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The impact of corporate social performance on the cost of debt and access to debt financing for listed European non-financial firms

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ABSTRACT

This study addresses the controversial issue of how non-financial performance affects the cost of debt capital and access to it. The relationship between corporate social performance and two measures of debt cost (accounting-based and market-based) and the measure of debt access are analysed by means of a multi-theoretical framework combining economics with social theories. By observing a sample of listed European non-financial firms over an 8-year period from 2005 to 2012, we find a negative relationship between corporate social performance and interest rate. Consistent with this result, we find a positive relationship between corporate social performance and debt rating. Thus, corporate social performance has a positive role in reducing the cost of debt capital. Moreover, firms with better corporate social performance are more attractive to lenders in terms of leverage allowance. Overall, our findings provide deeper insight into the reasons why companies should improve their corporate social performance.

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1. Introduction

The accounting literature suggests that companies that consistently make detailed, timely, and informative disclosures obtain numerous market benefits, for example, lower cost of debt capital (COD) (Mazumdar & Sengupta, 2005; Verrecchia, 1983). If the negative relationship between financial disclosure and COD (i.e. the higher disclosure is, the lower is the COD) seems to be clear, the effects of non-financial disclosure are not so univocal because the content of any specific information can differently influence appraisal of risk (Sengupta, 1998). Among all non-financial information, that on corporate social responsibility (CSR) is certainly interesting (Dhaliwal, Li, Tsang, & Yang, 2011), because of its increased demand from stakeholders and the current trend toward CSR (Arvidsson, 2011). In particular, the cost of capital can reflect CSR risks and benefits (Weber, 2008). For example, firms might benefit from lower interest rates (Goss & Roberts, 2011) and higher access to debt capital through CSR (Cheng, Ioannou, & Serafeim, 2014). Following a combined approach aimed at integrating

economic theories (agency cost of debt and voluntary disclosure) with social theories (reputation and stakeholder), we expect companies receive financial benefits by acting responsibly.

This study enters the debate from a unique perspective by examining the impact of a ready-to-use corporate social performance (CSP) index, which is the Datastream/ASSET4, on both the COD and access to debt financing.¹ The use of a commonly available source of information allows us to analyse the link between a flow of information produced by a third party (i.e. Thomson Reuters Datastream) and used by the market, and the cost of debt of a firm. We use two proxies of cost of debt, namely, the interest rate and debt rating (hereafter, 'rating') and a measure of debt access ('leverage'). We analyse this relationship through a sample of European firms listed in the 17 countries which are included in the Standard and Poor's (S&P) Europe 350, from 2005 to 2012. Our results show a negative relationship between interest rate and CSP. Likewise, there is a positive relationship between the rating and CSP. In addition, we find CSP positively impacts debt capital access. Moreover, since during the 2008 global financial crisis companies faced the difficulties of both higher interest rates and credit constraints, we aim to investigate how the credit crisis affected the

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¹ In this work, we use CSP and social performance interchangeably.

association between CSP and both COD and debt capital access. Our analysis confirms prior results (Hoepner, Oikonomou, Scholtens, & Schröder, 2016), which find no evidence of the link between CSP and COD during the financial crisis years. The results obtained from multivariate analysis are robust to different models' specifications and sensitivity tests.

This study makes three contributions to the existing literature. First, it examines the impact of social performance on the cost of debt, adding new empirical evidence in a research field that has controversial results. Second, this study considers a cross-country European sample, which has rarely been undertaken in the literature to date (Girerd-Potin, Jimenez-Garcès, & Louvet, 2014; Menz, 2010; Perrini, 2005). Third, the study provides evidence of the impact of social performance on the cost of debt when considering a time horizon that includes the ongoing financial crisis.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 discusses the research methodology. Section 4 presents our findings and Section 5 draws conclusions and implications.

2. Literature review and hypotheses development

2.1. Firms' disclosure and cost of debt

Prior studies argue that by providing more informative disclosures, firms increase demand for their debt and equity issues and thereby lower their cost of capital (Fishman & Hagerty, 1989; Verrecchia, 1983). Empirical evidence is consistent with the view that voluntary public disclosure reduces information asymmetry and facilitates a firm's access to lower-cost external financing. More informative disclosures are found to result in a more effective allocation of capital overall due to reduced information asymmetry, decreased bid–ask spreads, increased stock liquidity, a lower average cost of both equity and debt capital and, consequently, better investment decisions (Healy, Hutton, & Palepu, 1999; Sengupta, 1998).

In particular, the reduction of the COD seems due to the activity and characteristics (e.g. forecast accuracy and dispersion) of analysts, who reduce bond yield spreads, thereby contributing to the information environment of the firm, especially when uncertainty about firm value is at its greatest (Mansi, Maxwell, & Miller, 2011). Therefore, analysts' forecasts and recommendations do affect credit ratings (Cheng & Subramanyam, 2008). Since analysts are important information intermediaries, who help market participants reduce information asymmetry between lenders and managers, the quantity and quality of the information disclosed by companies should lead to a lower COD.

For example, Nikolaev and Van Lent (2005), Sengupta (1998), and Yu (2005) find that there is a negative relationship between interest rate paid and analysts' perceptions of disclosure quality. Similarly, Francis, Khurana, and Pereira (2005) find that firms benefit from expanded disclosure by having a lower cost of both debt and equity capital, after controlling for cross-country institutional differences in legal and financial systems. Mazumdar and Sengupta (2005) confirm this inverse relationship even for private debt, that is, companies with consistently high ratings for voluntary disclosures pay lower interest on their private debt (bank loan) contracts. However, there are mixed results for low-quality corporate disclosure environments. For example, Lopes and de Alencar (2010) find a negative relationship between corporate disclosure in Brazil and cost of debt, with an association even greater than that found for cost of equity. Wang, Sewon, and Claiborne (2008) obtain no evidence that Chinese public firms benefit from extensive voluntary disclosure by having a lower COD. Likewise, Armitage and Marston (2008) obtain mixed evidence in

their UK survey that asked financial directors about disclosure and the cost of debt. Indeed, although 55% of the interviewees believed that greater transparency toward rating agencies and bankers increases the availability of debt or reduces its cost, 38% were unsure whether greater transparency would reduce the cost of debt.

