

Corporate Social Responsibility and the Cost of Debt

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In this paper, we analyze the relationship between corporate social responsibility (CSR) and the cost of debt financing. Using a large sample of U.S. firms across all industries from 2006 to 2013, we find that firms with strong CSR have a lower cost of debt. This is especially evident in the manufacturing and financial industries. Further, we analyze the impact of managerial ownership on the CSR/cost of debt relationship. Practically speaking, to reduce the cost of debt financing our results suggest that it would be beneficial for firms to strengthen involvement and engagement in CSR activities.

INTRODUCTION

Awareness and interest in corporate social responsibility has been on the rise in recent years. A report conducted by the CECP and The Conference Board finds that over half of companies surveyed increased their level of corporate giving from 2012 to 2014.¹ While the relationship between corporate social responsibility and firm performance is somewhat ambiguous in the academic literature, it is apparent that investors are interested in companies that engage in CSR. In fact, a survey from LGT Capital Partners, Ltd. find that there has been an increase in interest among institutional investors to integrate CSR into decisions about investments. Elliott, et. al (2014) find that investor estimates of fundamental value is positively influenced by a company's corporate social responsibility.

Engagement in corporate social responsibility has been shown to be a strategic choice to improve financial performance. According to Wu and Shen (2013), rather than a purely altruistic behavior or simply an effort to enhance the image of the company (greenwashing), companies engage in CSR as a central part of their management strategy. In this study we investigate this notion further by looking at the relationship between CSR and the cost of debt used by the firm. Specifically, we look to see whether having strong CSR reduces the cost of debt. This would make sense if enhancing CSR is done from a strategic management perspective to improve financial performance. This is in line with stakeholder theory, which suggests that tuning in to stakeholder needs provides firms with a competitive advantage over counterparts that have weak CSR initiatives. The competitive advantage can be in the form of financial resources, which come at a cost to the firm. Allowing the firm to secure debt financing in the capital markets at reduced prices would certainly benefit the firm in funding its assets and future growth. A lower cost of debt will in turn reduce the cost of capital for the firm, allowing the firm to increase firm value. So by improving CSR performance and strength a firm should be able to increase firm value if investors do perceive firms with strong CSR engagement to be better than firms with weak CSR.

Bondholders, who do not necessarily want the firm to take on risk at the expense of their promised cash flows, would be especially interested and perhaps influenced by the extent and strength of CSR performance at a firm as this may indicate a company with stronger management skills and lower levels of uncertainty and risk. In fact, we do find that better CSR performance reduces the cost of debt for firms – most notably for firms in the financial and manufacturing industries. We find that this relationship exists throughout the financial crisis but is somewhat weakened when we interact managerial ownership with CSR.

This paper differs from the literature and contributes to studies of CSR and the cost of debt in several ways. First, we use multiple measures of CSR based on research utilizing the STATS data set. Our measures include four assessments of overall CSR performance that take into account the change and variability of the data over time. We also include two measures of the cost of debt to validate our findings. Second, we use a large sample of U.S. firms across all industries during the time period 2006 to 2013. This includes observations around the time of the financial crisis, which allows us to offer some insight into how the crisis may have influenced the relationship between CSR and the cost of debt. Third, we include managerial ownership as a moderating factor that has previously been shown to impact the cost of debt. To the best of our knowledge ours is the first paper to include it in an analysis of CSR and bond yields. Fourth, we analyze the data by industry to see whether CSR performance is more important in determining the cost of debt in certain industries relative to others.

LITERATURE REVIEW

One outcome of the recent financial crisis has been the increased interest in areas related to corporate social responsibility (CSR). In particular, trends in CSR and the relationship between CSR and crisis origination and consequences have garnered some attention in the financial academic literature. For instance, Jacob (2012) finds that as a result of the 2008 crisis, many firms experienced financial pressures which subsequently impacted their CSR initiatives. To this point, our data shows that various measures of CSR were lower (weaker) during the crisis time period relative to years following the crisis.² The type of CSR initiatives impacted differed by the extent of their reputational effect on the firm, according to Jacob (2012). Gangi and Trotta (2015) find that socially responsible funds fared better than non-socially engaged mutual funds following the financial crisis; they posit that ethics pays off during and after a severe market downturn.

Several studies focus on the relationship between CSR and the firm's financial performance using accounting-based or market-based measures; these studies provide mixed results. For instance, Jiao (2010) finds that corporate social performance is associated with a positive firm valuation effect. Orlitzky et al., (2003) also find a positive relationship between corporate social responsibility and corporate financial performance in a meta-study of CSR papers. However, Brammer et al. (2006) find that firms with higher social performance scores realize lower returns, while Nelling and Webb (2009) find no evidence that CSR activities affect financial performance.

Some recent studies focus on the link between CSR and the cost of financing, looking at both the cost of equity and cost of debt. The literature shows that CSR activities may have an impact on the cost of capital. Hypothesizing that firms with higher levels of CSR have less risk and a larger investment base, El Ghoul, et al. (2011) find that the cost of equity is negatively related to CSR strength. In addition to the possible risk-reducing effect of CSR, several studies use stakeholder theory to understand the relationship between CSR and the cost of debt. Stakeholder theory was introduced by Freeman (1984) and was extended by Jones (1995). Rather than just focusing on the interest of shareholders, stakeholder theory suggests that firms should consider the interest of a broader group of stakeholders; for instance: customers, suppliers, employees, creditors. Jones (1995) notes that stakeholder theory focuses on the relationship between a firm and its stakeholders and theorizes that trusting and cooperative relationships will help firms to have competitive advantage over those that do not focus on stakeholders. Jones (1995) explains that CSR activities are essential for firms in obtaining necessary resources and stakeholder

support. Financial resources from capital markets come at a cost, and stakeholder theory would suggest that stronger CSR should be associated with a lower cost of capital.

