative relationship between CSP and CFP. These authors contend that responsible firms are at a competitive disadvantage compared with their unresponsive peers [38–40].

Consistent with the *overinvestment hypothesis*, Menz [4] finds that CSP is positively related to European corporate bond spreads, but this relationship appears only weakly significant. Goss and Roberts [8] show that CSP leads to an economically modest decrease in loan spreads applied to US public firms. However, they find evidence of a positive relationship between CSR investments and loan spreads applied to low-quality borrowers, because the agency costs associated with sustainable investments are greater for these firms. Baran and Zhang [41] show that the yields of newly issued bonds are greater for firms included in the KLD 400 Index. Hoepner et al. [6] do not detect a significant link between CSP and syndicated loan spreads and document that particular dimensions of CSR even appear to lead to greater loan spreads. Finally, Bae et al. [15] find evidence of a non-linear effect of CSR investments on debt financing costs in a sample of US firms.

Our study presents important elements of novelty compared to previous studies, which are focused on the European context [4,5] or investigate some international samples that include European companies [6,23]. Unlike the above mentioned studies, we hypothesize that the European context is not a homogeneous area, and we prove the existence of nonlinearities in the relationship between CSP and loan spreads in the European area.

3. Hypothesis Development

3.1. Do CSR Ratings Affect Loan Spreads?

The risk mitigation view and the overinvestment view offer the theoretical background to verify whether CSR ratings affect the cost of bank loans.

Lenders take into account potential risks that may negatively affect the borrowers' financial performance. In this respect, lenders may be concerned about the likelihood that CSR-related issues (e.g., a corporate scandal or a negative environmental event) increase default risk and jeopardize the ability of the borrower to repay his debts. Under a broader perspective, as Bae et al. [11] point out, CSR engagement may reduce conflicts of interests between managers and stakeholders. If the conflict-resolution hypothesis holds, then CSR engagement reduces agency costs and conflict of interests among various stakeholders, including lenders. Thus, under the risk mitigation view, we expect that:

Hypothesis 1a (H1a). *CSR ratings are negatively related to loan spreads.*

On the contrary, lenders may consider a firm's CSR engagement from the perspective of a principal-agent relationship between managers and shareholders: CSR investments waste corporate resources and thus make borrowers more vulnerable to adverse economic conditions. The competitive disadvantage hypothesis (neo-classical economic theory) reaches the same conclusions. Under the previous views, lenders charge higher spreads to high CSR performers borrowers. If this is the case, consistent with the overinvestment view, we can propose an alternative hypothesis:

Hypothesis 1b (H1b). *CSR ratings are positively related to loan spreads.*

However, the previous hypotheses could only provide a first approximation of the actual relationship between CSR ratings and loan spreads. Bae et al. [15] combine the risk mitigation hypothesis with the overinvestment hypothesis, suggesting a non-linear relationship between CSP and loan spreads. Building on previous theoretical studies, they hypothesize an optimal level of CSR investments that maximize profits, while also satisfying the demand for CSR of the other stakeholders. The optimal level of a firm's CSR investments is that required to fully insure the firm's risky assets against loss, so CSR investments beyond this level would impose additional costs without producing any insurance benefits. The authors provide evidence of a U-shaped relationship between CSP and debt financing costs for a sample of U.S. bank loans. Similar findings are reported by Ye and Zhang [42] for Chinese firms.

We too hypothesize a nonlinear relationship between CSP and loan spreads, but we assume a different relationship from that of Bae et al. [15]. Several studies find evidence that CSP has a mitigating effect on stock price crash risk [43] and on downside risk [44,45]. From a theoretical point of view, the previous literature argues that CSR investments can reduce a firm's risk exposure through insurance-like protection by generating moral capital among stakeholders. The creation of moral capital (and other intangible, internal resources) acts as insurance-like protection when negative events occur, preserving shareholder value. We emphasize that lenders, compared to shareholders, are more averse to downside risk. As a result, lenders may be less willing to penalize high CSP levels than shareholders. In addition, we have already clarified (see Introduction) that the results provided by Bae et al. [15] for the US market cannot be mechanically extended to other institutional contexts. In this respect, further confirmation comes from Utz [43], who examines the predictive power of CSP for both idiosyncratic risk and stock crash risk in an international sample and finds mixed results. In the Asia-Pacific sample, high CSP increases crash risk, in accordance with the overinvestment hypothesis. On the contrary, in the European sample, there is no evidence of a U-shaped relationship between CSP and idiosyncratic risk.

Building on the above-mentioned studies, we may hypothesize that better CSR ratings lower loan spreads but at a decreasing rate. High CSP may increase firms' fixed costs or create a competitive disadvantage. However, the high aversion of lenders to downside risk, together with the existence of specific institutional or cultural factors affecting the European context, may counteract the increase in a firm's fixed costs, preventing a positive relationship between loan spreads and CSR ratings. In light of previous consideration, we propose an additional hypothesis:

Hypothesis 1c (H1c). *Loan spreads are not a strictly decreasing function of CSR ratings: as the CSR rating increases, the loan spread function should first be decreasing and then should become approximately flat.*

In any case, to further validate our hypothesis, we will also control for a potential U-shaped relationship in our sample.

3.2. Does Country ESG Performance Affect the CSR Rating–Loan Spread Link?

The institutional theory argues that the national institutional and economic environment influences the likelihood that companies will assume CSR compliant behavior [46,47], and that variation in CSP across firms is explained by variation in national-level institutions [12]. Cai et al. [48] document the role of other country factors, besides national institutions, that explain CSP, such as differences in stages of economic development, the cultural dimension, factors associated with the political system (e.g., corruption, civil liberty, and political rights), as well as the education and labor system characteristics. Following this line of reasoning, Hoepfner et al. [6] outline that issues such as climate change, resource scarcity, population growth, and ageing have deep economic repercussions, and that ESG macro-themes have a growing importance in the valuation of every asset class and type of financial contract. They find that a higher country sustainability rating is associated with lower costs of bank loans and argue that the sustainability framework of the home country “act[s] as a shield for the borrower firm, protecting it from the operational and reputational hazards occurring from systemic social and environmental challenges and, ultimately, reducing its default risk” [6] (p. 161). Stellner et al. [5] show that the relationship between CSR engagement and EU firms' credit ratings and bond spreads depends significantly on the CSP of the country where the company is established. They argue that CSP leads to lower credit risk only if the CSR efforts of firms are rewarded in the environment in which they are embedded. In particular, the authors find that greater CSR efforts lead to greater benefits for companies whose CSP mirrors that of their home country.

Given the potential effect of countries' sensitivity to CSR issues, we hypothesize that the impact of CSR ratings on syndicated loan pricing may be affected by the home country ESG rating of the borrower. Lenders should reward borrowers whose high CSR rating mirrors the home country ESG performance.

Conversely, in countries with low ESG performance, high CSR ratings may bring lower benefits to the borrower or may be associated with higher borrowing costs. Moreover, low CSR-rated firms should pay higher loan spreads regardless of the country ESG rating. Indeed, potential lenders could hardly ignore issues related to poor CSP (e.g., problematic relationships with consumers, employees, and other stakeholders) both in high and low ESG-rated countries.

Overall, we expect that in high ESG-rated countries, the loan spread is a decreasing function of CSR rating. On the contrary, in low ESG-rated countries, we expect to find evidence consistent with a U-shaped relationship between loan spread and CSR rating. Therefore, we formulate our second hypothesis:

Hypothesis 2 (H2). *In high ESG-rated countries, firms pay lower loan spreads as their CSR rating improves. In low ESG-rated countries, high or low CSR-rated borrowers pay higher loan spreads compared to median CSR-rated borrowers.*

4. Data and Methodology

4.1. Sample and Data

Our sample consists of syndicated loans granted to listed non-financial firms established in EU member states during the 2006–2015 period.

We use LPC's DealScan database to collect information on individual loans, including: the loan closing date, the loan spread over Libor (incorporating any annual or facility fees paid by the firm), maturity, seniority status, purpose, and type. We also retrieve from LPC's DealScan database the information on the borrower, including its sector of activity, and the lending syndicate, including the identity and the role of banks in the loan syndicate.