It is possible to explain the mixed empirical evidence not only in terms of the informational environment but also by the nature of the disclosures. While Sengupta (1998, p. 461) focuses on 'the overall disclosure efforts of a firm over a number of years', he recognises that 'the content of any specific disclosure can cause lenders and underwriters to either increase or decrease their estimates of default risk'. Examples of specific disclosures include reporting on intellectual capital, corporate governance, or social issues. For example, Orens, Aerts, and Lybaert (2009) confirm the above-mentioned negative relationship for the case of intellectual capital, and find that firms with greater intellectual capital disclosure benefit from a lower level of information asymmetry, a lower cost of equity capital, and a lower cost of debt capital, and they exhibit higher firm value. Similarly, Ashbaugh-Skaife, Collins, and Lafond (2006), Bhojraj and Sengupta (2003), Byun (2007), and Mansi, Maxwell, and Miller (2004) find corporate governance practices to be negatively related to the cost of debt capital. While these studies find similar and consistent results, mixed evidence seems to characterise the relationship between CSR and the cost of debt. Therefore, we analyse the role of such non-financial information in explaining the cost of and access to debt capital.

2.2. CSR, cost of debt, and access to debt financing

While the relationship between financial disclosure or performance measures and the cost of debt has been analysed to a significant degree (Ahmed, Billings, Morton, & Stanford-Harris, 2002; Jiang, 2008; Reeb, Mansi, & Allee, 2001), there are few and controversial studies on the effects of non-financial, and especially social, performance on the cost of debt. Indeed, the effects of social performance or CSR have been analysed mainly on share price (Murray, Sinclair, Power, & Gray, 2006) and on the cost of equity capital (Girerd-Potin et al., 2014; Reverte, 2012; Wu, Lin, & Wu, 2014).² In particular, Girerd-Potin et al. (2014), by investigating which dimensions of social responsibility concern financial investors (and therefore, affect the cost of equity), leave open the question of which dimensions of social responsibility might impact the cost of debt. Dhaliwal et al. (2011) suggest this quite unexplored avenue of research, and point out that CSR could have a different impact on the cost of debt, as debt-holders have a payoff function which is different from that of equity-holders. Indeed, banks are financially motivated to the same extent as institutional investors, but play a more relevant economic role as delegated monitors (Allen & Santomero, 1997). However, the interest of banks in CSR issues is far from clear.

From a theoretical point of view, the theory of reputation formation in debt markets informs the relationship between social performance and COD (Diamond, 1989). The theory predicts that interest rates will decline over time as firms compile good credit histories. Indeed, there is evidence consistent with Diamond's

² The literature on the definition of CSR and CSP is inconclusive (De Bakker, Groenewegen, & Den Hond, 2005) and uses both terms to denote economic, legal, ethical, and charitable responsibilities (Windsor, 2001). Although we can consider the CSR construct a part of the broader framework of CSP (Carrol, 1979), this framework represents a way to make CSR applicable and put it into practice, that is, to measure social responsibility in terms of performance (Maron, 2006; Matten, Crane, & Chapple, 2003). Therefore, in this work, while we conceptualise CSP and CSR as synonyms, pragmatically, we consider CSP merely as a measure of CSR.

(1989) prediction that firms lower their interest rates by developing their reputations (Datta, Iskandar-Datta, & Patel, 1999). Similarly, a firm's sustainability influences its creditworthiness as part of its financial performance (Weber, Scholz, & Michalik, 2010), and there is evidence of a relationship between CSR and firms' credit ratings (Attig, El Ghouli, Guedhami, & Suh, 2013; Jiraporn, Jiraporn, Boeprasert, & Chang, 2014).

Looking at the reverse concept of financial risk, there is apparent confirmation for the abovementioned theoretical relationship through negative correlation between social performance and financial risk (Orlitzky & Benjamin, 2001), and through the role of CSR as a determinant of financial distress (Goss, 2009). Likewise, CSR has a strong effect on default risk reduction, and this relationship is stronger on firms in high dynamism environments (Sun & Cui, 2014).

Since voluntary disclosure on CSR issues seems to reduce the problems of asymmetric information between different market agents (Cho, Lee, & Pfeiffer, 2013; Martínez-Ferrero, Ruiz-Cano, & García-Sánchez, 2015), we theoretically rely on the idea of CSR voluntary disclosure as a means for both increasing reputation and reducing agency costs of debt, thereby responding to financial stakeholders.³

The results of studies exploring the impact of CSR on the cost of debt are recent and controversial. For example, firms with extremely low or extremely high CSR are subject to higher debt financing costs (Ye & Zhang, 2011). Lower and higher corporate bond yield spreads reward good performance and penalise corporate social transgressions, respectively (Oikonomou, Brooks, & Pavelin, 2014). Similarly, borrowers' ethical behaviour leads lending banks to loosen financing conditions when setting loan rates (Kim, Surroca, & Tribó, 2014). Finally, firms with better CSP have better credit ratings and are able to issue bonds at lower cost (Ge & Liu, 2015).

Although these arguments suggest a negative relationship between CSP and COD, other scholars find no evidence of this relationship. For example, D'Antonio, Johnsen, and Hutton (1997) find no change in the risk-adjusted yields when comparing more and less socially engaged firms. Similarly, Menz (2010) finds that the risk premium of bonds for socially responsible firms does not differ significantly from that of less responsible corporations. Likewise, Goss and Roberts (2011) find that the impact of CSR is not economically important and that the modest premiums associated with CSR suggest that banks do not regard CSR as significantly value enhancing or risk reducing. Girerd-Potin et al. (2014) find that CSR does not affect debt cost directly or indirectly and, therefore, banks would not adjust their rates in consideration of the CSR scores of their clients, thereby generating an identical debt cost for the socially responsible and non-socially responsible borrower. Finally, Hoepner et al. (2016) find no evidence suggesting that higher firm-level sustainability reduces the interest rates charged to borrowing firms by banks. Therefore, the empirical relationship between CSR and COD is still controversial. Although overall prior research

provides mixed results, we rely on agency theory and the theory of reputation formation, and hypothesise a positive relationship as follows.

Hypothesis 1a. There is a negative relationship between social performance of listed firms and their interest rate.

Hypothesis 1b. There is a positive relationship between social performance of listed firms and their debt rating.

CSR could have a positive impact by providing better access to financial resources. According to agency theory, more transparent firms rely less on debt, because it is informationally less sensitive than equity is (Myers & Majluf, 1984). However, by combining the agency theory assumptions with those of stakeholder theory, we argue that the adoption of firm strategies leading to superior CSR and the availability of credible data about firms' CSR strategies reduces informational asymmetries and agency costs and results in lower capital constraints (Cheng et al., 2014; Jones, 1995). Likewise, firms' engagement with stakeholders could enhance firms' profits through higher quality of relationships with lenders and banks, and limit the likelihood of short-term opportunistic behaviour. Thus, relying on agency and stakeholder theory, we test the following hypothesis.

Hypothesis 2. There is a positive relationship between social performance of listed firms and their leverage.

2.3. CSR, cost of debt, debt financing access and credit crisis

Credit restrictions affect firms more severely during economic crises. The 2008 credit crisis has probably affected both debt markets and banks' policies on firms financing, and CSR initiatives. The impact makes further analysis necessary, taking into account the effect of the global financial crisis on both CSP and COD.