Much of the research seems to support this theory. Looking at environmental stakeholders, Bauer and Hann (2010) argue that environment externalities impose particular risks on corporations such as reputational, financial, or litigation risks. They propose that firms that engage in environmental misconduct can incur costly penalties and evoke strong negative reactions from both financial and non-financial stakeholders, each of which affects their default risk. This implies that the firm's cost of debt may be affected by CSR externalities as a direct application of stakeholder theory. By using environmental information on 582 U.S. public corporations between 1995 and 2006, they document that environmental concerns are associated with a higher cost of debt financing and lower credit ratings, and that proactive environmental practices are associated with a lower cost of debt. Schneider (2010) presents evidence that a firm's environmental performance will be reflected in its bond pricing. By studying the pulp and paper and chemical industries, he argues that poor environmental performance presents a significant downside risk in future clean-up and compliance costs. These costs can be large enough to threaten the ability of polluting firms to meet their fixed payments to creditors. Thus, poor environmental practices (weak CSR) result in higher cost of debt. Similarly, Chava (2011) finds that corporations with several environmental concerns have to pay significantly higher interest rates on their loans. Chava (2011) examines 5,879 loan facilities made to 1,341 US-based firms to arrive at this result.

In more general CSR terms, Goss and Roberts (2011) find that firms with social responsibility concerns pay between 7 and 18 basis points more on their bank loans than firms that are deemed more responsible. Oikonomou et al. (2014) examine the effects of CSR strengths and concerns on the cost of U.S. corporate bonds and credit ratings. They look into the differential impact of various dimensions of corporate social performance on the pricing of corporate debt as well as the assessment of the credit quality of specific bond issues. Their findings suggest that community involvement, higher levels of marketed product safety and quality characteristics, and avoidance of controversial business areas (such as tobacco and firearms) can reduce the risk associated with corporate bonds and thus decrease the cost of debt. Also their results show that higher levels of corporate social performance can lead to improved credit quality and lower perceived credit risk. Ge and Liu (*forthcoming*) examine how CSR performance is associated with cost of new bond issues. They find that better CSR performance is associated with stronger credit ratings. They also examine CSR strengths and concerns separately and find that CSR strengths are associated with lower yield spreads while having many CSR concerns is directly related to higher spreads.

While managerial ownership has not played a role in past studies on the relation between CSR and cost of debt financing, it potentially could alter or enhance the relationship. Higher levels of managerial ownership is associated with higher risk-taking on the part of managers; much to the disapproval of creditors. In fact, Ortiz-Molina (2006) finds that there is a positive relationship between managerial ownership and borrowing costs. This, the author suggests, is evidence that new debt issues are priced using information about a firm's future risk choices, which can be contained in the managerial incentive structure. Firms with better CSR should see some risk-reducing effect on the cost of debt according to stakeholder theory. However, managerial ownership may counter the risk reduction since ownership structure increases risk from a creditor's perspective.

In this study we seek to extend the investigation of CSR and cost of debt financing, particularly in light of the recent financial crisis and the impact that this may have had on the perceived credit risk of a firm. Firms with better CSR should have lower cost of debt owing to stakeholder theory's assertion that firms with greater focus on stakeholders should be able to maintain a competitive advantage over those firms that are not focused on stakeholder relationships. Firms with greater levels of CSR should be able to obtain the best resources (such as suppliers, employees, and community support) and thus achieve a lower perception of risk from the eyes of creditors. The financial crisis brought to light much of the destructive culture and ethics surrounding some firms in corporate America and hence, more attention is given now to firms deemed to be socially responsible.

Following the previous studies and from the perspective of stakeholder theory, our hypotheses are as follows:

H1: Strong CSR is negatively associated with the cost of debt.

To test this hypothesis, we use four broad measures of CSR performance and two measures of the cost of debt.

Next, we hypothesize that ownership may influence the relationship between CSR and the cost of debt. Since the risk-reducing impact of CSR may be counterbalanced by the risk-increasing impact of managerial ownership, we expect that the effect of CSR on the cost of debt depends on the level of managerial ownership. In particular:

H2: Higher managerial ownership reduces the impact of CSR on the cost of debt.

Finally, we take a look at how different industries behave in the time surrounding the financial crisis. Although we do control for industry in our statistical analyses, we understand that some industries might benefit more from good CSR performance than others, especially with the increased scrutiny into this area that the crisis supplied. The financial sector, in particular, should see heightened interest surrounding its CSR practices given the major role that key players from this industry had in creating the recession. Further, while the manufacturing sector could not be pinpointed as a cause of the crisis, this industry was especially hard hit as a result of the crisis. This sector, which involves companies that do mechanical or chemical transformations of raw materials into usable resources (mostly using plants, factors, mills, etc.) has seen increased scrutiny surrounding issues related to supply chain management and a general squeeze in operating profit margins relative to other industries. Therefore, we expect that the cost of debt is influenced to a greater extent in these industries relative to others in terms of corporate social responsibility. We look at industry-specific relationships for both Hypotheses 1 and 2.

SAMPLE AND METHODOLOGY

Sample

In order to measure corporate social responsibility, we use the STATS database, which is managed by MSCI, a research-based index and analytics firm. The STATS database, formerly known as KLD, is a prominent tool in CSR research. The STATS data includes CSR data that for most U.S. publicly-traded companies from 1991 onward. The data consists of annual scores of environmental, social and governance (known as ESG) performance indicators. The indicators identify positive and negative performance on seven areas including community relations, diversity, employee issues, environmental matters, product safety, corporate governance, and human rights. Here, we use all data available from 2006 to 2013 to include time before and after the financial crisis.