For each firm, we retrieve CSR ratings from Thomson Reuters ASSET4. The ASSET4 database covers more than 6000 companies around the world, enabling us to investigate the European context. ASSET4 ratings have a reputation for being among the most diligent and trustworthy sources of CSR data [5,30,43]. ASSET4 assigns a score to each company considering four pillars: environmental, social, corporate governance, and economic. These four pillars have approximately 750 individual data points, which are combined into 280 key performance indicators (KPIs). Then, these KPIs are structured into 18 categories within the four pillars. ASSET4 provides a score for each pillar and an equal-weighted rating, which indicates the overall CSR score. Each score is calculated by equally weighting and z-scoring all underlying data points and comparing them against all companies in the ASSET4 universe. The final score is expressed as a percentage and is therefore a relative measure of performance.

We retrieve data on ESG country ratings from Bloomberg. Bloomberg provides an overall score for more than 170 countries and an individual score in the dimensions of environmental, social, strategic governance and economics that matches the four categories provided by ASSET4.

We use Datastream to collect information on firms' balance sheets. We match firms in LPC's DealScan to Datastream, using the company name and ISIN code, to extract firms' accounting information. After the matching, our dataset consists of 1727 loans granted to 483 firms. It is worth noting that, in our sample, approximately 60% of borrowers have a CSR rating, while only 40% of borrowers have a credit rating. This comparison highlights the relevance gained by CSR ratings for European listed firms.

Finally, after excluding from our dataset the companies without a CSR rating, our final sample includes 1101 loans granted to 297 firms.

4.2. Methodology

4.2.1. Measuring CSP

Measuring CSP is a challenging task involving the assessment of a broad range of economic, environmental, governance, and social factors [49]. Existing studies have adopted a remarkable

variety of different CSP measures [50]. More recently, several studies have measured CSP by adopting the assessments provided by social rating agencies. Following these studies, we measure CSP by employing Thomson Reuters ASSET4 ratings (described in Section 4.1). We are aware that any CSP measure involves unavoidable elements of subjectivity. However, we underline that, in contrast to measures specifically built for a single research work, a rating provides a CSP measure that is public and available to the entire financial community.

According to the economic theory, rating agencies perform at least two main functions: signaling and monitoring. For example, credit rating agencies signal to investors the creditworthiness of the issuer of a financial security (signaling), and, after the security issuance, they continue to monitor the issuer (monitoring). Similarly, social rating agencies signal and monitor CSP.

The literature notes that sustainability commitments are difficult to verify. Consumers, investors, and other external stakeholders are not able to verify the sustainability claims made by companies, because they do not have access to relevant information [51]. Reliable third party institutions, which are able to gather the needed information, may become important players [52].

We do not claim that CSR ratings are the best possible way to measure CSP. More simply, we aim to verify whether CSR ratings affect banks' loan pricing decisions. Again, we can find an analogy between CSR ratings and credit ratings. It is well known that the credit rating is not the only possible measure for assessing creditworthiness, and that the rating alone is not able to explain the level of credit spreads paid by different borrowers. However, it is generally recognized that credit ratings provide the market with economically relevant information. Furthermore, CSR ratings enjoy a significant difference compared to credit ratings. The latter are widely used in financial regulation, and economic agents are in some way obliged to take the credit rating into account in their decisions. In contrast, CSR ratings have not, to date, been subject to regulatory use. Consequently, economic agents can freely decide whether to consider the CSR rating, without being conditioned by regulation.

It must also be recognized that CSR ratings suffer from many shortcomings [53,54]. Windolph [52] highlights several undesirable properties of CSR ratings described in the literature: lack of standardization, lack of credibility of information, bias, lack of transparency, and lack of independence. Chatterji et al. [55] document a surprising lack of agreement across social ratings from six well-established raters. The authors claim that low convergence of social ratings remain even when they adjust for explicit differences in the definition of CSR held by different raters.

These problems do not invalidate our analysis. If our research hypotheses were verified, we could state that the ASSET4 rating provides information relevant for the pricing of the syndicated loans. This result, if proven, would not exclude that different CSR rating measures may provide other relevant information not captured by ASSET4 ratings.

Social raters began releasing their assessments only recently, especially when compared to the longstanding experience of credit rating agencies. Over time, market forces will select rating agencies, allowing only those agencies able to provide economically relevant information to survive [56].

4.2.2. CSR Rating and Loan Spread

To test our research hypotheses, we perform ordinary least squares (OLS) pooled regressions, treating the facilities in each deal as different loans. Consistent with the literature (e.g., [8]), we focus on cross-sectional differences, because most firms have only a few different observations. It is worth noting that we consider a sample of loans observed at their origination. Most firms have received just few loans during our sample period. As we treat the facilities in each deal as different loans, most borrowers often receive multiple loans at the same date, and subsequently they no longer appear in our sample. For the same reason, we have just one observation for several borrowers. Given the sample characteristics, we do not adopt firm fixed effects or other panel techniques. However, we perform additional tests to address self-selection bias and potential endogeneity and reverse causality issues (see Appendix A).

Our base regression model is described in Equation (1):

$$\ln\text{Spread}_{i,t} = \beta_0 + \beta_1\text{CSR}_{i,t-1} + \beta_2\text{B}_{i,t-j} + \beta_3\text{L}_{i,t} + \beta_4\text{X}_{i,t-j} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is the logarithm of the all-in-drawn spread of the loan granted to the i -th firm at the loan closing date t . Since borrowers are unlikely to receive loan spreads lower than LIBOR, the spread variable may be characterized by a positive skewness. Thus, we use a log-transformed spread to mitigate this potential bias.

The vector CSR includes alternative key explanatory variables used in our estimates. To test $H1a$ and $H1b$, we use the variable EW Rating , which is the CSR equal-weighted rating of the i -th firm in the year preceding t . A negative and significant coefficient of EW Rating would imply that banks charge higher loan spreads to firms with lower CSR ratings than firms with higher CSR ratings. The opposite is true if the EW Rating coefficient proves to be positive and significant.

To test our hypothesis $H1c$, we introduce the following variables: HighEWRating , which is a dummy variable that is equal to 1 if the CSR equal-weighted rating of the i -th firm in the year preceding t is in the highest tertile of the empirical distribution; and LowEWRating , which is a dummy variable that is equal to 1 if the CSR equal-weighted rating of the i -th firm in the year preceding t is in the lowest tertile of the empirical distribution. Then, in Equation (1), we replace EW Rating with HighEWRating and LowEWRating . This distinction allows us to verify whether the negative relationship between CSR ratings and loan spreads is not strictly decreasing. To further test $H1c$, we drop HighEWRating and LowEWRating , and, following Bae et al. [15], we estimate Equation (1) by adding the quadratic term EW Rating^2 . If the coefficient of this variable proves to be significant, our hypothesis would not be confirmed.

4.2.3. Control Variables

Following the existing literature on syndicated loan spreads, we develop our model by including three vectors of control variables [57,58]. The vector B includes *Borrower Variables* to consider firms' accounting information (*Size*, *CashFlow*, *ROS*, *IE_Revenue*, *Leverage*), market-based data (*MTBV*, *Stock_StdDev*), and industry (*Industry*). In addition, we consider the role of credit ratings. Previous studies emphasize that CSR-related risk factors may affect credit ratings [5,10,59,60]. If credit ratings fully incorporate CSR-related information that is relevant for lenders, then we will observe a non-significant impact of CSR ratings when we include borrowers' credit ratings in our model. Therefore, we introduce the variable Risk_Weight , which indicates the risk weight assigned to the i -th firm under the Basel II standardized approach. To calculate Risk_Weight , we convert the borrower's rating into a risk weight by adopting the weighting scale used in the Basel framework. Risk_Weight takes values from 0 to 1.5. High values of this variable indicate a greater credit risk of the borrower. This approach offers two advantages: (i) it allows us to convert an ordinal risk measure (rating) into a cardinal measure (risk weight), and (ii) it allows us to assign a risk weight (equal to 1) to unrated firms [61].

In Loan Variables, the vector L , we consider loan characteristics: *Maturity*, *Secured*, *Covenant*, *Purpose*, *Type*, *Seniority*, and *Loan_Concentration*. Following Goss and Roberts [8], we use *Loan Concentration* as a proxy for the strength of the relationship between the bank and the borrower. In our robustness tests, we specifically address this point considering the potential impact of relationship banking effects (Appendix A).