In a UK survey, Harwood, Humby, and Harwood (2011) find that CSR is a resilient concept, driven by relational and moral motives that go beyond pure speculation and instrumentalism. In particular, respondents did not consider cutting back or stopping CSR activities in response to the extended economic recession but instead, considered increasing them. However, the idea that firms continue to invest in CSR also during difficult times does not tell us anything about the effect on debt financing. Some scholars argue that firms with a higher level of CSR have easier access to external financing, because during expansionary periods, they develop strong relationships with stakeholders, such as banks, which are able to sustain their business in crisis periods. This effect might reduce the agency cost of debt and, as a result, lenders' perceptions of risk toward firms. For example, Yen, Lin, Chen, and Huang (2015) find that founding family firms obtain favours in terms of loan spread, as a consequence of their ability to mitigate agency and information risks, and this favourable spread effect increases during periods of financial crisis. However, apart from the case of family firms, previous empirical evidence has found no significant findings. Ducassy (2013) finds a significant positive link between CSP and financial performance for the period corresponding to the beginning of the crisis (second-half of 2007), but in early 2007 and after the first 6 months of turmoil, there was no longer a significant connection between the two variables. Similarly, Hoepner et al. (2016) find no evidence suggesting either that higher firm-level sustainability reduces the COD or that the crisis has a moderating effect on the link between CSR and cost of loans at the firm level. In addition, the credit crisis seems to have impacted the availability of credit source more than its cost (Campello, Graham, & Harvey, 2010). Finally, since few prior studies seem

³ Following a recommendation to complement agency theory with other theoretical perspectives (Eisenhardt, 1989), previous research combines the agency perspective with the stakeholder perspective. Efforts to integrate both agency and stakeholder theories are found in some seminal papers, such as Hill and Jones (1992), who extend the principal-agent paradigm of financial economics to create 'stakeholder-agency theory'. In particular, Hill and Jones (1992) emphasise 'information asymmetry' between managers and other stakeholders. Similarly, Jones (1995) develops a model that integrates economic theory and ethics, while Shankman (1999) shows how a general stakeholder model of the firm can subsume agency theory and is the logical conclusion of agency theory. In this work, we follow this line of reasoning by suggesting that it is necessary to mix these theories to comprehend fully the principal-agent relationship between lenders and management.

Table 1
Sample summary statistics.

Panel A – Sample selection process										
2776	The sample selection process considers as a starting point all the firm-year observations listed in the countries that are included in the S&P Europe 350 for which Social data, Interest Rate, Rating, and AdjLeverage are available from Datastream/ASSET4									
<i>n</i> observations dropped	Reason for dropping									
957	Classified as Financials									
299	Missing firm-specific controls from Datastream									
292	Missing country-specific controls									
1228	Final sample – firm-year observations									
Panel B – Sample constituents by country and industry										
Country	ICB industry classification ^a									
	Basic mat.	Cons. Goods	Cons. services	Health care	Indus-trials	Oil and gas	Tech-nology	Telec.	Utilities	TOT
Austria	0	0	0	0	0	5	0	0	0	5
Belgium	6	2	0	0	0	0	0	0	0	8
Denmark	0	0	0	0	0	1	0	3	0	4
Finland	13	0	0	0	0	0	10	0	7	30
France	7	43	38	8	74	10	15	10	21	226
Germany	31	35	18	13	47	0	0	10	20	174
Greece	0	0	0	0	0	0	0	8	0	8
Hungary	0	0	0	0	0	3	0	0	0	3
Ireland	0	0	7	0	1	0	0	0	0	8
Italy	0	10	0	0	10	10	9	10	29	78
Netherlands	15	10	19	0	10	8	8	8	0	78
Norway	0	0	0	0	0	17	0	7	0	24
Poland	0	0	0	0	0	3	0	5	7	15
Portugal	0	0	0	0	0	0	0	8	8	16
Spain	0	0	0	0	10	11	0	8	39	68
Sweden	0	8	0	0	9	0	17	9	0	43
Switzerland	0	10	1	17	14	0	0	0	0	42
UK	26	71	167	20	35	18	0	28	33	398
TOT	98	189	250	58	210	86	59	114	164	1228

^a Based on the Industry Classification Benchmark (ICB) Level 2.

to show that the role of CSP might have altered during the severe 2008 financial crisis, reducing its impact on financial contracting in particular, we posit as follows.

Hypothesis 3a. The negative relationship between social performance of listed firms and the interest rate is weaker during financial crisis years.

Hypothesis 3b. The positive relationship between social performance of listed firms and the debt rating is weaker during financial crisis years.

Hypothesis 4. The positive relationship between social performance of listed firms and their leverage is weaker during financial crisis years.

3. Research design

3.1. Sample selection process

We conducted the analysis using a sample of listed European non-financial firms. We selected all the companies listed on the stock exchanges of the countries that are included in the S&P Europe 350 for 2005–2012. While most previous studies adopt empirical samples that end in 2007, which is right before the start of the global credit crisis, similarly to Hoepner et al. (2016), we built a sample covering the period before the beginning of the crisis as well as that of its duration until 2012. We downloaded firm-specific social performance scores, ratings, interest rates as accounting data,

and market data from Datastream/ASSET4.

The first stage of the sample selection process included all the firm-year observations (2,776) for which social scores, ratings, and interest rates were available on Datastream. We excluded banks, insurance companies, and other financial institutions. The exclusion is justified by the different roles played by debt financing in financial and regulated companies compared with non-financial companies and by a number of papers on CSR (Martínez-Ferrero et al., 2015; Reverte, 2009) and on cost of debt (Byun, Choi, Hwang, & Kim, 2013; Mansi et al., 2011), which excluded this sector in their analyses. We then added the following refining criteria to the initial sample: (a) missing firm-specific controls from Datastream and (b) missing country-specific controls. As a result, we obtained a final sample of 1228 firm-year observations.

In Panel B of Table 1, we observe that the UK, France, and Germany are the most represented countries in the sample and that ‘consumer services’ and ‘industrial’ are the industries with the highest numbers of observations.

4. Models

To test our first hypothesis, we used the following regression model:

$$\text{Cost of debt}_{i,t} = \alpha_0 + \alpha_1 \text{SocialScore}_{i,t} + \text{Firm level controls}_{i,t} + \text{Country level controls} + \varepsilon_{i,t}$$

We employed two different proxies for cost of debt: interest rate

Table 2
Descriptive statistics for cost of debt.