The firm rates each firm separately on these different dimensions of CSR. The rating is binary in that an indicator is given a score of “0” if a particular indicator is not present in the firm or a score of “1” if it is relevant. Strengths and concerns are rated separately. For instance, Nordstrom, Inc. was rated a “1” for the strength indicator variable relating to “innovative giving” in 2012. Therefore, Nordstrom exhibited evidence of this particular behavior according to the research done by the MSCI team. As another example, GameStop Corporation was given a rating of “0” for the waste management indicator variable. This means that the ratings team did not see evidence that GameStop was using best practices regarding recycling and disposal of packaging material and proactively reducing the environmental impact of their packaging. Not all indicators are rated for all firms and are therefore in these instances given a score of “NR.” Of course, attributes of CSR change over time. What might have been an important environmental issue in 1991 may be different from what is important from an environmental perspective in 2012, for example. Therefore, the number and specific nature of each strength/concern in each area may change

over time. When compiling CSR performance over time, we take this important nuance of the data into account.

We use ExecuComp for compensation data. In particular, we use the number of the firm's shares held by the CEO as a percentage of total shares outstanding to describe the *Ownership* of the firm. The higher this percentage, the greater the managerial ownership structure of the firm. This is consistent with the measurement used by Ortiz-Molina (2006).

We collect bond-specific information from the Mergent Fixed Income Securities Database and the Bloomberg database. Following Ge and Liu, *forthcoming*, Oikonomou et al. (2014) and Bessembinder et al. (2009) we exclude variable coupon, zero coupon and perpetual bonds, since these bonds tend to be unique and behave more like equities. For firms with multiple bond issues during a fiscal year, we keep only the bond issue with largest offering amount to have only one issue per firm-year. It could be argued that firms with many issues in a year tend to receive too much weight while firms with only a few issues per year receive too little weight in the estimation. To address this concern, we select the bond with largest amount issued for firms with multiple issues in a given year. Thus, we have only one issue per firm-year in our sample, which is consistent with Ge and Liu, *forthcoming*, and Ortiz-Molina (2006).

We obtain bond issuer financial information from the Compustat database. After merging the data collected from the above four databases, we obtain 2,252 bond issues observations during the period 2006-2013 to test our hypotheses.

Methodology

Following prior research such as Oikonomou et al. (2014) and Ge and Liu, *forthcoming*, we use the following empirical models to test the relationship between CSR and the yield spreads of corporate bond issues.

$$YieldSpread_{ijt} = \beta_0 + \beta_1 CSR_{it-1} + \beta_2 FirmSize_{it-1} + \beta_3 ROA_{it-1} + \beta_4 Leverage_{it-1} + \beta_5 \ln Maturity_{ijt} + \beta_6 IssueSize_{ijt} + \beta_7 Duration_{ijt} + \beta_8 Yeardummy + \beta_9 IndustryDummy + \varepsilon_{ijt} \quad (1)$$

$$YieldSpread_{ijt} = \beta_0 + \beta_1 CSR_{it-1} + \beta_2 Ownership_{it-1} + \beta_3 CSR_{it-1} * Ownership_{it-1} + \beta_4 FirmSize_{it-1} + \beta_5 ROA_{it-1} + \beta_6 Leverage_{it-1} + \beta_7 \ln Maturity_{ijt} + \beta_8 IssueSize_{ijt} + \beta_9 Duration_{ijt} + \beta_{10} Yeardummy + \beta_{11} IndustryDummy + \varepsilon_{ijt} \quad (2)$$

The subscript *ijt* indicates bond *j* for firm *i* in year *t*. Based on (Oikonomou et al. (2014), Ge and Liu, *forthcoming*, and Cai et al. (2011), CSR variables and firm level variables are lagged in the models to reduce potential endogeneity problems. In line with the literature we also use industry and year indicators to control for any potential differences across the industries and over time. To mitigate potential heteroskedasticity, the standard errors of the estimated coefficients are adjusted for firm-level clustering and heteroskedasticity (White (1980)).

Variable Descriptions

Dependent Variables

As per Ge and Liu, *forthcoming*, Jiang (2008), and Ortiz-Molina (2006), to measure the cost of debt we use yield spread (*YieldSpread*). This is the difference (in percentage) between the corporate bond yield at issuance and a Treasury bond yield with comparable maturity.³ Yield spread is the most common measure used in the literature to capture the risk premium that bond issuers pay to bond investors to raise funds. As an alternative measure of the cost of debt, we also use yield to maturity as in Shaw (2012) and Khurana and Raman (2003).

CSR and Ownership Variables

We employ four measures of CSR using the STATS database. First, we calculate the *CSR score*. As in El Ghoul et al. (2011), we calculate the seven area scores by taking number of strengths in each area minus the number of concerns in each area (i.e., we add up the number of “1” scores in each area where strengths and concerns are listed separately). Recalling from earlier, the seven areas are defined as community relations, diversity, employee issues, environmental matters, product safety, corporate governance, and human rights. So a company with a score of 4 in community relations strengths and 3 in community relations concerns would have a COM_score of 1. Then, CSR score is calculated by taking the sum of all of the qualitative scores from each area (excluding corporate governance).

$$CSR\ score_{it} = (COM_score_{it} + ENV_score_{it} + DIV_score_{it} + EMP_score_{it} + PRO_score_{it} + HUM_score_{it}) \quad (3)$$

Second, we use the *CSR composite index*, which is based on the methodology of Cai, et al. (2011). This index is calculated as the sum of strengths in each of the seven areas minus sum of concerns in each category plus total maximum possible concerns for that year; this number is then divided by maximum number of strengths plus maximum number of concerns per area per year. The *CSR composite index* is equal to the average of five area indices. The five areas and equal weighting are based on work by Hillman and Keim (2001).

$$CSR\ composite\ index_{it} = (COM_index_{it} + ENV_index_{it} + DIV_index_{it} + EMP_index_{it} + PRO_index_{it}) / 5 \quad (4)$$

Third, based on Erhemjamts et al. (2013), the *All strength score* is the sum of all STATS scores on attributes that are identified as strengths across all areas.

$$All\ strength\ score_{it} = COM_str_{it} + CGOV_str_{it} + DIV_str_{it} + EMP_str_{it} + ENV_str_{it} + HUM_str_{it} + PRO_str_{it} \quad (5)$$

Fourth, also based on Erhemjamts et. al (2013), the *Relative CSR score* is equal to the CSR score minus the minimum CSR score in each area in each year, divided by the maximum CSR score minus the minimum CSR score in each area in each year.

$$Relative\ CSR\ score_{it} = (CSR_{it} - \text{Min}(CSR_{jt})) / (\text{Max}(CSR_{jt}) - \text{Min}(CSR_{jt})) \quad (6)$$

Here, we account for the fact that intra-industry variation is an important aspect of CSR, so CSR relative to industry peers is relevant and offers an additional perspective to gauge a firm's level of CSR. Intra-industry norms are measured by 2-digit SIC.