Finally, we use the vector X to control for the stock index return of the country where the i -th firm is established over the three months preceding t (Sov_Stock_Ret), the i -th firm's home country sovereign rating (Sov_Rating), the loan reference rate value (Ref_rate), and year dummies (*Year dummies*). In vector X , we also include a set of variables to control for country effects. To achieve this goal, we follow the varieties of capitalism (VoC) approach, which suggests that the different models of the economic system adopted by each country affect the national financial market [62–64]. Comparative analysis of

capitalism is based on an identification of a set of key institutional areas: (i) product market competition; (ii) the labour market; (iii) the financial intermediation sector (regarding the financial intermediation sector, the cluster classification considers, inter alia, the following variables: sophistication of financial markets, stock ownership concentration, creditor rights protection, importance of institutional investors, degree of banking concentration, and importance of banks in firms' investment funding) and corporate governance; (iv) social protection; and (v) the education sector. Countries exhibit significantly different features in each of these areas, and institutional complementarities define the different domestic models of capitalism. According to the VoC approach [64], EU countries can be clustered into five different models of capitalism: liberal market economies (*Lme*), liberal-like market economy (*LLme*), coordinated market economies (*Cme*), state-dominated market economies (*Sd*), and hybrid market economies (*Hy*). Therefore, to identify the capitalism model of the *i*-th firm's home country, we introduce a dummy variable for each cluster. In alternative versions of our models, we have replaced VoC dummies with country fixed effects, obtaining qualitatively similar results. Results unreported for space considerations are available from the authors.

In the Supplementary Material (hereafter SM) we report in Table S1 the complete list of variables used in our study and their relative sources.

4.2.4. The Role of the ESG Country Rating

To test our hypothesis *H2* we perform two different regression analyses. First, we drop *EW Rating* in Equation (1), and we reintroduce the dummy variables that divide our sample into tertiles (*HighEWRating* and *LowEWRating*). Then we add the following variables: (i) *HighESGCountry*, which is a dummy variable equal to 1 if the ESG rating assigned by Bloomberg to the *i*-th firm's home country in the year preceding *t* is above the average of the sample, (ii) the interaction variable *HighEWRating·HighESGCountry*, and (iii) the interaction variable *LowEWRating·HighESGCountry*. In this way, we consider six groups of firms: (1) high-rated firms located in low ESG-rated countries; (2) firms with median CSR ratings located in low ESG-rated countries; (3) low-rated firms located in low ESG-rated countries; (4) high-rated firms located in high ESG-rated countries; (5) firms with median CSR ratings located in high ESG-rated countries; (6) low-rated firms located in high ESG-rated countries. Our benchmark group includes firms with median CSR ratings established in countries with lower ESG rating (group (2)).

Consistent with *H2*, we expect that: (a) firms in group (1) and (3) pay higher spreads than firms in group (2); and (b) firms in group (6) pay higher spreads than firms in group (5), which, in turn, pay higher spread than firms in group (4).

To better investigate potential nonlinearities in the relationship between CSR ratings and loan spreads, we run a second regression analysis splitting our sample into high ESG-rated and low ESG-rated countries. Then, we add in Equation (1) the quadratic term of *EW Rating*. In order to confirm *H2*, we should find that in low ESG-rated countries the coefficient of EW_Rating^2 is positive and significant. In contrast, in high ESG-rated countries, our hypothesis will be confirmed whether (i) the coefficient of EW_Rating^2 is negative and significant and (ii) the interpolating parabola is a decreasing function in the domain of *EW Rating*.

5. Results

5.1. Sample Characterization

In Table 1, we report the distribution of loans included in our sample by country. We also indicate the percentage distribution, the mean all-in spread, and the mean amount. We observe that firms included in our sample are established in 17 EU member states.

Table 1. Distribution of syndicated loans by country.

Country	No. of Loans	Perc. of Loans	Mean All-In Spread (Basis Points)	Mean Loan Amount (Millions of Euro)
Austria	21	1.91%	71.96	676.33
Belgium	26	2.36%	174.42	519.12
Cyprus	7	0.64%	179.29	404.84
Czech Republic	11	1.00%	240.18	286.65
Denmark	7	0.64%	161.07	186.75
Finland	16	1.45%	172.81	832.52
France	180	16.35%	113.56	1489.01
Germany	175	15.89%	121.64	2412.15
Greece	2	0.18%	375.00	742.50
Ireland	21	1.91%	183.57	688.36
Italy	70	6.36%	150.76	2203.56
The Netherlands	64	5.81%	189.16	1146.51
Poland	15	1.36%	173.00	818.77
Portugal	18	1.63%	191.28	1810.02
Spain	128	11.63%	157.52	1585.67
Sweden	24	2.18%	224.17	695.66
United Kingdom	316	28.70%	196.43	1037.62
Total loans	1101	100.00%	160.29	1428.90

Table 2 shows the summary statistics for the main variables used in the regression models.

Table 2. Summary statistics.

Variable	No. of Obs.	Mean	Median	Std. Dev.
LnSpread	1101	4.71	4.83	0.91
EW_Rating	1101	0.72	0.83	0.25
HighEWRating	1101	0.34	0.00	0.47
LowEWRating	1101	0.33	0.00	0.47
HighESGCountry	1101	0.58	1.00	0.49
Size	1101	16.05	15.97	1.54
CashFlow	1101	0.09	0.08	0.07
ROS	1101	0.15	0.12	0.19
IE_Revenue	1101	0.03	0.02	0.04
Leverage	1101	0.64	0.65	0.16
MTBV	1101	2.63	2.05	2.63
Stock_StdDev	1101	0.29	0.26	0.15
Risk_Weight	1101	0.91	1.00	0.24
Maturity	1101	52.99	60.00	25.49
Secured	1101	0.23	0.00	0.42
Covenant	1101	0.10	0.00	0.30
Loan_Concentration	1101	−1.26	−1.04	0.96
Sov_Stock_Ret	1101	0.01	0.02	0.11
Sov_Rating	1101	20.62	22.00	2.70
Ref_rate	1101	1.53	0.88	1.63
NWC	1658	0.04	0.03	0.16
OpInc	1658	0.07	0.07	0.06
RET	1658	0.16	0.14	0.22
EW_Rating_Lag	988	0.70	0.81	0.26
Relationship	12,610	0.72	1.00	0.44
Share	12,546	0.08	0.05	0.08
NumLenders	12,610	19.57	19.00	9.86

Notes: The sample consists of 1101 loans granted to listed non-financial firms established in EU member states during the 2006–2015 period.

We checked the correlations among variables, and we can affirm that the correlations do not represent a concern for our estimates (please see Table S2 in Supplementary Materials).

5.2. The Impact of CSR Ratings on Loan Spreads

In Table 3, we report the estimates obtained by testing our alternative hypotheses *H1a* and *H1b* (the complete results are reported in Supplementary Materials in Table S3). We find that the CSR rating level of the borrower has a significant impact on loan spreads. In particular, the negative sign of the *EW Rating* coefficient suggests that an increase in the CSR rating of 10 scores reduces by about 4.2% the average loan spread applied to borrower firms (our study is focused on the overall CSP, measured by the CSR rating. However, we also verified whether firms' scores in each CSR pillar (economic, environmental, social, and governance) have a different impact on loan spreads. The results obtained for each pillar do not significantly differ from those obtained for *EW_Rating*. Results are reported in Appendix B). Therefore, consistent with *H1a*, our results suggest that lenders: (i) take into account CSP when they assess borrowers' creditworthiness and (ii) seem to positively evaluate borrowers' CSR efforts.

Table 3. The impact of CSR ratings on loan spreads.

	(1)
EW_Rating	−0.416 *** (0.078)
Borrower Variables	YES
Loan Variables	YES
Country and other control variables	YES
Observations	1101
Adjusted R-squared	0.676

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

We find plausible results for our control variables. Regarding the variables included in the vector *B* (*Borrower Variables*), size, cash flow, burden of interest expenses, leverage, market-to-book value, and the borrower's stock return have a significant impact on loan spreads. The signs of the coefficients are those expected and in line with the literature. We also observe that greater values of *Risk_Weight* lead to greater spreads. Since *EW_Rating* remains also significant controlling for credit rating levels, we can confirm that credit ratings do not fully include CSR-related information and that lender banks consider CSR information also in the presence of credit ratings.

Regarding the variables included in the vector *L* (*Loan Variables*), we note that the priority structure, as expected, has a highly significant impact on the loan spread. In addition, collateral and covenant clauses are associated with greater spreads, because these clauses are generally included in loan contracts for riskier borrowers.

