A Matter of Trust? The Bond Market Benefits of Corporate Social Capital during the Financial Crisis*

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Abstract

We investigate whether a firm's social capital, and the trust that it engenders, are viewed favorably by bondholders when the markets and the economy at large face a severe crisis of confidence. Using the financial crisis as an exogenous shock to trust and firms' discretionary investments in corporate social responsibility (CSR) as a proxy for social capital, we show that high-CSR firms benefited from lower debt spreads in the secondary market during the financial crisis compared to low-CSR firms. High-CSR firms were also more able to access the primary bond market during this period and those high-CSR firms that did gain access benefited from lower at-issue spreads, better initial credit ratings, and were able to issue bonds with longer maturities. Our results suggest that debt investors believe that high-CSR firms are less likely to engage in asset substitution that would be detrimental to stakeholders other than shareholders. Our findings also indicate that the reciprocity benefits of CSR that accrued to shareholders during the financial crisis carry across to another important asset class, debt capital.

Keywords: CSR, corporate bonds, cost of debt, financial crisis
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1. Introduction

Financial contracts are the "ultimate trust-intensive" transactions: the capital provider exchanges a sum of capital today for a promise of a future payment (Guiso, Sapienza, and Zingales (2004), p. 527). While the legal enforceability of a contract and the financier's ability to monitor the financee's actions are crucial in determining whether such an exchange can take place, *trust* is also an important factor. As the former U.S. Labor Secretary Robert Reich highlighted in the midst of the 2008 financial crisis, "Financial markets trade on promises. If investors stop trusting the promises, financial markets can't function."[1]

Social capital, and the trust it engenders, can facilitate financial transactions by mitigating adverse selection and moral-hazard problems.[2] When trust prevails, counterparties in economic transactions need to spend less time, effort, and resources in protecting themselves from the risk of being exploited. In exchanges characterized by mutual trust, the demand for formal written contracts is lower, and written contracts that do exist need not specify every possible contingency (e.g., Knack and Keefer (1997)). Extending this notion to agency relationships, principals may also engage in less stringent monitoring of agents (e.g., Chami and Fullenkamp (2002)). These factors lead to broad economic benefits such as increased stock market participation (Guiso, Sapienza, and Zingales (2004, 2008)) and greater economic and financial development (e.g., Putman (1993), Fukuyama (1995), Knack and Keefer (1997), La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997)).

New evidence shows that the benefits of social capital and trust accrue to individual firms. *Endowed trust* (i.e., externally "acquired" trust that a firm enjoys from being located in a high-trust

[1] R. Reich: Government needs to rebuild trust in markets. US News and World Report, 16 September 2008. Available at: http://www.usnews.com/articles/opinion/2008/09/16/robert-reich-government-needs-torebuild- trust-in-the-markets.html.

[2] Social capital is a multidimensional abstract concept. It can be defined in terms of generalized trust, civic norms, beliefs and dispositions which affect agents' propensity to cooperate (e.g., Putnam (1993, 2000), Knack and Keefer (1997), La Porta, et al. (1997)). Alternatively, social capital can be defined as the cooperative networks that exist among agents (e.g., Coleman (1988, 1990), and Lin (2001)).

society/environment) is associated with less-intensive formal contracting, better financial performance, higher stock valuations (Huang and Hillary (2016)), and moderately better terms in private loan deals (Hasan, Hoi, Wu, and Zhang (2016)). *Earned trust,* which a firm can generate internally through *its own investment in social capital,* also pays off: during crisis-of-trust periods, firms with higher earned trust obtain both capital market and real economic benefits (Lins, Servaes, and Tamayo (2016)). Studying the economic effects of earned trust is particularly interesting because it is discretionary in nature: endowed social capital is not something a firm can easily modify, whereas a firm can choose its own level of internally generated social capital.