Ownership is calculated as the number of the firm's shares held by CEO as a percentage of total shares outstanding. This is consistent with Ortiz-Molina (2006), who measures management's fractional ownership as an incentive variable.

Control Variables

Bond- level Variables

Following Ge and Liu, *forthcoming*, Oikonomou et al. (2014), Ortiz-Molina (2006), Shi (2003), Ertugrul and Hedge (2008), and Khurana and Raman (2003), we control for several bond characteristics that are related to debt premiums. We include the size of the bond issue (*IssueSize*), the natural logarithm of the number of years to bond maturity (*lnMaturity*), and bond *duration*⁴. It is understood that there is more risk associated with bonds with longer terms to maturity relative to shorter-maturity bonds because of the greater degree of unpredictability and the difficulty of forecasting the firms' solvency in the distant future. So we expect that *YieldSpread* and *Yield to Maturity* are positively related to bond maturity. Previous studies show mixed results about sign of the *IssueSize*. Wang and Zhang (2009) find that issue

size is positively related to bond yield spread. However, Shi (2003) describes how large bond issues may have greater debt marketability and this marketability can be associated with lower risk premiums. Alternatively, they posit that larger bond issue size can be a burden and therefore associated with higher risk premiums. Thus, we do not make predictions for the sign of the *IssueSize*. *Duration* is the bond duration (measured in years) to control for differences in maturity and coupon rates. We predict that duration is negatively related with yield spread and yield to maturity.

Firm-Level Variables

Following Ge and Liu, *forthcoming*, Oikonomou et al. (2014), Ortiz-Molina (2006), Shi (2003), Cai et al. (2011), and Khurana and Raman (2003), we control for several firm-level variables including size (*FirmSize*), return on assets (*ROA*) and debt ratio (*leverage*)⁵. We measure firm size as the natural logarithm of total assets. Generally, larger firms are considered safer than small firms, and larger firms are perceived to be less risky. Thus, we expect *FirmSize* to be negatively related to *YieldSpread* and *Yield to Maturity*. Return on assets is measured as operating income before depreciation divided by book value of assets. Generally, a higher return on assets implies higher profitability and ability to able to cover debt obligations. So, we expect *ROA* to be negatively related to *YieldSpread* and *Yield to Maturity*. Leverage is measured as book value of debt divided by book value of assets, and we expect that *Leverage* will be positively related to *YieldSpread* and *Yield to Maturity* as well.

UNIVARIATE STATISTICS

Table 1 presents summary statistics and correlations for the variables in our primary analyses. Since our analyses requires firm-level variables, bond- level variables and CEO ownership variable, the number of observation used to calculate descriptive statistics differs among those variables⁶. According to the summary statistics in Panel A, the average (median) yield spread is about 2.21% (1.76%), and the average (median) yield to maturity is about 5.22% (6.50%). The average (median) bond in our sample has duration of about 7.81 years (7.41years). The average (median) maturity of bond is 11.25 years (10.0 years) and average (median) offer size is \$674.1 million (\$450 million). The average (median) CSR variables – CSR score, CSR composite index, aggregate strength scores, and relative net CSR score- are about 1.31 (1); 0.43 (0.42); 3.88 (2) and 0.48 (0.45), respectively. The average (median) ROA and leverage are 11.8% (11.3%); 31.6% (30%), respectively. Lastly, a firm's CEO holds 1.29% of the firm's shares on average and 0.36% of the firm's shares at the median.

Panel B presents a summary statistics on yield spread and CSR composite index across the industries. In our sample, Agriculture, Mining and Construction sectors have the highest mean yield spread about (3.19%) and lowest CSR composite index about (0.40), while Manufacturing sector has the lowest yield spread about (1.2%) and highest CSR composite index about (0.45). Transportation, Communication and utilities sectors have the second highest yield spread (2.3%) with CSR composite index of 0.43. The average yield spread (CSR composite Index) of Wholesale and Retail Trade sectors, Finance, Insurance and Real Estate sectors and Services sector are 2.30 (0.43); 2.19 (0.42); 2.18 (0.43); and 2.07 (0.44), respectively. These univariate statistics show that the stronger the CSR composite index, the lower average the yield spread across the industries.

TABLE 1
SUMMARY STATISTICS

Panel A: Summary Statistics

Variables	N	Mean	Std. dev	Median	Min	Max
<i>Bond Characteristics</i>						
Yield spread (%)	2,252	2.209	2.262	1.763	-4.59	16.485
Yield to maturity (%)	2,252	5.216	2.297	6.505	0.125	19.240
Maturity (in years)	2,252	11.250	8.066	10	1	70
Duration (in years)	2,252	7.807	3.512	7.406	0.909	23.301
Issue size (in millions)	2,252	674.069	1949.071	450	0.155	60000
<i>CEO ownership</i>						
Ownership (%)	1,699	1.293	3.425	0.362	0.001	59.706
<i>Firm Characteristics</i>						
CSR score	2,255	1.307	3.725	1	-8	18
CSR composite index	2,255	0.435	0.085	0.422	0.211	0.795
Aggregate strength score	2,255	3.885	4.097	2	0	22
Relative net CSR score	2,002	0.476	0.283	0.45	0	1
Size	2,226	47566.5	171855.8	9694.675	134.019	2187631
ROA	2,103	0.118	0.084	0.113	-0.436	1.243
Leverage	2,224	0.316	0.176	0.301	0	1.521