For the third vector of variables (*X*), we note that higher sovereign ratings lead to lower loan spreads. Our results show that, compared to our control group (*CME*), borrowers belonging to the LME countries paid greater loan spreads. This finding is consistent with the VoC literature, which agrees that in the financial markets of LME countries, competitive pressures are higher and that financial transactions are priced according to purely market mechanisms. In contrast, in CME countries, competitive pressures are moderate, financing channels are based mostly on informal relations and on reputational factors, and the relations between banks and companies tend to be long-lasting. The coefficients of the remaining clusters (*LLme*, *Hy*, and *Sd*) are not significant.

Overall, notwithstanding the statistical significance of *EW_Rating*, we emphasize that the importance of CSR ratings in the syndicated loan pricing process appears relatively limited after controlling for firm and loan characteristics. When we remove the variable *EW_Rating* from our model, the adjusted R-squared decreases from 67.6% to 66.7%, indicating that the marginal explanatory power

of the borrower's CSR rating level is approximately equal to 0.9%. By comparison, if we remove *Risk_Weight* from our model, the adjusted R-squared declines from 67.6% to 63.9%, which indicates a marginal explanatory power of the borrower's credit rating level of 3.7% (results unreported for space considerations are available from the authors). Therefore, the incremental explanatory power of CSR ratings is approximately a quarter of that of credit ratings. This result suggests that CSP is considered by lenders, but it remains a second-order determinant of loan spreads compared to credit ratings and other financial and accounting variables.

Overall, our results are consistent with *H1a*. However, as we anticipated in Section 3.1, the actual relationship between *Ew_Rating* and loan spread could be more complex, so our first regression model may not tell us the whole story.

5.3. High and Low CSR Ratings

In this section, we report the results obtained for our hypothesis *H1c*. Table 4 shows in column 1 the results of Equation (1) obtained by replacing *EW_Rating* with *HighEWRating* and *LowEWRating*. In this case, the control group consists of firms with median CSR ratings.

Table 4. The different effects of high and low CSR ratings on loan spreads.

	(1)	(2)
HighEWRating	−0.040 (0.042)	-
LowEWRating	0.140 *** (0.043)	-
EW_Rating	-	−0.360 (0.338)
EW_Rating ²	-	−0.503 (0.292)
Borrower Variables	YES	YES
Loan Variables	YES	YES
Country and other control variables	YES	YES
Observations	1101	1101
Adjusted R-squared	0.671	0.675

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

We observe that *LowEWRating* has a significant positive impact on loan spreads, while the coefficient of *HighEWRating* is not significant. These findings are consistent with *H1c*, confirming the diminishing marginal benefits of CSR ratings, and offer some additional insights to *H1a*. Banks charge to low-rated firms a loan spread that is 14% higher on average than that applied to those with better scores. In contrast, high-rated firms do not benefit from a reduction in loan spreads significantly greater than firms with median CSR ratings.

Column 2 shows the results obtained by adding, in Equation (1), the quadratic term *EW_Rating*². As the coefficient of this variable is not significant, we can exclude that the relationship between CSR ratings and loan spreads is quadratic.

5.4. ESG Country Sensitivity

In this section, we investigate whether the country ESG rating moderates the impact of firm's CSR rating on loan spread. To this end, we performed a first regression analysis by identifying six groups of firms (Section 4.2.4): groups (1)–(3) include firms located in low ESG-rated countries with, respectively, high, median, and low CSR rating; groups (4)–(6) include firms located in high ESG-rated countries with, respectively, high, median, and low CSR rating.

Table 5 shows the results of Equation (1) estimated by introducing the variables described in Section 4.2.4. In the reported results, firms with median CSR ratings located in low ESG-rated countries (group (2)) are the control (omitted) group.

Table 5. The impact of CSR ratings on loan spreads considering ESG country ratings.

	(1)
HighEWRating	0.117 * (0.064)
LowEWRating	0.143 ** (0.063)
HighESGCountry	0.011 (0.061)
HighEWRating·HighESGCountry	−0.267 *** (0.083)
LowEWRating·HighESGCountry	0.005 (0.085)
Borrower Variables	YES
Loan Variables	YES
Country and other control variables	YES
Observations	1101
Adjusted R-squared	0.675

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Our findings depict a complex relationship between the CSR rating and the loan spread when the ESG rating of a firm's home country is taken into account.

First, we examine the spread charged to firms located in low ESG-rated countries (group (1)–(3)). The positive coefficient of *HighEWRating* indicates that better CSR ratings are associated with greater loan spreads if the borrower is located in a low ESG-rated country. Firms in group (1) pay 11.7% more than those in group (2). In addition, the positive coefficient of *LowEWRating* indicates that the spread applied to firms with lower CSR ratings in low ESG-rated countries (group (3)) is 14.3% greater than that charged to companies in the control group (group (2)).

Our findings suggest that in low ESG-rated countries, both high and low CSR-rated firms pay higher spreads than those with median CSR ratings. These results are consistent with the hypothesis suggesting a U-shaped relationship between CSP and the cost of debt in countries less interested in ESG matters.

Second, we analyze the cost of syndicated loans for firms located in high ESG-rated countries (groups (4)–(6)). Given that the coefficient of *HighEWRating·HighESGCountry* is significant and negative, the average loan spread applied to high-rated firms located in high ESG-rated countries (group (4)) is 15% (0.117−0.267 using the estimates of Table 5) lower than that charged to firms in group (2) (our control group). In contrast, we observe that the coefficient of *HighESGCountry* is not significant. This implies that the loan spread charged to firms with median CSR ratings established in high ESG-rated countries (group (5)) is not statistically different than that applied to firms with median CSR ratings located in low ESG-rated countries (group (2)). Finally, since the coefficient of *LowEWRating·HighESGCountry* is not significant, the spread applied to low-rated firms in high ESG-rated countries (group (6)) is not statistically different than that applied to low-rated firms in low ESG-rated countries (group (3)). Therefore, the cost of syndicated loans for firms in group (6) is about 14% greater than that for firms in the control group (group (2)).

Summing up, in high ESG-rated countries: (a) the loan spread charged to firms in group (6) is higher than that charged to firms in group (2), which pay a loan spread statistically similar to that charged to firms in group (5); (b) the loan spread charged to firms in group (4) is lower than that charged to firms in group (2) and to firms in group (5) also. These results suggest that in high ESG-rated

countries, there is no evidence of firms' overinvestment problem, since in these countries the loan spread declines as the CSR rating improves.

To control for potential nonlinearities in the relationship between CSR rating and loan spread, we run additional estimates by splitting our sample into two sub-samples: high ESG-rated countries and low ESG-rated countries. Then, we estimate Equation (1) by introducing the quadratic term EW_Rating^2 . Results reported in Table 6 allow us to provide additional insights. We find evidence of significant nonlinearities in both sub-samples. However, our results depict a divergent relationship between the CSR rating and the loan spread in the two sub-samples. Indeed, we observe that the sign of the quadratic term coefficient is negative for the first group (column 1) and positive for the second one (column 2), suggesting that the relationship between the CSR rating and the loan spread can be described by a function that is concave downward for high ESG-rated countries and concave upward for low ESG-rated ones. These results explain why we were not able to detect a U-shaped relationship between CSP and CFP when we investigated our whole sample (see Section 5.3 above).

Table 6. Evidence of nonlinearities in the impact of CSR ratings on loan spreads in high and low ESG-rated countries.

	(1)	(2)
	<i>HighESGCountry</i>	<i>LowESGCountry</i>
EW_Rating	0.569 (0.485)	−2.089 *** (0.489)
EW_Rating ²	−0.874 ** (0.424)	1.403 *** (0.419)
Borrower Variables	YES	YES
Loan Variables	YES	YES
Country and other control variables	YES	YES
Observations	642	459
Adjusted R-squared	0.716	0.657

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Figure 1 displays the relationship between the predicted values of $LnSpread$ (based on the coefficients reported in Table 6) and EW_Rating for both groups of countries. In high ESG-rated countries we observe that firms with a low CSR rating, between 0 and about 33 (the maximum value of the function based on the coefficient reported in column 1 of Table 6), pay approximately the same spread. For firms with a score higher than 33, the loan spread declines as the CSR rating improves, consistent with the risk mitigation view.

In contrast, in low ESG-rated countries, there is a U-shaped relationship between CSR ratings and loan spreads. The spread on loans declines as the firm CSR rating improves until an optimal level of the CSR score, equal about to 74 (the minimum value of the function based on the coefficient reported in column 2 of Table 6). After this threshold, the loan spread rises as the CSR rating improves, implying that there is evidence of firms' overinvestment problem in this group of countries.