In this paper, we investigate the role of earned trust in a setting where moral hazard is of particular concern: public debt financing. Unlike private loan arrangements, the arm's length nature of public debt (corporate bond) contracts makes them more susceptible to agency frictions, largely due to structural differences between private and public debt in terms of lenders' monitoring ability, their information costs, and recontracting flexibility. In this setting, trust, defined as "the expectation that another person will perform actions that are beneficial, or at least not detrimental, to us regardless of our capacity to monitor those actions" (Gambetta (1988)), is likely to play a more pronounced role. However, since corporate bonds are typically held by financially savvy, informed institutional investors, the benefits to earned trust in the public debt market may be less pronounced than in a setting with greater heterogeneity in investor sophistication, such as the equity market.[3]

To capture an individual firm's social capital, we follow recent academic work in economics (Sacconi and Degli Antoni (2011)) and finance (Lins, et al. (2016)) and use a firm's Corporate Social Responsibility (CSR) activities as a proxy for its investment in social capital. The view that CSR activities generate social capital and earned trust is also widely held by practitioners

[3] Guiso, et al. (2008) show that the effect of social capital on stock market participation is weaker for individuals with more education.

and corporations.[4] Our primary objective is to investigate whether, and to what extent, firms that are managed to take into account the interests of a broad set of stakeholders, i.e., high-CSR firms, reap financial benefits in public debt markets.

An individual firm's social capital, and the trust it cultivates, could affect the firm's public debt contracts through both a direct and an indirect channel. The direct channel is via a reduction in the agency costs of debt. Managers, acting in the interest of shareholders, have incentives to expropriate debtholders' wealth by investing in risky projects as a firm gets closer to default on its debt (Jensen and Meckling (1976)). Debtholders anticipate this potential for asset substitution and demand higher rents, thus raising the firm's cost of debt capital. In contrast, stakeholder-focused managers are likely less willing to jeopardize the firm's survival in order to make a risky bet on behalf of shareholders. Debtholders' confidence that managers are committed to safeguarding the economic interests of a broad set of constituents will reduce their demand for monitoring, alleviate moral hazard concerns, and ultimately reduce the agency costs of debt.

The indirect channel is a result of externalities: if a firm's social capital helps build stakeholder trust and cooperation (Putnam (2003)), stakeholders (such as employees, customers, suppliers, and the community at large) are more likely to "do whatever it takes" to help ensure that high-social-capital firms weather periods of crisis (Lins, et al. (2016)).[5] This is the so-called *reciprocity* concept often discussed in studies of social capital – I will be good to you with the expectation that you will be good to me when I need it. Enhanced stakeholder cooperation can lead to higher cash flows and/or a reduction in risk, thereby lowering debt default probabilities and benefiting bondholders.

[4] Practitioners have held the view that CSR helps build trust for a long time (Fitzgerald (2003)) but, following the financial crisis, this view has become more widespread (see CEO surveys conducted by PricewaterhouseCoopers (2013, 2014)).
[5] For example, employees may work harder (or more cheaply) and more creatively to ensure that the firm weathers a crisis; suppliers may continue to supply on credit and customers may continue to buy the firm's products/services.

Of course, a competing argument to those noted above is that stakeholder-oriented firms are merely wasting the firm's resources by diverting current cash flows to invest in CSR activities that do not necessarily add value to the firm (e.g., Friedman (1970), Masulis and Reza (2015), Cheng, Hong, and Shue (2016)). If bondholders view CSR activities as wasteful, they will demand higher compensation to lend to high-CSR firms.

To test whether bondholders view high-CSR firms more favorably, we investigate both secondary market bond trades and primary market bond originations. Our main analyses are conducted using a large sample of publicly-traded, non-financial, U.S.-domiciled firms with bond trade data available on the Trade Reporting and Compliance Engine (TRACE) database between 2005 and 2013.[6] We also identify a sample of corporate bond issues covered in the Mergent Fixed Income Securities Database (FISD) that were offered on the primary market over the same period.

We first conduct preliminary tests in which we estimate regressions of secondary market bond spreads on firms' CSR ratings over the full sample period. While endogeneity concerns make it difficult to draw causal inference from such a regression, these preliminary tests are suggestive of a modest negative CSR-bond spread relation, consistent with Goss and Roberts (2011) who study private debt and conclude that "CSR is at most a second-order determinant of yield spreads" (p. 1795). However, when we also control for time fixed effects the modest relation between CSR and debt spreads disappears entirely. Thus, on average, there is no relation between debt spreads and CSR.