Panel A – Descriptive statistics by year for <i>IntRate</i> ^a											
Statistic	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003–2012
Mean	0.060	0.058	0.054	0.052	0.052	0.053	0.057	0.060	0.058	0.054	0.052
St. Dev.	0.027	0.023	0.025	0.022	0.022	0.025	0.027	0.027	0.023	0.025	0.022
Min	0.010	0.011	0.014	0.010	0.010	0.010	0.010	0.010	0.011	0.014	0.010
Median	0.056	0.055	0.052	0.051	0.051	0.051	0.054	0.056	0.055	0.052	0.051
Max	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183
N	51	65	96	124	138	141	142	151	158	162	1228
Panel B – Test for trend for <i>IntRate</i> ^a											
Cuzick test ^b						–5.910***					
FOLLOW UP	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012		
Mann–Whitney	–0.976	1.406	–0.318	0.554	0.559	1.812*	0.844	–0.281	–0.140		
T-test	–0.938	1.311*	–0.387	1.005	0.613	1.228	1.026	–0.273	–0.491		
Panel C – Descriptive statistics by year for <i>Rating</i>											
Statistic	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003–2012
Mean	17.627	17.446	17.646	17.532	17.362	17.220	16.965	16.795	16.519	16.198	17.023
St. Dev.	3.741	3.540	3.185	3.119	2.977	2.974	2.928	2.827	2.872	2.949	3.061
Min	1	1	1	1	1	1	1	1	1	1	1
Median	17	17	17	17	17	17	17	17	17	16	17
Max	24	24	24	24	24	23	23	23	23	23	24
N	51	65	96	124	138	141	142	151	158	162	1228
Panel D – Test for trend for <i>Rating</i>											
Cuzick test ^b						–6.100***					
FOLLOW UP	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012		
Mann–Whitney	0.368	–0.254	0.161	0.545	0.391	0.840	0.695	0.921	0.982		
T-test	0.267	–0.373	0.265	0.451	0.400	0.727	0.506	0.850	0.987		
Panel E – Descriptive statistics by year for <i>AdjLeverage</i> ^a											
Statistic	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003–2012
Mean	0.000	0.020	–0.001	0.018	0.001	0.009	0.002	0.016	0.008	0.003	0.008
St. Dev.	0.120	0.124	0.137	0.132	0.141	0.144	0.131	0.127	0.134	0.136	0.134
Min	–0.292	–0.292	–0.292	–0.283	–0.280	–0.276	–0.292	–0.292	–0.292	–0.292	–0.292
Median	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Max	0.413	0.419	0.419	0.419	0.419	0.419	0.396	0.419	0.419	0.419	0.419
N	51	65	96	124	138	141	142	151	158	162	1228
Panel F – Test for trend for <i>AdjLeverage</i> ^a											
Cuzick test ^b						–0.300					
FOLLOW UP	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012		
Mann–Whitney	–0.417	0.875	–0.892	1.051	–0.458	0.234	–0.797	0.432	0.340		
T-test	–0.881	0.992	–1.063	0.996	–0.427	0.396	–0.923	0.537	0.349		

All variables are defined in Appendix A.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

^a Variables are winsorised at the 1st and 99th percentiles.

^b The Cuzick test is a non-parametric test for trends across ordered groups (see Cuzick, 1985). The Mann–Whitney and T-test examine the median and mean differences between two periods, respectively.

(*IntRate*) and rating (*Rating*). The first represents a direct proxy for cost of debt and we estimated it as the ratio between interest paid and the average debt at the end of the year⁴ (Bhojraj & Sengupta, 2003). The second is the company's credit rating as provided by Fitch, ranging from an AAA rating evaluated with 24 points to a DDD rating with 1 point. This represents our indirect proxy for cost of debt.

To test our second hypothesis, we used the following regression model:

Access to debt financing $i_{i,t} = \alpha_0 + \alpha_1 \text{SocialScore}_{i,t} + \text{Firm level controls}_{i,t} + \text{Country level controls} + \varepsilon_{i,t}$

⁴ We repeated the analyses by estimating *IntRate* as the ratio between interest paid and the yearly average debt. The results are qualitatively similar.

We measured the access to debt financing using the *AdjLeverage* variable calculated as the company's leverage ratio minus the median of the ratio in the same industry-year cluster.

We took the *SocialScore* variable from Datastream/Asset4 (Cheng et al., 2014; Ioannou & Serafeim, 2012; Stellner, Klein, & Zwergel, 2015). Datastream/Asset4 builds the *SocialScore* collecting social information from primary and publicly available sources, such as annual reports, CSR reports, and NGO websites. In line with the literature, we did not use social score as directly downloaded from Datastream. We adjusted it by means of a transformation. We calculated the percentile rank (*Social_Rank*) (Baldini, Dal Maso, Liberatore, Mazzi, & Terzani, 2016; Elzahar, Hussainey, Mazzi, & Tsalavoutas, 2015; Nikolaev & Van Lent, 2005). The *Social_Rank* has the advantage of being distribution free, correcting for kurtosis and skewness (Tsalavoutas, 2011), and being less sensitive to

Table 3
Descriptive statistics for social score.

Panel A – Descriptive statistics by year											
Statistic	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003–2012
Mean	75.063	81.753	84.743	82.179	83.546	84.077	85.831	85.462	84.341	83.811	83.753
St. Dev.	21.817	21.270	17.937	19.031	18.267	18.516	17.788	18.425	19.448	19.295	18.981
Min	22.550	8.870	13.380	8.920	15.500	10.880	14.640	11.940	6.560	9.070	6.560
Median	85.890	90.130	92.995	89.470	90.600	90.780	92.880	92.450	92.290	91.565	91.110
Max	97.800	98.690	98.680	98.780	97.930	97.820	97.870	97.390	97.470	96.950	98.780
N	51	65	96	124	138	141	142	151	158	162	1228
Panel B – Test for trend											
Cuzick test ^a	1.650										
FOLLOW UP	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012		
Mann-Whitney	–2.492**	–0.892	1.045	0.240	–0.237	–1.592	0.545	0.312	1.274		
T-test	–1.662**	–0.962	1.016	–0.593	–0.241	–0.813	0.174	0.519	0.245		

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

^a The Cuzick test is a non-parametric test for trends across ordered groups (see Cuzick, 1985). The Mann–Whitney and T-test examine the median and mean differences between two periods, respectively.

Table 4
Descriptive statistics.