Evidence obtained from the cross-country analysis allows us to highlight the role played by the national institutional context in shaping the link between CSP and CFP. Consistent with the institutional perspective, companies mirror their domestic institutional environment by reflecting the actions of the government, market, and civil society. Financial rewards for CSP are linked to the types of corporate behavior sought by society.

In low ESG-rated countries, our findings are consistent with the existence of an optimal level of CSP from the risk mitigation perspective. Lenders positively evaluate firms' engagement in CSR up to the optimal level, because it mitigates firms' exposure to substantial legal, reputational, operational, and financial risks. Hence, CSR engagement would serve as an insurance mechanism against harmful,

risk-inducing events. Beyond that optimal level, lenders evaluate the borrower's commitment in CSR as a waste of the company's resources, because the proactive attitude of companies toward CSR issues does not respond to the requests made by national institutions or by the community.

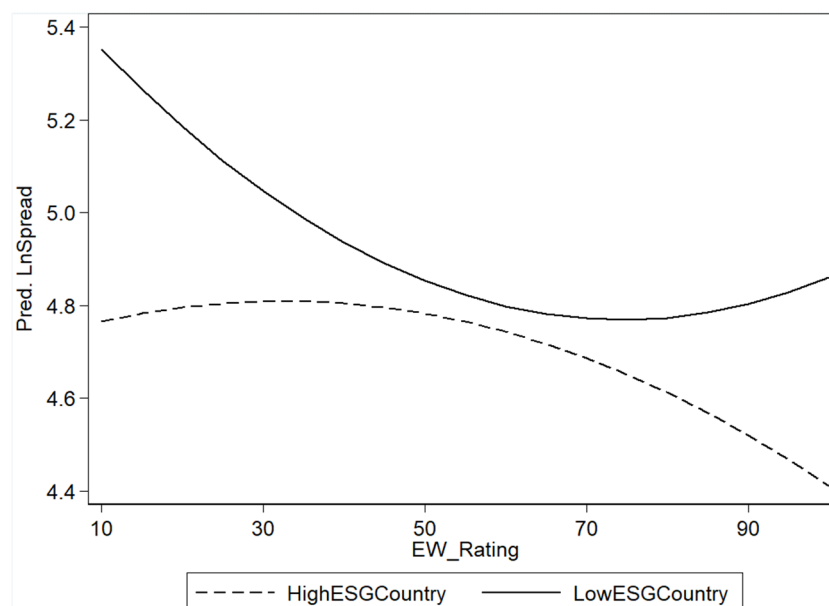


Figure 1. The relationship between the predicted values of loan spreads and CSR ratings in high and low ESG-rated countries.

The previous findings are consistent with those reported by Bae et al. [15], who claim to find a U-shaped relationship between CSR investments and the cost of bank loans in the US context. However, the Bae et al. [15] results do not hold in European high ESG-rated countries. In these countries, lenders positively evaluate CSP as a factor that, all other things being equal, reduces the borrower's riskiness. This positive assessment persists even when the borrower shows high CSP levels. High CSP values are not perceived by banks as a waste of resources. This means that there is no evidence of overinvestment in high ESG-rated countries, where the proactive attitude of companies toward CSR is not penalized.

Our findings can be explained by considering that in countries that show high sensitivity toward CSR issues, companies are encouraged by the institutional context and by the community to pursue a CSR engagement that outpaces the mere risk coverage perspective. At the same time, the high level of awareness and sensitivity of the community toward sustainability issues reduces the risk that management may invest in CSR only for its own interest to improve its own reputation at expense of shareholders.

Overall, our results suggest that (i) the European Union cannot be considered as a homogeneous area, because the cross-country differences in the attitude toward ESG issues affect the relationship between CSR ratings and the cost of debt financing; and (ii) consistent with *H2*, the benefits of high CSR ratings are associated with lower loan spreads only if the borrowers' CSR efforts are rewarded in the environment in which they are embedded. Moreover, in high ESG-rated European countries, the relationship between CSP and the cost of debt financing is consistent with the risk mitigation view; (iii) in low ESG-rated European countries, there seems to be an optimal level of CSR investments. Hence, firms with very high or low CSP are subject to a higher cost of debt, compared to firms with median CSP.

Finally, estimates reported in Tables 5 and 6 allow us a better understanding of the results obtained for the whole sample (hypothesis *H1c*). The relationship observed for the entire sample (first decreasing and then approximately flat) is the result of the mixed impact that the CSR rating exerts on the cost of debt in the different European Union countries: (a) in high ESG-rated countries firm's loan

spread declines as the firm CSR rating improves; (b) in low ESG-rated countries there is a U-shaped relationship between CSR rating and loan spread. To the best of our knowledge, the previous results are undocumented for European firms in the CSR literature.

6. Robustness Checks and Additional Results

In Appendix A, we address potential endogeneity issues by employing an instrumental variable approach and a Heckman selection model. Finally, we control for the potential relationship banking effect and for the heterogeneity of lender banks. In Appendix B, we report some additional results. First, we verify whether firms' scores in each CSR pillar have a different impact on loan spreads. Second, we test whether the impact of CSR ratings is moderated by firm credit quality. Finally, we verify whether the impact of CSR rating changes in crisis times.

7. Discussion

Our results outline a complex picture of the relationship between CSR ratings and loan spreads. The previous studies offer mixed findings on the link between CSP and credit risk in the European context. Unlike existing studies investigating the European context, we explicitly examine potential nonlinearities in the relationship between CSP and the cost of debt, and we find evidence of a significant lack of homogeneity within the European Union. Bae et al. [15] find a U-shaped relationship between CSR investments and debt financing costs in a sample of syndicated loans issued by U.S. firms. We confirm Bae et al. [15] results just for low ESG-rated European countries, whereas in high ESG-rated countries, we find evidence consistent with the hypothesis that a firm's loan spread declines as the firm's CSR rating improves. The existing literature (among others, Utz [43] and Stellner et al. [5]) has clearly proved that the link between CSP and debt financing costs is highly country specific. Our results offer further confirmation to the hypothesis that, for what concerns the link between CSP and the cost of debt, the relationships observed in the US context do not necessarily hold in the European context. Our findings are undocumented in the existing literature concerning the debt financing cost of European firms. Evidence of nonlinearities in the relationship between CSP and CFP is provided also by Utz [43], who finds a U-shaped relation between CSP and idiosyncratic risk in the United States and in the Asia-Pacific region. For what concerns the European context, Utz [43] finds that European firms have their maximum idiosyncratic risk at a very low level of the CSP score. Beyond that level, a higher score always reduces the idiosyncratic risk. However, Utz [43] treats European firms as a homogeneous sample and does not control for any country specific variable.

In order to compare our results with the existing literature, below we focus our attention on studies whose sample include European firms. Menz [4] shows that companies with better CSP face, respectively, higher spreads for their corporate bonds and a higher cost of debt. The observed differences in the results may be due to several factors (e.g., differences in sample and/or methodology). We emphasize that, first, the adopted CSP indicator may have a limited explanatory power, as acknowledged by Menz himself. Second, the time period investigated by Menz ends in 2007. Given that social raters have gained increasing attention in recent years, the relevance of CSR ratings could have considerably changed over the last years. Third, Menz studies a sample including credit-rated firms only, while in our sample only 40% of companies have a credit rating. Fourth, the European corporate bond market suffers from significant liquidity problems. As far as we know, the author does not control for variations in the liquidity premium paid by corporate bonds in his sample. Fifth, the author does not take into account the impact that the national institutional context exerts on the domestic financial markets. In contrast, we control for the different models of capitalism. In this way, we are able to account for the different institutional context in each cluster, and we find that companies' credit risk is affected by the characteristics of the domestic financial market. Finally, unlike us, Menz does not investigate whether the country ESG performance moderates the CSP–credit risk link.

Our results are more in line with those of Stellner et al. [5]. These authors find some evidence that superior CSP results in lower credit risk in the European corporate bond market, although the statistical

significance of their results is rather weak. However, we recall that less than 3% of medium and large European companies have access to the corporate bond market. In contrast, almost all European companies have access to bank financing, and our findings show that banks consider the CSR rating in their loan pricing decisions. In line with our results, Stellner et al. [5] find support to the hypothesis that countries ESG performance moderates the CSP–credit risk relationship and that superior CSP is rewarded with lower bond spreads only if it is recognized by the environment. Compared to Stellner et al. [5], our study offers significant additional insights. Our results provide a more complete picture, as we prove the existence of nonlinearities in the relationship between CSR and loan spreads in low ESG-rated countries, and we are able to highlight the differences between high and low ESG-rated countries in the European context.