The primary aim of our investigation is not to study the relation between debt spreads and CSR on average, however. Rather, following Lins, et al. (2016), we hypothesize that CSR is likely

[6] Our selection of 2005 as the starting point of the sample period is driven primarily by data availability on TRACE. The Financial Industry Regulatory Authority (FINRA) is responsible for the collection and reporting of over-the-counter (OTC) bond trades. Before 2005, data on bond trades were disseminated in phases, beginning in July 2002 with Phase I requiring the reporting of investment-grade securities of $1 billion in face value or greater. Over the course of Phases II and III in late 2004, trade reporting was expanded to cover approximately 99% of all OTC transactions. As of July 2005, FINRA requires all its members to report their trades within 15 minutes of the transaction.

to benefit bondholders more when the earned trust that a firm's social capital generates is more highly valued, such as during a crisis of trust. In a crisis, the agency costs of debt are more pronounced as firm survival might be at stake and the payoffs to risky bets increase. Bondholders of high-CSR firms, however, may be more confident that the management will not engage in risk-increasing asset substitution because this would harm stakeholders. If a crisis is compounded with a loss of trust, the benefit to bondholders from CSR activities may be even larger given the reciprocity argument that stakeholders (employees, customers, suppliers, the community) of a trustworthy firm will help it weather the crisis.

We examine this conjecture by focusing on the financial crisis of 2008-2009. The financial crisis constituted an external shock that eroded trust in financial markets and corporations and affected most firms. Following prior work (e.g., Duchin, Ozbas, and Sensoy (2010), Ivashina and Scharfstein (2010), Sapienza and Zingales (2012), Lins, et al. (2016)), we identify two distinct periods: the credit crunch – the period of July 2007 through July 2008, when the supply of credit suffered a shock but general trust had not yet eroded; and the trust crisis – the period of August 2008 through March 2009, when a shock to trust occurred. The characterization of this period as the one during which trust declined is also consistent with survey evidence provided by Edelman (the world's largest independent public relations firm). Edelman reports that trust in business in the U.S. declined from 58% in early 2008 to 38% in early 2009.

The exogenous nature of the financial crisis also helps us circumvent potential endogeneity concerns that arise in traditional studies examining firms' CSR activities and debt financing (Goss and Roberts (2011)), as described above.

We conduct multiple difference-in-differences tests using the shock to trust as a quasi-experimental setting. Our results are unambiguous: during the trust crisis, secondary market credit spreads of high-CSR firms did not rise as much as the spreads of low-CSR firms; high-CSR firms

were also more likely to access the primary bond market during this period, and those (high-CSR firms) that accessed the bond market benefited from lower at-issue spreads relative to treasuries and better initial credit ratings, and they were able to issue bonds with longer maturities. These effects are economically substantial as well. For example, a one-standard deviation increase in our measure of CSR is associated with at least 36 basis points (bps) lower credit spreads in both the secondary and primary market. Further, the benefits of CSR are considerably larger for firms with poorer credit quality. There is also some weaker evidence of a reduction in secondary market spreads during the credit crunch period that preceded the trust crisis and in the post-crisis period up through 2013, although the economic magnitude of the CSR effect is less than half as large during these periods as during the trust crisis. For new bond issues, we find no effect of CSR on spreads during the credit crunch or the post-crisis periods.

We conclude that firm-level social capital and the trust that it engenders affect bond contracting when they matter most: when there is a crisis of trust. In such periods, a firm's social capital acts as an insurance policy against excessive risk taking that can harm stakeholders and bondholders[7] and also generates helpful stakeholder reciprocity efforts. Our results indicate that high-CSR firms are perceived as being more trustworthy and, hence, reap significant benefits in the bond markets.

Our work complements the findings of Lins, et al. (2016), who show that firms with higher pre-crisis CSR scores had higher crisis-period stock returns. Given that the benefits of investing in social capital accrued to stockholders *and* bondholders, our evidence suggests that the superior stock returns of high-CSR firms are not driven by risk-shifting during the crisis – if that were the case, we should observe larger bond spreads for high-CSR firms.