Variable	n	Mean	St. Dev.	Min	Median	Max
IntRate ^a	1228	0.057	0.027	0.010	0.054	0.183
Rating	1228	17.023	3.061	1	17	24
AdjLeverage ^a	1228	0.008	0.134	–0.292	0.000	0.419
SocialRank	1228	0.507	0.291	0.000	0.512	1.000
Size	1228	16.275	1.393	9.817	16.286	19.337
TobinQ ^a	1228	1.083	0.570	0.318	0.947	3.338
Liquidity ^a	1228	1.191	0.555	0.306	1.110	3.468
Leverage ^a	1228	0.297	0.145	0.021	0.274	0.673
AssetG ^a	1228	0.054	0.181	–0.407	0.031	1.032
Tangibility ^a	1228	0.320	0.211	0.005	0.290	0.872
Performance ^a	1228	0.072	0.085	–0.232	0.063	0.322
IntCoverage ^a	1228	6.170	8.304	–9.400	4.025	51.319
CashFlow ^a	1228	0.098	0.056	–0.012	0.087	0.295
Beta	1228	0.984	0.367	–0.270	0.980	2.150
CSRactivity	1228	1.252	0.865	0	2	2
GovEffectiveness	1228	1.550	0.369	0.488	1.664	2.171
GDPcapita	1228	10.618	0.259	9.345	10.623	11.528
MrktCapGDP	1228	85.475	43.270	11.652	73.401	282.507
AntiSelfDeal	1228	0.540	0.293	0.181	0.379	0.950
Enforcement	1228	12.182	5.654	2	14	19
Audit	1228	14.792	3.204	7	15	18

All variables are defined in Appendix A.

^a Variables are winsorised at the 1st and 99th percentiles.

outliers (Hail, 2002). We calculated *Social_Rank* by using the dense rankings in the following equation:

$$Social_Rank_{j,t} = \frac{Rank_{j,t} - 1}{MaxDense_t - 1}$$

where *Social_Rank_{j,t}* is the percentile rank of firm *j* during year *t*, *Rank_{j,t}* is the rank/position of firm *j* during year *t*, and *MaxDense_t* is the sample size less the number of ties for year *t*. We ranked the social score in ascending order so that the newly created variable increases with the social disclosure (Hail, 2002).

In our model, we included the control variables defined in the Appendix, the industry dummy variables based on Industry Classification Benchmark Level 2 industry classification, and we controlled for cross-sectional and time-series correlation by clustering by firm and adding year dummies.

Our objective is to measure the impact of social performance on cost of debt and access to debt financing independently of the

impact of financial performance. To do that, following previous literature, we included in our model the control variable *Performance* defined as Income before Extraordinary Items at time *t* divided for Sales at time *t* (Attig et al., 2013; Ge & Liu, 2015; Hoepner et al., 2016).

To test our third and fourth hypotheses, we divided the sample into two subsamples for the years 2005–2008 and 2009–2012⁵ and we ran models 1 and 2 for the two subsamples.

5. Results

5.1. Descriptive statistics and univariate analysis

Panel A of Table 2 shows descriptive statistics by year for the interest rate (*IntRate*). The mean value is 0.052 and the median value is 0.051. Looking at the trend, the Cuzick test shows a decrease of the interest rate during the sample window with statistical significance at the 1% level. In Panel C, we can observe that the mean value of the *Rating* is 17.023 and the median value is 17. Numbers show a progressive decrease in the mean value of rating starting in 2006 and a stable trend for the median value. The coefficient of the Cuzick test corroborates this result, with statistical significance at the 1% level. Panel E shows a mean value of the *AdjLeverage* of 0.008 and a median value of 0.000. During the entire sample period, we observe a fluctuating trend in the mean value of the *AdjLeverage*, as corroborated by the lack of statistical significance of the Cuzick test.

In Table 3, we observe that the mean value of the social score is 83.753 and the median value is 91.110. If we consider that this result is on a 100 basis, we could infer that social performance is a quite common practice. The highest mean value was registered during 2009 (85.831) and the highest median value (92.995) during 2005, whereas the lowest mean value was registered during 2003 (75.063), as was the lowest median value (85.890). During the entire sample period, we observe a fluctuating trend in both the mean and median values of social performance. The lack of statistical significance of the Cuzick test corroborates this result.

⁵ We repeated the analyses by considering 2008 as the year of crisis, and thus, we divided the entire sample into 2005–2007 as the pre-crisis period and 2009–2012 as the crisis period. The results are qualitatively similar.

Table 5
Pearson's correlation coefficients.

	<i>IntRate</i> ^a	<i>Rating</i>	<i>AdjLeverage</i> ^a	<i>SocialRank</i>	<i>Size</i>	<i>TobinQ</i> ^a	<i>Liquidity</i> ^a	<i>Leverage</i> ^a	<i>AssetG</i> ^a	<i>Tangibility</i> ^a	<i>Performance</i> ^a
<i>IntRate</i> ^a	1										
<i>Rating</i>	-0.266***	1									
<i>AdjLeverage</i> ^a	-0.242***	-0.293***	1								
<i>SocialRank</i>	-0.240***	0.311***	-0.005	1							
<i>Size</i>	-0.243***	0.674***	-0.229***	0.388***	1						
<i>TobinQ</i> ^a	0.001	0.118***	0.191***	0.056*	0.172***	1					
<i>Liquidity</i> ^a	0.156***	-0.067**	-0.171***	-0.089***	-0.092***	0.053*	1				
<i>Leverage</i> ^a	-0.258***	-0.250***	0.854***	0.064**	-0.195***	0.140***	-0.307***	1			
<i>AssetG</i> ^a	-0.227***	0.105***	0.049*	0.035	0.107***	0.045	0.060**	0.024	1		
<i>Tangibility</i> ^a	-0.111***	0.098***	0.131***	0.097***	0.012	-0.028	-0.264***	0.200***	0.009	1	
<i>Performance</i> ^a	-0.144***	0.287***	0.055*	0.144***	0.261***	0.498***	-0.005	0.099***	0.24***	0.229***	1
<i>IntCoverage</i> ^a	-0.062**	0.312***	-0.304***	0.038	0.255***	0.384***	0.203***	-0.419***	0.142***	-0.027	0.456***
<i>CashFlow</i> ^a	0.026	0.062**	0.121***	0.005	0.120***	0.656***	-0.033	0.125***	-0.005	0.141***	0.391***
<i>Beta</i>	0.010	-0.141***	0.065**	0.123***	0.127***	-0.041	0.124***	-0.036	-0.042	-0.144***	-0.150***
<i>CSRactivity</i>	-0.263***	0.132***	-0.021	0.296***	0.241***	-0.130***	0.004	0.061**	0.061**	0.042	0.085***
<i>GovEffectiveness</i>	0.070**	0.040	-0.150***	-0.143***	0.070**	0.230***	0.172***	-0.220***	0.002	-0.201***	0.064**
<i>GDPcapita</i>	0.029	-0.070**	-0.058**	-0.065**	0.074**	0.155***	0.100***	-0.122***	0.019	-0.249***	0.032
<i>MrktCapGDP</i>	0.055*	0.213***	-0.094***	-0.011	0.116***	0.439***	0.067**	-0.117***	0.020	0.006	0.238***
<i>AntiSelfDeal</i>	0.107***	-0.003	-0.023	-0.16***	-0.103***	0.237***	-0.087***	0.037	0.012	0.136***	0.097***
<i>Enforcement</i>	-0.104***	0.051*	0.001	0.090***	0.075***	0.046	-0.060**	-0.007	-0.014	-0.074***	-0.023
<i>Audit</i>	0.035	0.013	-0.027	-0.092***	-0.068**	0.134***	-0.079***	-0.007	0.038	0.016	0.065**
	<i>IntCoverage</i> ^a	<i>CashFlow</i> ^a	<i>Beta</i>	<i>CSRactivity</i>	<i>GovEffectiveness</i>	<i>GDPcapita</i>	<i>MrktCapGDP</i>	<i>AntiSelfDeal</i>	<i>Enforcement</i>	<i>Audit</i>	
<i>IntCoverage</i> ^a	1										
<i>CashFlow</i> ^a	0.362***	1									
<i>Beta</i>	-0.009	-0.048*	1								
<i>CSRactivity</i>	-0.031	-0.063**	0.098***	1							
<i>GovEffectiveness</i>	0.157***	0.114***	-0.017	-0.033	1						
<i>GDPcapita</i>	0.054*	0.071**	-0.051*	0.139***	0.622***	1					
<i>MrktCapGDP</i>	0.234***	0.222***	-0.116***	-0.131***	0.473***	0.242***	1				
<i>AntiSelfDeal</i>	0.054*	0.163***	-0.136***	-0.066**	0.151***	-0.026	0.485***	1			
<i>Enforcement</i>	-0.015	0.001	0.075***	0.100***	-0.144***	0.127***	0.278***	0.318***	1		
<i>Audit</i>	0.010	0.080***	-0.157***	-0.063**	0.096***	0.138***	0.460***	0.752***	0.524***	1	