Panel B: Yield Spread and CSR Composite Index by Industry

	N	Mean	Std. dev	Min	Max
<i>Agriculture, Mining, & Construction</i>					
Yieldspread	215	3.189	2.564	-3.505	11.078
CSR Composite Index	215	0.398	0.067	0.211	0.701
<i>Manufacturing</i>					
Yieldspread	809	1.981	2.269	-4.59	16.485
CSR Composite Index	809	0.445	0.0909	0.248	0.794
<i>Transportation, Communications, & Utilities</i>					
Yield spread	369	2.301	1.911	-1.735	13.5
CSR Composite Index	369	0.435	0.082	0.253	0.708
<i>Wholesale & Retail Trade</i>					
Yield spread	170	2.196	2.402	-3.8	12.88
CSR Composite Index	170	0.428	0.08	0.299	0.678
<i>Finance, Insurance & Real Estate</i>					
Yield spread	470	2.184	1.818	-4.03	9.431
CSR Composite Index	470	0.433	0.078	0.267	0.77
<i>Services</i>					
Yield spread	204	2.072	2.588	-3.86	12.16
CSR Composite Index	204	0.446	0.095	0.267	0.713

Panel C: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
Yield spread	1												
Yield to maturity	0.849***	1											
Size	-0.038*	-0.028	1										
ROA	-0.154***	-0.146***	-0.174***	1									
Leverage	0.156***	0.150***	-0.077***	0.157***	1								
Duration	-0.341***	-0.128***	0.003	0.040*	-0.065***	1							
Maturity	-0.178***	0.055***	0.027	-0.008	-0.067***	0.894***	1						
Issue size	-0.073***	-0.056***	0.309***	0.006	-0.021	0.059***	0.042**	1					
Ownership	0.044*	0.109***	-0.076***	-0.028	0.085***	-0.051**	-0.053**	-0.041*	1				
CSR score	-0.202***	-0.331***	0.136***	0.098***	-0.145***	0.051**	-0.012	0.092***	-0.150***	1			
CSR composite index	-0.136***	-0.257***	0.117***	0.096***	-0.136***	0.059***	0.006	0.087***	-0.119***	0.819***	1		
Relative net CSR score	-0.064***	-0.047**	0.069***	0.063***	-0.078***	0.040*	0.046**	0.070***	-0.064**	0.667***	0.583***	1	
Aggregate strength score	-0.165***	-0.233***	0.271***	0.142***	-0.173***	0.049**	0.035*	0.177***	-0.172***	0.799***	0.679***	0.564***	1

Notes: Table 1 reports the summary statistics and correlations for the major variables used in the empirical analysis during the sample period of 2006-2013. Panel A lists the summary statistics. Panel B reports summary statistics by industry. Panel C reports the correlation matrix among the variables. *, **, and *** indicate significance based on a *t*-test at the 10%, 5%, and 1% levels, respectively. All the variables are in their raw format. See the Appendix for the definitions of all the variables.

Panel C presents a correlation matrix of the major variables used in the regression analyses. Both yield spread and yield to maturity are negatively correlated with the four CSR measures (CSR score, CSR composite index, aggregate strength score, and the relative CSR score), as expected. In terms of control variables, consistent with our predictions, ROA and firm size are negatively correlated with yield spread and yield to maturity while leverage is positively correlated with yield spread and the yield to maturity. Issue size and bond duration are negatively correlated with cost of debt measures. Lastly, as we predicted, the ownership variable is positively correlated with cost of debt measures (yield spread and yield to maturity).

EMPIRICAL RESULTS

Relationship Between CSR Measures and Cost of Debt Measures

Table 2 reports OLS regression results on the two cost of debt measures. Panel A of Table 2 reports the results of the effect of CSR measures (CSR score, CSR composite index, relative net CSR score and aggregate strength score) on *YieldSpread*. The coefficient of CSR score, CSR composite index and aggregate strength score are negative and significant at the 5% level, 1% level, and 1% level, respectively. The coefficient of relative net CSR score is negative but not statistically significant. These results are consistent with our first hypothesis, which states that strong corporate social responsibility reduces the firm's cost of debt. To understand what this means practically, if a firm increases their CSR score by 1 point (i.e., they add an additional strength in one of the seven areas of CSR or are no longer engaging in an activity deemed as a CSR concern) they should see, according to Model 1 a reduction in yield spread of .29%, holding all else constant.

TABLE 2
RELATIONSHIP BETWEEN COST OF DEBT MEASURES AND CSR MEASURES

Panel A: Yield Spread and CSR Measures				
Variables	Yield spread			
	(1)	(2)	(3)	(4)
CSR score	-0.029**			
CSR composite index		-1.541***		
Relative net CSR score			-0.126	
Aggregate strength score				-0.042***
Size	-0.118***	-0.115***	-0.120***	-0.066
ROA	-2.879***	-2.874***	-2.469***	-2.792***
Leverage	1.710***	1.702***	1.706***	1.704***
Duration	-0.852***	-0.851***	-0.886***	-0.852***
Maturity	4.465***	4.461***	4.497***	4.458***
Issue size	0.000***	0.000***	0.000***	0.000***
Constant	-0.163	0.541	-0.046	-0.637
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Observations	1,857	1,857	1,537	1,857
Adjusted R-squared	0.470	0.471	0.469	0.472

Panel B: Yield to Maturity and CSR Measures

Variables	Yield to Maturity			
	(1)	(2)	(3)	(4)
CSR score	-0.000**			
CSR composite index		-0.014***		
Relative net CSR score			-0.000	
Aggregate strength score				-0.000***
Size	-0.001***	-0.001***	-0.001***	-0.000**
ROA	-0.031***	-0.0319***	-0.028***	-0.030***
Leverage	0.017***	0.017***	0.016***	0.017***
Duration	-0.008***	-0.008***	-0.009***	-0.008***
Maturity	0.056***	0.056***	0.056***	0.056***
Issue size	0.000***	0.000***	0.000***	0.000***
Constant	-0.001	0.005	0.000	-0.006
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Observations	1,857	1,857	1,537	1,857
Adjusted R-squared	0.541	0.541	0.514	0.543

Notes: These models use OLS regressions to examine the relationship between CSR and cost of corporate bond during the sample period of 2006-2013. All models include year dummies and dummies for two-digit SEC code. These coefficients are not reported to save space. Standard errors are adjusted for heteroskedasticity and clustered at the firm level. *, **, and *** indicate significance based on a *t*-test at the 10%, 5%, and 1% levels, respectively. See the Appendix definitions of all variables.