[7] Other papers have looked at the role of CSR in mitigating firm specific risks. Using prosecutions of the Foreign Corrupt Practices Act, Hong and Liskovich (2015) report that more socially responsible firms pay $2.3 million or 40 percent less than the median fine for bribery when caught. Jeffers (2015) finds that officials are more lenient with penalties for OSHA violations ascribed to high-CSR firms. Albuquerque, Durnev, and Koskinen (2015) model CSR as a product differentiation strategy allowing firms to benefit from higher profit margins which lessens systematic risk.

The remainder of the paper proceeds as follows. In Section 2, we describe the sample and present summary statistics. Section 3 reports preliminary results for secondary market spreads while Section 4 presents the results using the financial crisis as an exogenous shock. In Section 5, we expand our analyses to the primary market. Section 6 concludes the paper.

2. Sample and Summary Statistics

2.1. Sample Construction

To construct our sample of corporate bonds on the secondary market, we start with the universe of bonds covered in the TRACE database from 2005 to 2013. As in Dick-Nielsen, et al. (2012), we exclude variable- and zero-coupon, perpetual, foreign currency, preferred, and exchangeable issues as well as private placements and Yankee and Canadian bonds. We further restrict our selection to include only corporate debentures and corporate medium-term notes with a time-to-maturity of more than one month and 30 years or less. We also exclude issuers from the financial sector (SIC codes 6000-6999) as these firms received government support during the 2008-2009 crisis, which could affect our inferences. To be included in our sample, we further require that data on relevant bond contract attributes (i.e., issue size, offering and maturity dates, coupon, collateral, and covenants) are available on Mergent FISD. Merging the two databases, we obtain a sample of bond trades comprising 2,219 bonds issued by 340 firms. To account for liquidity biases and erroneous entries in TRACE, we follow the method in Dick-Nielsen (2009).[8] We further apply the price-based filters in Edwards, Harris, and Piwowar (2007) and Han and Zhou

[8] This procedure entails removing retail-sized non-institutional trades (i.e., those with a value below $100,000), dirty prices that include dealer commissions, trades with missing execution time or date or missing trade size, genuine duplicates, trade reversals along with the original trade reports, trades with missing or negative yields, as well as same-day trade corrections and cancellations.

(2008) to remove outliers and observations with likely data errors.[9] Applying these refinements reduces our sample to 2,182 bonds issued by 336 firms.

We merge this sample with CSR ratings data from the MSCI ESG Stats Database, which contains yearly environmental, social, and governance ratings of large, publicly-listed companies. This database has been used in a number of studies examining the effect of CSR on firm value and performance (e.g., Hong and Kostovetsky (2012), Deng, Kang, and Low (2013), Servaes and Tamayo (2013), Albuquerque, Durnev, and Koskinen (2015), Lins, et al. (2016)) and covers roughly the 3,000 largest U.S. companies. Finally, we obtain annual fundamentals and monthly stock market data from Compustat and CRSP, respectively.

Merging these databases yields a final sample of 2,007 corporate bonds issued by 303 firms with secondary market trade data from 2005 to 2013, as noted in Panel A of Table 1. Panel B presents the breakdown of bonds and issuers covered annually. In terms of the industry composition (Panel C of Table 1), manufacturing constitutes the largest proportion of bond issues (14.8%), while the other sectors have a fairly balanced representation in the overall sample.

2.2. CSR Variable Construction and Descriptive Statistics

Our main independent variable is the CSR index, which we construct following Servaes and Tamayo (2013). We concentrate on five of the 13 categories that ESG Stats uses to classify a firm's environmental, social, and governance performance: community, diversity, employment, environment and human rights. We do not consider the six ESG Stats categories that penalize firms' participation in controversial industries (alcohol, gaming, firearms, military, nuclear and tobacco), as there is nothing incremental that firms can do to change a ranking score, except change

[9] Specifically, we exclude trades with prices less than $1 or greater than $500, and trades with prices that are 20 percent away from the median of the reported price in the day or 20 percent away from the previous trading price.

industries.[10] We further exclude the ESG Stats product category because it contains a number of elements that we consider to be outside the scope of CSR, such as product quality and innovation. Finally, we leave out the ESG Stats corporate governance category because governance is usually considered to be outside a firm's CSR remit. However, since strong corporate governance may also be beneficial to bondholders (e.g., Bhojraj and Sengupta (2003), Klock, Mansi, and Maxwell (2005), Bradley and Chen (2011, 2015)), we examine this category separately as part of our robustness tests.