All variables are defined in Appendix A.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

^a Variables are winsorised at the 1st and 99th percentiles.

Table 4 reports some additional descriptive statistics for all variables that are winsorised at the 1st and 99th percentiles. The median firm has a liquidity index of 1.110, exhibits a leverage ratio of 0.274, and reports 6.3% of income before extraordinary items to total sales (*Performance*).

Table 5 shows a negative correlation (-0.240) between social performance and interest rate, and a positive correlation (0.311) between social performance and debt rating. The negative correlation between social performance and leverage (*AdjLeverage* = -0.005) has no statistical significance.

5.2. Multivariate analysis

Table 6 reports results for the multivariate analysis.

Looking at our first hypothesis, we estimated the impact of social performance (*Social_Rank*) on both the interest rate (*IntRate*), Hypothesis 1a, and on the debt rating (*Rating*), Hypothesis 1b. Our results show a negative relationship (-0.009) between social performance and interest rate with a statistical significance of 5%, suggesting that the higher is the level of social performance, the lower is the interest rate. The results of column 2 show a positive relationship (0.727) between social performance and rating with statistical significance of 5%, suggesting that the higher is the level of social performance, the higher is the company's rating. The results of our regressions confirm our first hypothesis: social performance has a positive impact on reducing COD by using both an accounting measure (the interest rate) and a market measure (the rating) of COD.

The third column shows a positive relationship (0.007) between social performance and leverage, Hypothesis 2, with a statistical significance of 5%, suggesting that the higher the level of social performance, the higher the adjusted leverage of companies. This result confirms our second hypothesis and shows that higher CSP is associated with higher leverage compared to industry peers.

Table 7 shows the results of our two models for the subsamples 'crisis' and 'no crisis'. It is interesting to note that during the crisis, CSP still reduced the COD (-0.004 for *IntRate* and 0.259 for *Rating*) but these results are weaker compared with those of the 'no crisis' sample and are not statistically significant. The results for the second model are not statistically significant for either the 'crisis' or 'no crisis' subsamples.

5.3. Sensitivity analysis

Numerous authors have discussed the inherent endogeneity issue in studies like ours. One standard textbook solution is to use instrumental variable methods, but implementing such techniques in typical management and accounting research is far from straightforward (Larcker & Rusticus, 2010). Nikolaev and Van Lent (2005) suggest that performing fixed-effects estimations can reduce the endogeneity bias and produce consistent results. However, fixed effects control only for time-series dependence, regardless of any firm autocorrelation. Thus, in the spirit of testing the robustness of our results to a different model's specification, we control for cross-sectional correlations employing two clusters by firm and year, since the literature provides evidence that this

Table 6
Regression results.

Variables	IntRate	Rating	AdjLeverage
Constant	0.021 (0.32)	19.015 (1.63)	−0.187*** (−3.50)
SocialRank	−0.009** (−2.55)	0.727** (2.06)	0.007** (2.13)
Size	−0.005*** (−3.16)	1.254*** (6.71)	−0.002** (−2.06)
TobinQ ^a	0.004 (1.17)	−0.292 (−0.89)	0.011** (2.03)
Liquidity ^a	0.005* (1.79)	−0.350 (−1.24)	0.001 (0.70)
Leverage ^a	−0.080*** (−6.19)	−2.341** (−2.58)	0.965*** (107.17)
AssetG ^a	−0.026*** (−6.33)	−0.172 (−0.50)	−0.004 (−0.86)
Tangibility ^a	−0.010 (−1.56)	−0.556 (−0.60)	−0.001 (−0.11)
Performance ^a	0.011 (0.61)	0.202 (0.12)	−0.027 (−1.04)
IntCoverage ^a	−0.001** (−2.55)	0.049** (2.47)	0.001 (1.22)
CashFlow ^a	0.057** (2.34)	0.981 (0.33)	0.002 (0.07)
Beta	0.007* (1.87)	−1.639*** (−2.78)	0.003 (1.57)
CSRactivity	−0.002 (−1.30)	0.174 (1.14)	−0.001 (−0.71)
GovEffectiveness	−0.011* (−1.81)	0.244 (0.35)	0.001 (0.64)
GDPcapita	0.014** (2.26)	−1.904 (−1.50)	−0.004 (−0.83)
MrktCapGDP	0.001 (0.67)	0.012** (2.04)	−0.001 (−0.57)
AntiSelfDeal	0.019** (2.31)	−0.308 (−0.43)	−0.005 (−0.92)
Enforcement	−0.001*** (−2.67)	−0.001 (−0.01)	−0.001 (−0.17)
Audit	−0.001 (−0.93)	0.002 (0.03)	0.001** (2.26)
Industry Fixed Effects	Included	Included	Included
Year Fixed Effects	Included	Included	Included
N	1228	1228	1228
F	7.381***	15.250***	1720.794***
R ² -adjusted	0.333	0.619	0.955
Mean VIF	2.93	2.93	2.93

All variables are defined in Appendix A.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Bold values indicate the main independent variable of interest in this study.