Panel B of Table 2 reports the results of the effect of CSR measures on *Yield to maturity*. Results in Panel B are similar to results in Panel A. The coefficient of CSR score, CSR composite index and aggregate strength score are negative and significant at the 5% level, 1% level, and 1% level, respectively, and relative net CSR score is negative but not statistically significant. The coefficient of firm-level and bond-level variables are expected signs. The coefficient of size, ROA and duration are negative and statistically significant. The coefficient of maturity, issue size and leverage are positive and statistically significant. Overall, results in Table 2 support our contention that firms that engage in CSR have a lower cost of debt relative to firms with weak CSR. The results demonstrate that strong CSR is valued by bondholders and therefore their required return is less than if firms did not have a strong CSR component.

Relationship Between CSR Measures, Ownership, Cost of Debt Measures

Our second hypothesis stated that increased managerial ownership should reduce the impact of CSR on the cost of debt since the risk-increasing impact of ownership from the bondholders' perspective is likely to counterbalance the risk-reducing impact of CSR on bond yields. Indeed, past research has shown a positive relationship between managerial ownership and borrowing costs (Ortiz-Molina (2006)). Results in Table 3 are largely consistent with this hypothesis. In Panel A of Table 3, we report that while CSR score is negative and statistically significant determinant of yield spread (Model 1) and yield to maturity (Model 2), the interaction variable CSR score \times ownership has a negative and statistically significant coefficient in both models. This implies that at higher levels of managerial ownership (the proportion of shares outstanding owned by the firm's CEO) the negative relationship between CSR and cost of debt is weakened. In other words, bondholders must weigh the perceived risk-increasing impact of managerial equity ownership with the risk-reducing impact of CSR support. This result is repeated in Panel B where we use the CSR composite index as the measure of CSR performance. We find in both Models 1 and 2 that the impact on yield spread and yield to maturity, respectively, is less impacted by

CSR strength by firms with high levels of managerial ownership. Put differently, a firm with low levels of managerial ownership and high levels of CSR performance would experience low borrowing costs. However, while a firm with strong CSR performance would see reduced borrowing costs, if that firm has high levels of managerial ownership, they would not experience the same reduction of borrowing costs as they would if ownership levels were lower.

TABLE 3
RELATIONSHIP BETWEEN COST OF DEBT MEASURES,
OWNERSHIP AND CSR MEASURES

Panel A: Yield Spread, Yield to Maturity, CSR Score and Ownership		
Variables	Yield spread	Yield to maturity
	(1)	(2)
CSR score	-0.021*	-0.000*
Ownership	0.019	0.000
CSR score*Ownership	-0.012**	-0.000**
Size	-0.127***	-0.001***
ROA	-2.394***	-0.025***
Leverage	1.686***	0.016***
Duration	-0.944***	-0.010***
Maturity	5.492***	0.071***
Issue size	0.000**	0.000**
Constant	-1.723***	-0.024***
Year fixed effect	YES	YES
Industry fixed effect	YES	YES
Observations	1,309	1,309
Adjusted R-squared	0.513	0.607

Panel B: Yield Spread, Yield to Maturity, CSR Composite Index and Ownership		
Variables	Yield spread	Yield to maturity
	(1)	(2)
CSR composite index	-0.981*	-0.009*
Ownership	0.246**	0.002**
CSR composite index*Ownership	-0.539**	-0.005**
Size	-0.127***	-0.001***
ROA	-2.385***	-0.025***
Leverage	1.681***	0.016***
Duration	-0.944***	-0.010***
Maturity	5.495***	0.071***
Issue size	0.000**	0.000**
Constant	-1.242*	-0.020***
Year fixed effect	YES	YES
Industry fixed effect	YES	YES
Observations	1,309	1,309
Adjusted R-squared	0.513	0.606

Panel C: Yield Spread, Yield to Maturity, Relative net CSR score and Ownership

Variables	Yield spread	Yield to maturity
	(1)	(2)
Relative net CSR score	-0.281	-0.002
Ownership	0.018	0.000
Relative net CSR score*Ownership	0.022	0.000
Size	-0.125***	-0.001***
ROA	-1.794*	-0.019**
Leverage	1.804***	0.017***
Duration	-0.985***	-0.010***
Maturity	5.604***	0.072***
Issue size	0.000	0.000
Constant	-1.780**	-0.024***
Year fixed effect	YES	YES
Industry fixed effect	YES	YES
Observations	995	995
Adjusted R-squared	0.510	0.592

Panel D: Yield Spread, Yield to Maturity, Aggregate Strength Score, and Ownership

Variables	Yield spread	Yield to maturity
	(1)	(2)
Aggregate strength score	-0.036***	-0.000***
Ownership	0.047**	0.000**
Aggregate strength score*Ownership	-0.014***	-0.000***
Size	-0.074	-0.000*
ROA	-2.291**	-0.024***
Leverage	1.686***	0.016***
Duration	-0.943***	-0.010***
Maturity	5.480***	0.071***
Issue size	0.000**	0.000**
Constant	-2.221***	-0.029***
Year fixed effect	YES	YES
Industry fixed effect	YES	YES
Observations	1,309	1,309
Adjusted R-squared	0.516	0.609

Notes: These models use OLS regressions to examine the relationship between CSR and cost of corporate bond and ownership during the sample period of 2006-2013. All models include year dummies and dummies for two-digit SEC code. These coefficients are not reported to save space. Standard errors are adjusted for heteroskedasticity and clustered at the firm level. *, **, and *** indicate significance based on a *t*-test at the 10%, 5%, and 1% levels, respectively. See the Appendix definitions of all variables.