For each of the five categories we consider, ESG Stats compiles statistics on both strengths and concerns. To combine this information into one CSR metric, we divide the number of concerns and the number of strengths in each of the five categories by its possible maximum in a given year (as there is some time series variation in the possible maximum), and subtract the resulting scaled concern number from the scaled strengths number. This procedure yields an index for each of the five categories ranging from -1 to +1. Our CSR metric is the sum of the individual measures across the five categories. Thus, it ranges from -5 to +5.

Our main dependent variable is a bond's credit spread, computed as the difference between the bond's yield to maturity from TRACE and the Treasury yield matched by maturity (e.g., Campbell and Taksler (2003), Chen, Lesmond, and Wei (2007), and Huang and Huang (2012)).[11] As in Becker and Ivashina (2015), we employ the median yield of all transactions taking place on the last active trading day of a given month to compute the spreads. We winsorize credit spreads to be no greater than 1000 bps to alleviate the influence of substantially distressed firms.[12] Detailed definitions of all variables employed in the analyses are contained in the Appendix.

[10] In addition, in our regressions we control for either industry or firm fixed effects.
[11] Maturity-matched risk-free yields are obtained by linearly interpolating benchmark Treasury yields contained in the Federal Reserve H-15 release for constant maturities.
[12] Our results hold if we remove these bonds rather than winsorize them.

Table 2 provides descriptive statistics on the CSR index, credit spreads, and control variables.[13] The mean issue size in our sample is $573 million with a mean time-to-maturity (time-since-issue) of just over 6.5 (3.8) years. There is considerable cross-sectional variation in credit spreads, with an average of about 200bps. The firms in our sample are large (average market capitalization of $13.8 billion) and have an investment grade rating (the average credit rating is just over eight, equivalent to BBB+).[14] About 38 percent of the sample bonds are offered concurrently in global and domestic markets while over 90 percent of the issues include an option for early redemption. The mean security rank of secondary market bonds is just below 4, revealing that a majority of issues in our sample are senior bonds, and more than 50 percent of the bond indentures in our sample include at least six covenants.[15] The bottom part of Table 2 contains summary statistics on issuer-level attributes.

Finally, the mean of our explanatory variable of interest, *CSR*, is 0.098, which indicates that the average firm in our sample has more strengths than concerns. However, about 50 percent of our sample firms display more concerns than strengths (median is equal to -0.007), consistent with Deng, et al. (2013), Servaes and Tamayo (2013), and Borisov, Goldman, and Gupta (2016) who show that the median firm has negative CSR ratings.

[13] All the continuous control variables are winsorized at the 99th percentile and also at the 1st percentile unless their lower bound is 0.

[14] We obtain credit ratings issued by S&P, Moody's, and Fitch from Mergent FISD and Bloomberg. As in Bongaerts, Cremers, and Goetzmann (2012) and Ellul, Jotikasthira, Lundblad, and Wang (2015), to select a representative rating when an issue is rated by multiple agencies, we first select the S&P rating; if missing, we use ratings from Moody's, and if both are missing, we use ratings from Fitch.

[15] To measure the stringency of security, we construct a rank variable that takes the value of 1 to 5 for a junior subordinate, subordinate, senior subordinate, senior, and senior secured bonds. To measure covenant intensity, we follow Bradley and Roberts (2015) and count the number of covenants in the five main categories (payout, investment, financing, accounting, and event-related restrictions) reported on Mergent FISD.

3. Preliminary Evidence on the CSR-Credit Spread Relation

We begin our analyses by regressing bond spreads in the secondary market on firm CSR ratings (and controls) over the whole sample period. We note here that endogeneity concerns hamper the ability to draw causal inference from such regressions and any results of this analysis should be viewed as suggestive of correlations only.