Particular attention is required for the findings of Hoepner et al. [6], who examine the syndicated loan market based on a sample that includes borrowers belonging to 28 different countries located in different geographical regions: America (excluding the United States), Asia, Europe, and the United States. They find no conclusive evidence that firm-level sustainability influences the interest rates charged to borrowing firms by banks. The differences between their results and ours may be due to several factors. For example, we note that Hoepner et al. [6] may not take properly into account the impact the national institutional context exerts on loan spreads. Although they include in their models the country's sustainability rating, they control for different national institutional contexts only by means of a dummy that distinguishes developing countries from developed countries. This methodology may not take properly into account the heterogeneity across countries. Country ESG performance is affected by national institutions, but at the same time, these institutions directly affect the cost of the loan. For example, in line with the existing literature, we claim that the legal protection that a country's legal system grants to creditors may significantly affect the cost of bank debt. The legal protection of creditors' rights is not at all considered in a country sustainability rating. In contrast, we take into account the previous variable by clustering countries into different groups according to the VoC approach.

Furthermore, unlike Hoepner et al. [6], we present a cross country analysis, splitting our sample into high ESG-rated countries and low ESG-rated countries. It is only through this analysis that we are able to identify the differences between the two groups of countries and adequately grasp the impact of the CSR rating on the cost of bank debt.

Finally, with regard to the loan characteristics, Hoepner et al. [6] only control for the maturity of the loan, omitting other variables relevant to pricing (collateral, covenants, seniority, and loan type). These variables significantly affect loan spreads in our models, in line with the existing literature.

8. Conclusions

This study examines the impact of CSR ratings on syndicated loans spreads charged to European listed firms. We find that the CSR rating level affects loan spreads, as lower CSR ratings are on average associated with significantly higher spreads. However, the relationship between these two variables is quite complex. Looking at the whole sample, companies in the highest tertile of the CSR rating distribution do not pay significantly lower spreads than companies in the median tertile. A more detailed investigation allowed us to verify that the home country ESG rating sharply affects the relationship between CSR ratings and loan spreads. In summary, first, low CSR ratings levels are generally penalized with higher spreads by lenders. Second, high CSR rating levels lead to lower loan spreads only for companies located in countries with a high sensitivity to ESG issues. Third, in low ESG-rated countries, firms with high or low CSR rating pay higher loan spreads compared to firms with median CSR rating, providing evidence of a U-shaped relationship between CSR ratings and loan spreads. These results are consistent with the overinvestment view beyond an "optimal threshold" of CSR engagement.

Our results also suggest that CSR ratings are second-order determinants of loan spreads, which are taken into account only after "traditional" firm's fundamentals (i.e., accounting data and credit ratings).

Our findings have significant implications for managers, firm's stakeholders, and legislators. Poor CSP, "certified" by low CSR ratings, leads to greater borrowing costs. However, the efforts and the investments needed to gain high CSR ratings are rewarded only if the company operates in contexts that pay attention to CSR-related matters. Knowing the relationship between CSR-related activities and credit spreads helps managers make appropriate strategic investments in CSR activities. In addition to managers, lenders and outside investors can also rely on the CSP–cost of debt link to assess the firm's future credit health. Unfortunately, firms do not automatically benefit from high CSR ratings. The link between CSP and CFP is conditional on other important variables, some of which are beyond the control of firm's managers (e.g., the home country sensitivity to ESG issues).

Overall, our results suggest that CSR ratings could be a particularly useful tool for less informed stakeholders, such as consumers and retail investors who are interested in evaluating and comparing the CSP of different companies. From this perspective, the CSR rating may also improve firm's accountability and allow cross-company comparisons. Third-party external verification provided by specialized rating agencies enhances the reliability of CSR-related activities, inasmuch as it helps to bridge the credibility gap between the company's self-laudatory CSR communication and less informed stakeholders.

For what concern policymakers, our study offers some support for the vision of the European Parliament, mentioned in Section 1. However, the road ahead to support the transition to a more sustainable economy seems still very long. Given the lack of homogeneity detected in the European context, policy makers should be aware that a uniform legislation on CSR matters could have a mixed impact on the financial performance of companies located in different European Union countries. Mandatory investments in CSR do not necessarily create value for all EU companies. At present, low ESG-rated countries seem to value a high commitment in CSR as a luxury that companies cannot afford. At the same time, we doubt that law could enforce investors to reward a firm's CSR engagement. In order to achieve the objectives of the European Commission, apart from legislative measures, we believe it is necessary to promote several initiatives that support a change in the cultural attitude toward CSR and sustainability issues. Unfortunately, this is a challenging and time consuming process.

Supplementary Materials: The following are available online at <http://www.mdpi.com/2071-1050/12/18/7639/s1>, Table S1: Variables description. Table S2: Correlation matrix. Table S3: The impact of CSR ratings on loan spreads. Table S4: Variable description. Table S5: The impact of firm's scores in each CSR pillar on loan spreads.

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Appendix A. Robustness Tests

In the following sections, we address potential endogeneity issues by employing an instrumental variable approach and a Heckman selection model. Finally, we control for the potential relationship banking effect and for the heterogeneity of lender banks.

Appendix A.1. Instrumental Variable Approach

To address potential endogeneity and reverse causality issues, we estimate Equation (1) considering the impact of *EW_Rating* on loan spreads by employing an instrumental variable (IV) approach. To this end, we instrument *EW_Rating* with *EW_Rating_Lag*, which is the lagged CSR rating of the *i*-th firm from 3 years before *t*.

In line with Goss and Roberts [8], we assume that this instrument is valid. We exclude that our instrument is weak, because high CSR rating levels are obtained after several years of CSR efforts and

should be more persistent than financial performance indicators. Thus, the current CSR rating level of the borrower should be significantly affected by the lagged CSR rating level. The first-stage F-test statistic is equal to 57.71, which is significantly above the “rule of thumb” threshold of 10. Therefore, the F-test confirms the significance of our instrument.

In addition, we also assume that our instrument is exogenous. The CSR scores assigned to firms 3 years before the loan closing date, in fact, should be unlikely to affect the loan spreads applied in t . Consequently, the instrument should not affect loan spreads other than through its correlation with the current CSR rating level of the borrower. Table A1 reports the estimates from the second-stage IV regression (we observe a reduction in observations because not all CSR-rated borrowers also had a CSR rating three years before t). The results confirm that the instrumented variable *EW_Rating* has a significant negative impact on loan spreads. Consequently, these estimates mitigate endogeneity concerns.

Table A1. The instrumental variable regression.

	(1)
	IV
EW_Rating	−0.342 *** (0.129)
Borrower Variables	YES
Loan Variables	YES
Country and other control variables	YES
Observations	988
Adjusted R-squared	0.671

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Appendix A.2. Heckman Selection Model

Since firms choose their levels of engagement in CSR activities, self-selection bias may represent a potential concern for our analysis. To address this issue, we adopt a Heckman [65] approach. To this end, we expand our sample by including also loans registered in LPC’s DealScan to European listed companies without CSR ratings. Our new dataset consists of 1727 loans granted to 483 companies.

The first-stage selection equation is a probit model where the dependent variable is a dummy equal to 1 if the i -th firm has a CSR rating. To identify the selection equation, in line with Goss and Roberts [8], we add *NWC*, *OpInc*, and *RET*, which are, respectively, the ratio of net working capital, operating income, and retained earnings to total assets. In addition, we also include in the selection equation all variables included in the vector B (*Borrower Variables*), *Sov_Rating*, VoC dummies, and year dummies.

We calculate the inverse Mills ratio from the selection equation and we include it (variable *Lambda*) in the loan spread equation (Equation (1)), to control for selection bias. Table A2 shows the results of this test (we observe a loss of 26 observations due to some missing in the time series of *NWC*, *OpInc* and *RET*). The inverse Mills ratio is significant, suggesting potential self-selection effects. However, the coefficient of *EW_Rating* is not affected by the inclusion of *Lambda*, supporting our findings.

Table A2. The Heckman selection model.