^a Variables are winsorised at the 1st and 99th percentiles.

procedure leads to better results (Gow, Ormazabal, & Taylor, 2010). The untabulated results are consistent with those from ordinary least squares.

In addition, we ran a second group of regressions as a robustness test, in which we used an alternative transformation (*Social_Norm*) of social performance (Cooke, 1998). We calculated *Social_Norm* by using the following equation:

$$Social_Norm_{j,t} = \varphi^{-1} \left(\frac{Rank_{j,t}}{MaxDense_t + 1} \right)$$

where *Social_Norm_{j,t}* is the normal score of firm *j* during year *t*, and $\varphi^{-1}(\cdot)$ is the inverse of the cumulative density normal function. Normal scores usually have more exact statistical properties than rankings (Cooke, 1998). The untabulated results are consistent with the main results regarding the effect of social performance on interest rate, rating, and leverage.

Finally, we replicate our analysis distinguishing the entire

sample by the following two subsamples: 'big size' and 'small size' companies. Untabulated values show a stronger significance of our results for the subsample of 'small firms'.

6. Discussion

The present study analyses the effects of CSP on both COD and leverage. We use two different measures of COD: an accounting measure (the interest rate) and a market measure (the rating). This study differs from that of Hoepner et al. (2016), who investigate the relationship between CSR and cost of debt by considering only one accounting measure, the interest rate, and bank loan interest. However, when investigating the same relationship, the present study considers the overall interest rate of firms and also uses rating, an additional measure of the cost of debt. Another difference is this study analyses a specific and homogeneous debt market (Europe) while Hoepner et al. (2016) conduct a cross-country analysis without any specific debt market connection.

The results of the present study show that building a strong corporate image and reputation reduces COD. The higher is the level of social performance, the lower is the interest rate (Hypothesis 1a), and the higher is the debt rating (Hypothesis 1b). In line with the theory of reputation (Datta et al., 1999; Diamond, 1989), these results might be because companies with higher CSP provide confirmation of their socially responsible approach, which not only becomes a synonym for stronger corporate image but also creates expectation of continuing financial performance and lower risk exposure. In times of economic stability, lenders tend to perceive CSP as a strategic project and firms adopting this strategic approach can obtain loans at lower interest rates.

The results of our second regression model (Hypothesis 2) show that the higher is the level of social performance, the higher is the leverage. The reason is that firms showing high CSP are likely to disclose information about their future strategies. The creation of a more transparent and cooperative corporate culture reduces suspicion of opportunistic behaviour (Bénabou & Tirole, 2010; Jones, 1995), builds trust across stakeholders, and fosters stakeholder engagement, thereby reducing information asymmetries, agency costs, and capital constraints (Bénabou & Tirole, 2010; Dhaliwal et al., 2011).

In this study, we assess the impact of CSP on COD (Hypotheses 3a and 3b) and leverage (Hypothesis 4) in times of both economic stability and crisis. Although there are no significant differences in the level of CSP throughout the period considered, our models show that CSP significantly affects COD and leverage only in times of stability. In times of crisis, the results are not statistically significant, which can be explained by the fact that, in times of crisis, firms are expected to concentrate all their efforts on maintaining profitability, and manifestation of CSR is generally perceived by lenders as a strategy firms adopt to conceal negative performance (Ducassy, 2013). Our results show a positive correlation between firm size and CSP, and that the impact of CSP on COD and leverage is more significant for small companies. We can explain these results by the fact that lenders perceive small firms, which are generally less inclined to invest in CSP due to budget constraints, as extremely innovative, forward looking, and more willing to finance small firms when they decide to become involved in CSP.

7. Concluding remarks

Our study has implications for business managers, who should be more aware of the impact of social performance on both the cost of debt and access to debt financing. Managers of high-risk companies can use CSP as a strategic project and complementary tool to appear more reliable and pay less interest on debt. In times of crisis,

Table 7
Regression results across financial crisis.

Variables	IntRate		Rating		AdjLeverage	
	Crisis = 0	Crisis = 1	Crisis = 0	Crisis = 1	Crisis = 0	Crisis = 1
Constant	0.018 (0.18)	-0.015 (-0.22)	43.201** (2.50)	13.538 (1.05)	-0.184*** (-3.12)	-0.236*** (-6.90)
SocialRank	-0.011** (-2.48)	-0.004 (-0.91)	0.827** (2.30)	0.259 (0.57)	0.005 (1.07)	-0.001 (-0.38)
Size	-0.006*** (-2.95)	0.004*** (-2.73)	1.355*** (6.15)	1.193*** (8.59)	-0.001 (-0.91)	-0.001 (-0.90)
TobinQ ^a	0.007 (1.33)	-0.001 (-0.03)	-0.502 (-1.44)	0.042 (0.10)	0.008 (1.44)	0.001 (0.53)
Liquidity ^a	0.003 (0.85)	0.007* (1.91)	-0.240 (-0.80)	-0.292 (-0.84)	0.001 (0.09)	0.002 (0.95)
Leverage ^a	-0.092*** (-5.13)	-0.064*** (-4.76)	-3.396*** (-3.24)	-1.355*** (-1.19)	0.960*** (86.16)	0.987*** (140.06)
AssetG ^a	-0.026*** (-5.23)	-0.032*** (-3.49)	0.318 (0.82)	-1.180** (-2.09)	0.001 (0.06)	-0.010* (-1.83)
Tangibility ^a	-0.019** (-2.21)	-0.001 (-0.05)	-0.018 (-0.02)	-0.940 (-0.91)	-0.006 (-0.71)	-0.002 (-0.86)
Performance ^a	0.029 (1.27)	-0.005 (-0.21)	-0.080 (-0.04)	0.288 (0.14)	-0.007 (-0.27)	0.010 (0.73)
IntCoverage ^a	-0.001** (-2.14)	-0.001 (-1.25)	0.065*** (2.89)	0.039* (1.66)	-0.001 (-0.23)	0.001* (1.82)
CashFlow ^a	0.055 (1.59)	0.049 (1.57)	2.972 (0.99)	-1.773 (-0.48)	0.033 (0.76)	0.006 (0.24)
Beta	0.005 (1.06)	0.009** (2.48)	-1.481** (-2.41)	-1.810*** (-3.38)	0.002 (0.72)	0.003* (1.80)
CSRactivity	-0.003* (-1.83)	-0.001 (-0.18)	0.110 (0.75)	0.291 (1.03)	-0.001 (-0.69)	0.001 (0.52)
GovEffectiveness	-0.009 (-1.21)	-0.014** (-2.24)	0.416 (0.57)	0.125 (0.16)	-0.001 (-0.45)	0.003 (0.91)
GDPcapita	0.018** (1.98)	0.015** (2.30)	-4.496** (-2.46)	-1.267 (-0.97)	-0.003 (-0.66)	-0.003 (-0.89)
MrktCapGDP	0.001 (0.15)	0.001 (1.10)	0.018** (2.56)	0.011* (1.71)	-0.001 (-0.88)	-0.001 (-0.13)
AntiSelfDeal	0.016 (1.62)	0.020** (2.35)	-0.109 (-0.14)	-0.623 (-0.77)	-0.002 (-0.34)	-0.006 (-1.40)
Enforcement	-0.001** (-2.11)	-0.001** (-2.57)	-0.018 (-0.60)	0.013 (0.47)	-0.001 (-0.93)	-0.001 (-0.23)
Audit	-0.001 (-0.31)	-0.001* (-1.80)	0.044 (0.67)	-0.031 (-0.51)	0.001 (1.47)	0.001 (1.10)
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
N	615	613	615	613	615	613
F	5.729***	6.444***	14.229***	14.815***	1085.316***	5547.165***
R ² -adjusted	0.357	0.309	0.690	0.576	0.950	0.987
Mean VIF	2.88	2.44	2.88	2.44	2.88	2.44