We find similar results in Panel D where aggregate strength score proxies for the firm's CSR performance. In Panel C, we do not see any relationship between relative net CSR score and measures of

the required return on debt, nor do we see any significant relationship between this measure of CSR and ownership. In Table 3, the adjusted R-squared is between 51 percent and 61 percent across all models.

Relationship Between CSR Measures and Cost of Debt Measures by Industry

In Table 4 we present the OLS regression results on yield spread by industry. Panels A and B show that CSR score and CSR composite index, respectively, have a negative and statistically significant relationship with yield spread in the manufacturing industry and in the financial, insurance, and real estate industry. The coefficients on CSR score and CSR composite index, however, are not statistically significant in industries outside of manufacturing and financial sectors (Model 3 in both Panels A and B). Other industries include agriculture, mining and construction, transportation, communications and utilities, wholesale and retail trade, and services. The coefficients of the control variables are the expected sign. Overall, results of Table 4 indicate that effect of CSR on cost of debt is varies across the industries. We find that some industries benefit more from good CSR performance than others. Better CSR performance is especially important for financial firms, which have been at the heart of the recent financial crisis. Indeed, the *Wall Street Journal* recently reported a significant bump-up in support for proxy proposals on CSR issues following the financial crisis.⁷ Also, manufacturing firms, which have been especially hard hit as a result of the crisis, seem to benefit most from the cost-reducing effects of good CSR performance relative to other industries covered in the sample. It is also important to note that these industries, which typically can carry more debt in the capital structure relative to other industries, would benefit the most from any effort to reduce the cost of the debt as it carries more weight in the overall cost of capital.

TABLE 4
RELATIONSHIP BETWEEN COST OF DEBT AND CSR MEASURES BY INDUSTRY

Panel A: Yield Spread and CSR Score			
Variables	Yield spread		
	Manufacturing (1)	Finance, Insurance & Real Estate (2)	All others (3)
CSR score	-0.032**	-0.121***	-0.0249
Size	-0.204**	0.078	-0.225***
ROA	-2.387**	-2.204	-3.441***
Leverage	1.180	1.660***	1.968***
Duration	-1.004***	-0.650***	-0.809***
Maturity	5.655***	3.253***	4.131***
Issue size	0.000**	0.000	0.000*
Constant	-0.889	-1.158	1.190
Year fixed effect	YES	YES	YES
Observations	707	300	850
Adjusted R-squared	0.477	0.476	0.479

Panel B: Yield Spread, CSR Composite Index by Industry

Variables	Yield spread		
	Manufacturing (1)	Finance, Insurance & Real Estate (2)	All others (3)
CSR composite index	-1.578**	-5.431***	-1.237
Size	-0.201**	0.074	-0.223***
ROA	-2.400**	-2.207	-3.439***
Leverage	1.183	1.593***	1.962***
Duration	-1.005***	-0.641***	-0.809***
Maturity	5.666***	3.209***	4.130***
Issue size	0.000**	0.000	0.000*
Constant	-0.171	1.499	1.761**
Year fixed effect	YES	YES	YES
Observations	707	300	850
Adjusted R-squared	0.477	0.474	0.479

Notes: These models use OLS regressions to examine the relationship between CSR and cost of corporate bond by industry during the sample period of 2006-2013. See the All models include year dummies. These coefficients are not reported to save space. Standard errors are adjusted for heteroskedasticity and clustered at the firm level. *, **, and *** indicate significance based on a *t*-test at the 10%, 5%, and 1% levels, respectively.

Relationship Between CSR Measures, Ownership, Cost of Debt Measures by Industry

Interestingly, in Panel A of Table 5 we find that the coefficient of CSR score in manufacturing and finance industries is negative and statistically significant at the 5% and 1% levels, respectively, but the coefficient on the interaction between CSR score and ownership is not statistically significant in these subsets as was found in the full sample. The interaction term is significant for all other industries besides manufacturing and finance (Model 3). Further, for industries other than manufacturing and finance, the coefficient on ownership is positive and statistically significantly related to yield spread while the coefficient on CSR score, while negative, is not statistically significant. This suggests that CSR is important in the manufacturing and finance industries in particular, similar to the conclusion we came to from the results of Table 4. In fact in these industries CSR is more important than managerial ownership when it comes to the impact on the cost of debt. This is not the case, however, in industries outside of manufacturing and finance. In those industries it seems that borrowers are concerned more with managerial ownership concentration and less with CSR performance when it comes to establishing the required rate of return on the firm's debt.

The results reported in Panel B of Table 5 are consistent with the results in Panel A. Here, we use CSR composite index as the measure of CSR performance. Better CSR performance is associated with lower cost of debt for manufacturing and finance industries and ownership does not play a significant role in determining the yield spread. In other industries, we find that CSR performance is not statistically related to the cost of debt while managerial ownership is positive and statistically significant at the 1% level in determining yield spread. Interaction between CSR composite index and ownership is only statistically significant in industries other than manufacturing and finance.