	(1)
	<i>Heckman</i>
EW_Rating	−0.422 *** (0.080)
Lambda	−0.296 *** (0.073)
Borrower Variables	YES
Loan Variables	YES
Country and other control variables	YES
Observations	1075
Adjusted R-squared	0.679

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Appendix A.3. Potential Relationship Banking Effects and Lender Characteristics

Our findings could be driven by the potential effects of the relationship between banks and borrowers. Since customer relationships generate private information to banks about their clients, previous relationships between banks and their borrowers could lead to lower borrowing costs [58,66].

To address this issue, we consider as “relationship lenders” the arrangers that were at least in one syndicate of a loan granted to the same borrower before the current loan. We focus on arranger banks because they assess borrower quality, negotiate loan contract terms, and only then do they invite and coordinate participant banks [67]. Following previous studies [57,68], we consider each facility multiple times to capture the differences across arrangers if there are multiple arranger banks in the same syndicate.

To control for previous relationship banking effects, we include in our model the variable *Relationship*, which is a dummy variable equal to 1 if the arranger was in a syndicated loan granted to the *i*-th firm prior to the current loan in the investigated period (Following Goss and Roberts [8], in our previous estimates we have indirectly controlled for potential relationship banking effects by including the variable *Loan_Concentration*. The variable *Relationship* allows us to take directly into account this potential factor, which could significantly affect loan spreads [69]).

In addition, we control for lender and syndicate characteristics by including *Share*, which indicates the share of the loan to the *i*-th firm held by each arranger; and *NumLenders*, which is the number of lenders in the syndicate. Finally, we include bank fixed effects. Table A3 shows the results. As expected, previous relationships with the same lenders lead to lower loan spreads. However, the coefficient of *Relationship* is rather small. This is not surprising, because the literature finds that the previous relationship produces greater benefits for unlisted companies than for listed ones [58,66]. It is worth noting that our sample includes only listed companies.

We find that the share of the loan held by arrangers is positively related to loan spreads. In fact, the loan share concentration is generally positively related to the borrowers’ risk, because arrangers frequently hold a greater stake in the loan if the borrower requires more intense monitoring [66,70].

More lenders in the syndicate are associated with greater loan spreads. We underline that in our sample, the number of lenders is positively related to the number of foreign banks in the syndicate. Therefore, the positive coefficient of *NumLenders* may be due to the expansion of the set of creditors to less-informed investors, such as foreign banks, which, consistent with Sufi [71], may require a greater spread to participate in the loan syndicate.

Finally, since the coefficient of *EW_Rating* remains significant and negative and our main findings remain unchanged, we can confirm that our results hold also controlling for relationship banking effects and other lender and syndicate characteristics.

Table A3. The impact of CSR ratings on loan spreads taking into account lender bank characteristics.

	(1)
EW_Rating	−0.361 *** (0.026)
Relationship	−0.020 * (0.011)
Share	0.830 *** (0.100)
NumLenders	0.005 *** (0.001)
Bank FE	YES
Borrower Variables	YES
Loan Variables	YES
Country and other control variables	YES
Observations	12,546
Adjusted R-squared	0.752

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Appendix B. Additional Results

In the following sections, we report additional results. First, we verify whether firms' scores in each CSR pillar have a different impact on loan spreads. Second, we test whether the impact of CSR ratings is moderated by firm credit quality. Finally, we verify whether the impact of CSR ratings changes in crisis times.

Table S4 in Supplementary Materials shows the complete list of variables used in Appendix B. Table A4 provides summary statistics of the variables used in Appendix B.

Table A4. Summary statistics.

Variable	No. of Obs.	Mean	Median	Std. Dev.
Ec_Score	1101	0.67	0.75	0.27
Soc_Score	1101	0.74	0.84	0.25
Env_Score	1101	0.70	0.82	0.27
Gov_Score	1101	0.61	0.68	0.26
HighZscore	822	0.33	0.00	0.47
LowZscore	822	0.33	0.00	0.47
Small	1101	0.10	0.00	0.30
Crisis	1101	0.32	0.00	0.47

Notes: The sample consists of 1101 loans granted to listed non-financial firms established in EU member states during the 2006–2015 period.

Appendix B.1. The Impact of Different CSR Pillars

To verify whether firms' scores in each CSR pillar have a different impact on loan spreads, we introduce the following variables: *Ec_Score*, *Soc_Score*, *Env_Score*, and *Gov_Score*, which represent the ASSET4 scores in each pillar (economic, social, environmental, and governance) of the *i*-th firm in the year preceding *t*. Then, we replace *EW_Rating* by alternatively inserting in Equation (1) each of the previous variables. We get four different models whose results are presented in Table A5 (the complete results are reported in Supplementary Materials in Table S5). We observe that all scores are significantly and negatively related to loan spreads, suggesting that better scores lead to lower firms' borrowing costs. An increase in each CSR dimension of 10 scores reduces the average loan spread applied to borrowers by 2.2% for the economic pillar, 4.2% for the social pillar, 4.1% for the environmental pillar, and 1.4% for the governance pillar, respectively. Therefore, banks also appear to positively evaluate firms' efforts in each CSR dimension.

The analysis of the individual scores offers further insights. *Ec_Score* is highly significant, but its coefficient is about half compared to the *Soc_Score* and *Env_Score* coefficients. We believe that the reduced impact of the economic score on the loan spread can be explained by considering that lenders are able to obtain most of the economic data using traditional accounting information derived from the annual report. Furthermore, we highlight that, in line with the existing literature, in the regression analysis we include several variables (e.g., *ROS*, *IE_Revenue*, etc.) that are able to capture some relevant economic information affecting syndicated loan spreads. However, the high significance of the *Ec_Score* coefficient shows that the information provided by the CSR economic score is appreciated by the lenders, and it is perceived as supplementary to other economic information of strict accounting derivation. The economic pillar combines key performance indicators (KPIs) based on wider economic information. For example, *Ec_Score* includes measures about a company's capacity to improve its margins by the use of advanced cost/risk management techniques, or a company's management commitment and effectiveness toward generating sustainable and long-term revenue growth, while maintaining a loyal client base through satisfaction, programs, and avoiding anti-competitive behaviors and price fixing.

Table A5. The impact of firm's scores in each CSR pillar on loan spreads.

	(1)	(2)	(3)	(4)
<i>Ec_Score</i>	−0.223 *** (0.072)	-	-	-
<i>Soc_Score</i>	-	−0.420 *** (0.079)	-	-
<i>Env_Score</i>	-	-	−0.406 *** (0.078)	-
<i>Gov_Score</i>	-	-	-	−0.143 * (0.076)
Size	−0.131 *** (0.018)	−0.110 *** (0.018)	−0.105 *** (0.018)	−0.136 *** (0.017)
Borrower Variables	YES	YES	YES	YES
Loan Variables	YES	YES	YES	YES
Country and other control variables	YES	YES	YES	YES
Observations	1101	1101	1101	1101
Adjusted R-squared	0.670	0.675	0.675	0.668

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Focusing on the *Soc_Score* and *Env_Score*, we note that the two coefficients present a high significance and magnitude. These results can be explained by considering that the social and environmental pillars offer important information to lenders not captured by traditional financial information. Furthermore, the performance levels in the environmental and social dimensions signal the company's commitment to CSR dimensions that may originate important levels of risk. Several corporate scandals (e.g., Bayer, Volkswagen, etc.) have repeatedly shown that bad performances in the environmental and social dimensions can expose companies to significant losses and negative market assessments. It is not surprising that the attention and sensitivity of the lenders is mainly focused on these two pillars.

The reduced significance and the magnitude of the *Gov_Score* coefficient do not surprise. This result could be explained considering that lenders have other sources available to derive information on governance, especially for large companies such as those included in our sample. However, the information provided by the governance score seems not to be superfluous. Lenders appreciate the information provided by the governance score for a broader assessment of the risk levels of their borrowers. Our result can be explained considering that the corporate governance pillar includes several measures about a company's systems and processes, which ensure that its board members and executives act in the best interests of its long term shareholders. It reflects a company's capacity,

through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long term shareholder value.

Finally, we note that in all estimated models, our control variables maintain the signs and the statistical significance discussed in the main text.