All variables are defined in Appendix A.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Bold values indicate the main independent variable of interest in this study.

^a Variables are winsorised at the 1st and 99th percentiles.

CSP no longer plays the beneficial roles it generally plays in times of stability, and lenders tend to disregard CSP by focusing exclusively on financial performance. Our findings suggest that firms should devote more resources to CSP in times of economic stability rather than during a crisis. These results highlight the importance of considering the moderating effects of the external environment in social studies (Donaldson, 2002; Lawrence & Lorsch, 1967; Muller, 2006). In addition, the results of this study provide managers of small companies with deeper insight into the advantages of CSP for small firms, which are traditionally less creditworthy and, consequently, more constrained by capital than big companies are (Kestens, Van Cauwenberge, & Vander Bauwhede, 2012). By investing in strategic CSP, managers of small firms could increase both the reputation and financial returns of their companies. Furthermore, the results of this study have implications for investors, who will be discouraged to invest in companies with low levels of social performance.

In conclusion, this study has some limitations. First, our analysis is focused only on the impact of CSP on COD and leverage as an add-

on of financial performance, but it does not consider the extent to which other kinds of performance, such as environmental sustainability and governance, can affect interest rate, debt ratings, and access to debt financing. Second, our study focuses on European listed non-financial firms. It could be interesting to investigate other geographical areas with different levels of market efficiency and diverse cultural and institutional characteristics, as these could affect the impact of CSP both on COD and leverage. Third, future research should investigate whether different kinds of lenders might affect the impact of CSP given that different lenders might have differences in their access to information. Finally, it is worth researching whether the economic returns derived from CSP in terms of reduced cost of debt and increased leverage outweigh the cost of the investment required to implement CSP.

Appendix. Variables definition

Variable	Description	Source/Measurement
IntRate	$\text{Interest}_t / (\text{Short-term Debt}_t + \text{Long-term Debt}_t)$	Interests: Datastream-WC01251 Short-term Debt: Datastream-WC03051 Long-term Debt: Datastream-WC03251
Rating	The company's credit rating as provided by Fitch (AAA (24 points); AA+ (23 points); AA (22 points); AA- (21 points); A+ (20 points); A (19 points); A- (18 points); BBB+ (17 points); BBB (16 points); BBB- (15 points); BB+ (14 points); BB (13 points); BB- (12 points); B+ (11 points); B (10 points); B- (9 points); CCC+ (8 points); CCC (7 points); CCC- (6 points); CC+ (5 points); CC (4 points); CC- (3 points); C (2 points); D (1 point); DD (1 point); DDD (1 point)).	Rating: Datastream-ECSL005V
AdjLeverage	Company's leverage ratio ($\text{Total Debt}_t / \text{Total Asset}_t$) minus the median of the ratio in the same industry-year cluster (e.g. Faccio, Lang, & Young, 2001; Mills & Newberry, 2005)	Total Debt: Datastream-WC03255 Total Asset: Datastream-WC02999
SocialRank	Percentile rankings transformation of Social Score from Asset 4. Social Score is a company's capacity to generate trust and loyalty with its workforce, customers, and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining the company's ability to generate long-term shareholder value.	Social Score: Datastream-SOCSCORE
Size	Natural logarithm of a firm's Market Value $_{t-1}$	Market Value: Datastream-WC08001
TobinQ	$(\text{Market Value}_t + \text{Short-term Debt}_t + \text{Long-term Debt}_t) / \text{Total Asset}_t$	Market Value: Datastream-WC08001 Short-term Debt: Datastream-WC03051 Long-term Debt: Datastream-WC03251 Total Asset: Datastream-WC02999
Liquidity	$\text{Current Asset}_t / \text{Current Liabilities}_t$	Current Asset: Datastream-WC02201 Current Liabilities: Datastream-WC03101
Leverage	$\text{Total Debt}_t / \text{Total Asset}_t$	Total Debt: Datastream-WC03255 Total Asset: Datastream-WC02999
AssetG	$(\text{Total Asset}_t - \text{Total Asset}_{t-1}) / \text{Total Asset}_{t-1}$	Total Asset: Datastream-WC02999
Tangibility	$\text{Property Plant and Equipment}_t / \text{Total Asset}_t$	PPE: Datastream-WC02501 Total Asset: Datastream-WC02999
Performance	$\text{Income before Extraordinary Items}_t / \text{Sales}_t$	Income Bef Extr: Datastream-WC01551 Sales: Datastream-WC01001
IntCoverage	$(\text{Income before Extraordinary Items}_t + \text{Interests}_t) / \text{Interests}_t$	Income Bef Extr: Datastream-WC01551 Interests: Datastream-WC01251
CashFlow	$\text{Operating Cash Flow}_t / \text{Total Asset}_t$	Operating Cash Flow: Datastream-WC04860 Total Asset: Datastream-WC02999
Beta	Market Beta	Beta: Datastream-WC09802
CSRactivity	Equals 2 if a company issues an audited CSR report; equals 1 if a company issues a non-audited CSR report; equals 0 if a company does not issue a CSR report	CSRreporting: Datastream- CGVSDP026 CSRAudit: Datastream- CGVSDP030
GovEffectiveness	Government effectiveness captures perceptions of the quality of public service, the quality of the civil service, and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	Worldwide Governance Indicators
GDPcapita	GDP per Capita (yearly base)	World Bank
MrktCapGDP	Market capitalization of listed companies % of GDP (yearly base)	World Bank
AntiSelfDeal	Average of ex-ante and ex-post private control of self-dealing	Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008)
Enforcement	A measure of the degree of accounting enforcement in year 2002	Brown, Preiato, and Tarca (2014)
Audit	A measure of the quality of the public company auditors' working environment in year 2002	Brown et al. (2014)

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