TABLE 5
RELATIONSHIP BETWEEN COST OF DEBT AND CSR MEASURES AND OWNERSHIP BY INDUSTRY

Panel A: Yield Spread and CSR Score and Ownership

Variables	Yield spread		
	Manufacturing (1)	Finance, Insurance & Real Estate (2)	All others (3)
CSR score	-0.034**	-0.106***	-0.012
Ownership	0.014	-0.047	0.036***
CSR score*Ownership	0.011	0.015	-0.018***
Size	-0.110	0.042	-0.271***
ROA	-1.806	-1.794	-2.451**
Leverage	1.426*	1.133**	1.830***
Duration	-1.134***	-0.905***	-0.900***
Maturity	6.856***	5.076***	5.219***
Issue size	0.000	0.000	0.000
Constant	-3.447***	-1.909***	-0.230
Year fixed effect	YES	YES	YES
Observations	480	220	609
Adjusted R-squared	0.502	0.584	0.538

Panel B: Yield Spread and CSR Composite Index and Ownership

Variables	Yield spread		
	Manufacturing (1)	Finance, Insurance & Real Estate (2)	All others (3)
CSR composite index	-1.612**	-3.988***	-0.472
Ownership	-0.187	-0.040	0.368***
CSR composite index*Ownership	0.463	0.014	-0.797***
Size	-0.109	0.037	-0.276***
ROA	-1.836	-1.780	-2.512***
Leverage	1.426*	1.092**	1.846***
Duration	-1.135***	-0.904***	-0.900***
Maturity	6.859***	5.077***	5.214***
Issue size	0.000	0.000	0.000
Constant	-2.695**	-0.730	0.092
Year fixed effect	YES	YES	YES
Observations	480	220	609
Adjusted R-squared	0.502	0.579	0.535

Notes: These models use OLS regressions to examine the relationship between CSR, ownership and cost of corporate bond by industry during the sample period of 2006-2013. See the All models include year dummies. These coefficients are not reported to save space. Standard errors are adjusted for heteroskedasticity and clustered at the firm level. *, **, and *** indicate significance based on a *t*-test at the 10%, 5%, and 1% levels, respectively.

CONCLUSION

Corporate social responsibility, while an area of interest to investors and managers, has proven to show mixed results when it comes to its overall impact on firm performance. Here we document that the relationship between good corporate citizenry and a reduced cost of debt is quite clear – particularly for certain industries. We find that among three of our four measures of corporate social responsibility, better CSR performance leads to lower yield spreads and yield to maturity on corporate borrowing. For financial and manufacturing firms in particular this result is robust to a variety of specifications. This lends support to the stakeholder theory of CSR, which states that firms that contribute to the well-being of stakeholder constituents will be able to obtain resources and support easily and less expensively than their non-stakeholder-supporting counterparts. Further, the result that the cost of debt is lower for firms with better CSR supports the idea that lenders in particular perceive a good social performer as a less risky investment than a company with weak CSR, consistent with El Ghouli et al. (2011). This is also highlighted when we analyze the impact of managerial ownership on the CSR/cost of debt relationship. Bondholders perceive firms with high levels of managerial equity ownership as riskier due to the fact that higher equity ownership may lead managers to take on more firm risk (in the interest of shareholders). We find that when a firm has high levels of managerial ownership, the relationship between CSR and the cost of debt is weakened. Put another way, the risk of managerial equity ownership starts to outweigh the risk-reducing benefits of CSR in the eyes of the bondholders. This result supports earlier work by Ortiz-Molina (2006), who finds a positive relationship between managerial ownership and cost of debt which is attributed to an increase in risk as perceived by the bondholders.

Practically speaking, for financial and manufacturing firms (the majority of firms in our sample) it is evident that CSR does play a role in determining the cost of debt. For firms seeking to reduce the overall cost of capital, it would do them well to include CSR in corporate strategy and management. In these industries, which typically hold high levels of leverage in their capital structures, it is especially important to tend to stakeholders through good CSR practices, which can lead to a reduction in risk in the eyes of the majority investors and thus help to increase firm value.

ENDNOTES

1. Millman, Gregory J. "Corporate Philanthropy and Shareholder Value," *The Wall Street Journal*, June 3, 2015
2. For instance, from 2011 – 2013 our data shows average CSR score and average CSR composite index of 2.73 and 0.458, respectively. Average CSR score and average CSR composite index were 0.278 and 0.419, respectively, from 2006 to 2010.
3. Following the Ge and Liu (*forthcoming*), if the benchmark Treasury bond yield with a certain maturity is not available, we use an interpolation approach to construct it.
4. Please refer to the Appendix I, for more detail of definitions of those variables.
5. Please see the Appendix I, for more detail of definitions of those variables.
6. The number of observations in the regressions is fewer than what is reported in the summary statistics here since in regression we require CSR and firm-level variables, and CEO ownership variable are lagged by one year.
7. Johnson, Kimberly S. "Proxy Proposals Call for Social Responsibility and Lobbying Disclosures," *Wall Street Journal*, April 14, 2015.

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APPENDIX

Variable Definitions

Variable	Definitions
YieldSpread	The difference between bond yield at issuance and a Treasury bond yield with comparable maturity.
Yield to Maturity	Bond yield at issuance
Duration	Duration of the bond
Maturity	The log of the numbers of years until the bond matures
IssueSize	The log of the amount of bond initially issued, in millions of dollar
CSR score	The score for each category (COM, ENV, DIV, EMP, and PRO) is calculated as the number of strengths minus the number of concerns in each category by year. Overall score is calculated as COM_score + DIV_score + EMP_score + ENV_score + HUM_score + PRO_score
CSR_composite index	The index for each category (COM, ENV, DIV, EMP, and PRO) is calculated as the (sum of strengths in the category by year minus sum of concerns in the category by year plus total maximum possible concerns for that year) divided by maximum number of strengths plus maximum number of concerns for each category by year. The overall composite index is then calculated as (COM_index + ENV_index + DIV_index + EMP_index + PRO_index) / 5
Relative net CSR score	The net CSR score is measured relative to the industry (intra-industry norms measured by 2-digit SIC). This is calculated as (net CSR score – min net CSR score)/(max net CSR score – min net CSR score).
Aggregate strength score	Aggregate strength score is the sum of all KLD scores on attributes that are identified as strengths.
Size	The log of the total asset
ROA	Operating income before depreciation, scaled by book value of assets
Leverage	Book value of debt over book value of assets
Ownership	The number of the firm's shares held by CEO as a percentage of total shares outstanding.