Appendix B.2. CSR Ratings and Creditworthiness

Previous studies found that the creditworthiness of the borrower could significantly moderate the link between CSR ratings and loan spreads [8]. We argue that, given the same CSR rating, low credit quality firms pay greater loan spreads than high credit quality firms. We distinguish two cases that lead to the same conclusion. First, if the CSR rating is low, having a low creditworthiness has a multiplicative effect on the risk of the borrower. In this case, the borrower is exposed to significant CSR-related risks in addition to “traditional” financial risks. Second, if the CSR rating is high, CSR investments made by low quality firms are not rewarded by lenders. In fact, since less creditworthy firms have fewer available resources than safer ones, proactive engagement in CSR and greater discretionary investments may be perceived by lenders as a costly diversion of scarce resources.

To verify whether the impact of CSR ratings is moderated by firm credit quality, we identify less creditworthy firms by alternatively adopting three sets of variables. First, we rely on the z-score, an accounting measure that indicates the probability of firms’ bankruptcy. Z-scores are calculated using firms’ quarterly data over the past 3 years following Santos and Winton [72]:

$$Z = \frac{1}{S_r} \left[\frac{1}{n} \sum_{j=1}^n \frac{2\tilde{\pi}}{A_j + A_{j-1}} + \frac{1}{n} \sum_{j=1}^n \frac{E_j + E_{j-1}}{A_j + A_{j-1}} \right]$$

where π is the firm’s profits, A is its assets, E is its equity, and S_r is the estimated standard deviation of r , the firm’s return on assets.

We introduce in Equation (1) two dummy variables: *HighZscore* and *LowZscore*. These variables are equal to 1 if the z-score of the i -th firm in the year preceding t is, respectively, in the highest or in the lowest tertile of the empirical distribution. We interact *EW_Rating* with *HighZscore* and *LowZscore*, respectively. We expect to find that higher CSR ratings lead to lower spreads mainly for safer firms (higher z-scores).

Second, we rely on the dummy variable *Secured*. Empirical evidence has demonstrated that lenders demand security mainly from low-quality borrowers [73]. Thus, we add in Equation (1) the interaction variable *EW_Rating-Secured*. We expect that, given the same CSR rating, secured loans are charged with higher spreads.

Third, we identify riskier firms by relying on their size. Holding all else equal, smaller firms are generally considered riskier than larger ones, because they are less transparent and more financially constrained. Thus, we replace the variable *Size* in Equation (1) with *Small*, which is a dummy variable equal to 1 if the i -th firm’s total assets in the year preceding t are lower than the tenth percentile of the sample. We underline that, since small firms do not have generally access to the syndicated loan market, the majority of firms in our sample are large. Therefore, we have adopted a low threshold to identify smaller firms. Moreover, we include in our model an interaction between *EW_Rating* and *Small*. A positive and significant coefficient of the interaction variable would imply that, given the same *EW_Rating*, low quality borrowers pay higher spreads than high quality borrowers.

We highlight that the interaction between *EW_Rating* and *Small* allows us to capture the effect of the firm’s size on the impact of CSP on loan spread. In particular, we are able to verify whether, all other things being equal, the impact of CSP on loan spread changes for small companies compared to large ones.

Column (1) of Table A6 shows the results of Equation (1) estimated by interacting *EW_Rating* with *HighZscore* and *LowZscore* (We observe a reduction in observations due to data availability). Our control

group consists of firms with median *Zscore*. We observe that *EW_Rating·HighZscore* has a negative impact on loan spreads, while the interaction variable *EW_Rating·LowZscore* is positively correlated with *LnSpread*. This implies that the impact of CSR ratings on loan spreads significantly depend on the probability of default of the borrower. Riskier firms (lower z-scores) always pay higher loan spreads than the control group, given the same CSR rating level. In contrast, safer firms (higher z-score) pay lower loan spreads compared to the control group. Therefore, our findings suggest that banks reward greater CSR efforts mainly when the credit risk of the borrower is low, whereas CSR investments of riskier firms may be perceived as a costly diversion of scarce resources.

Column (2) of Table A6 shows the results of Equation (1) estimated by interacting *EW_Rating* with *Secured*. The interaction term *EW_Rating·Secured* shows a positive impact on loan spreads and counteracts the negative coefficient of *EW_Rating*. An increase in the CSR rating of 10 scores reduces by about 5% the average spread on secured loans and by about 2.1% that on unsecured loans. These results confirm that the negative relationship between CSR ratings and loan spreads is weaker for riskier firms (i.e., those that receive secured loans).

Table A6. CSR ratings and the firm's creditworthiness.

	(1)	(2)	(3)
	<i>Z-score</i>	<i>Secured</i>	<i>Small</i>
<i>EW_Rating</i>	−0.214 (0.145)	−0.487 *** (0.082)	−0.656 *** (0.083)
<i>HighZscore</i>	0.184 (0.143)	-	-
<i>EW_Rating·HighZscore</i>	−0.334 * (0.190)	-	-
<i>LowZscore</i>	−0.118 (0.145)	-	-
<i>EW_Rating·LowZscore</i>	0.377 ** (0.180)	-	-
<i>Small</i>	-	-	−0.200 (0.125)
<i>EW_Rating·Small</i>	-	-	0.448 ** (0.222)
<i>Secured</i>	0.213 *** (0.055)	0.061 (0.119)	0.253 *** (0.050)
<i>EW_Rating·Secured</i>	-	0.280 * (0.164)	-
Borrower Variables	YES	YES	YES
Loan Variables	YES	YES	YES
Country and other control variables	YES	YES	YES
Observations	822	1101	1101
Adjusted R-squared	0.685	0.676	0.665

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Finally, in column (3), we report the results of Equation (1) estimated by replacing *Size* with *Small* and by adding the interaction *EW_Rating·Small*. We observe that the coefficient of the interaction variable is positive and significant. An increase in the CSR rating of 10 scores reduces by about 6.6% the average loan spread for larger firms and by about 2.1% that for smaller ones. Therefore, the firm's size moderates the relationship between CSR ratings and loan spreads. This result suggests that, given the same CSR rating, smaller firms pay higher loan spreads.

Overall, these findings suggest that the benefits of better CSR ratings are lower for riskier firms. These results may be interpreted as an additional confirmation that CSR ratings are second-order determinants of loan spreads, which are taken into account only after traditional financial factors.

Appendix B.3. Crisis

The time frame considered in our analysis includes two periods of major crises, the great financial crisis and the sovereign debt crisis, which have heavily affected the European economic system.

Existing literature finds evidence of a greater increase in loan spreads for European companies during the global financial crisis and the euro area sovereign debt crisis [74]. At the same time, we expect that, all other things being equal, in crisis periods, lenders are less sensitive to information related to the borrower's CSP, and they assign greater importance to the borrower's financial data. If this is true, we should observe a lower impact of the CSR rating on loan spreads in crisis periods.

To consider the potential impact of crisis periods on loan spreads we include in Equation (1) the variable *Crisis*, which is a dummy variable equal to 1 in crisis periods of the European economy. To determine crisis periods, we rely on the chronology of turning points for Europe identified by the OECD [75]. Consequently, the periods from February 2008 to June 2009 and from August 2011 to February 2013 are considered crisis periods. In contrast, we consider other periods as non-crisis periods.

Column (1) of Table A7 shows the results of Equation (1) estimated by replacing year dummies with the variable *Crisis*. As expected, the positive sign of *Crisis* suggests that, on average, banks raise loan spreads in crisis times. Moreover, in line with previous results, we find that an increase in the CSR rating of 10 scores reduces by about 3.4% the average loan spread applied to borrowers.

Table A7. The impact of CSR ratings on loan spreads considering crisis periods.

	(1)	(2)
EW_Rating	−0.342 *** (0.082)	−0.378 *** (0.089)
Crisis	0.321 *** (0.041)	0.228 * (0.117)
EW_Rating·Crisis	-	0.125 (0.149)
Borrower Variables	YES	YES
Loan Variables	YES	YES
Country and other control variables	YES	YES
Year Dummies	NO	NO
Observations	1101	1101
Adjusted R-squared	0.622	0.622

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

To verify whether the impact of CSR ratings on loan spreads changes in crisis times, we run the previous regression by adding in our model an interaction variable between *EW_Rating* and *Crisis*. Column (2) of Table A7 shows these estimates. We observe that the coefficient of *EW_Rating·Crisis* is not significant. However, we note that the significance of *EW_Rating* remains unchanged. Thus, our results show that crisis periods do not significantly affect the impact of CSR ratings on loan spreads. Lenders continue to positively evaluate borrowers' CSR efforts also in these periods.

In light of these results, we can confirm the validity of our main findings taking into account the potential effects of crisis periods.

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