We estimate the following pooled regression specification:

$$Spread_{ijt} = \beta_1 CSR_{it-1} + \sum \gamma_k{}' X_{kjt-1} + \sum \delta_l{}' Z_{lit-1} + FFE_i + \varepsilon_{ijt}, \quad (1)$$

where $Spread_{ijt}$ denotes the credit spread of firm *i*'s bond *j* at time *t,* and CSR_{it-1} is firm *i*'s total net CSR index measured at time *t-1*, our explanatory variable of interest. X_{kjt-1} is a (K×1) vector of bond-level controls measured at time *t-1* and Z_{lit-1} is a (L×1) vector of firm-level controls measured at time *t-1*. Bauer and Hann (2010) and Goss and Roberts (2011) estimate similar models when studying the relation between CSR and private debt spreads. In addition, we include firm-fixed effects, FFE_i, to control for unobservable time-invariant omitted credit risk factors. We double cluster the standard errors at the firm and time (monthly) levels to control for cross-sectional and time-series dependence, respectively (Petersen (2009)).

To control for bond characteristics, we include *Offering amount*, *Coupon*, *Time-to-Maturity*, *Bond age*, *Redeemable* (equal to one if the bond issue may be redeemed under conditions specified in the indenture agreements), *Fungible* (equal to one if the bond issue is, by virtue of its terms, equivalent, interchangeable, or substitutable), *Offering market* (equal to one if the bond offering is global), *Security* (i.e., collateral stringency), and *Covenant Intensity*, following prior work on debt markets (e.g., Datta, Iskandar-Datta, and Patel (1999), Miller and Puthenpurackal (2005), Jiménez, Salas, and Saurina (2006), Demiroglu and James (2010), Nini, Smith, and Sufi

(2012), and Bradley and Roberts (2015)).[16] We further control for contemporaneous bond liquidity using the Amihud (2002) illiquidity measure that captures the price impact of trades.

The issuer-level controls are similar to those employed in prior work on the cost of debt (see, e.g., Campbell and Taksler (2003), Chen, et al. (2007), and Acharya, Davydenko, and Strebulaev (2012)): (i) *Size*, (ii) *Profitability*, (iii) *Short-term leverage, (iv) Long-term leverage*, (v) *Cash holdings*, (vi) *Tangibility*, (vii) *Coverage ratio*, and (viii) *Idiosyncratic Volatility*. We further add controls for *Capital expenditures* and *Beta* as Baghai, Servaes, and Tamayo (2014) document that these factors play an important part in explaining issuers' credit ratings. The accounting-based firm characteristics and CSR data are updated annually. To ensure that the accounting data are publicly available, we update these items three months after a firm's fiscal year-end. *CSR* is updated annually in April when the ratings for the previous year have been released. *Beta* and *Volatility* are re-estimated each month based on the previous 60 months' data.

Our findings from estimating model (1) are reported in Table 3. We first present the results from a simple regression of credit spreads on CSR, controlling for firm fixed effects (column (i)). The coefficient on CSR is -0.198, suggesting that high-CSR firms have lower spreads. We control for bond-level attributes (column (ii)) and further add firm-characteristics (column (iii)) and find that the coefficient on CSR is slightly lower at -0.136. As a gauge of economic significance, a one-standard deviation increase in CSR of 0.742 (Table 2) is associated with a 10.1 bps decline in spread. In Panel B of Table 3, we repeat these three models, but also control for credit ratings and illiquidity. Both are highly significant and their inclusion further reduces the coefficient on CSR. For example, model (iii) of Panel B of Table 3 illustrates that the coefficient on CSR is -0.0934, which translates into a 6.9 bps lower spread for a one standard deviation increase in CSR.

[16] See the Appendix for details on variable definitions.

The relatively small CSR-credit spread relation that we document is similar to what has been documented in prior studies using private loans (e.g., Goss and Roberts (2011), Hasan, et al. (2016)). We next introduce time fixed-effects in column (iv) in both Panels A and B of Table 3. The coefficient on CSR becomes statistically (and economically) insignificant in this specification. This suggests that, on average, there is no relation between CSR and bond spreads, and that it is important to control for overall time-series variation in spreads when estimating models of bond yields. Prior evidence of a relation between CSR and spreads appears to be spurious.

The primary goal of our paper, however, is not to test for an overall relation between debt spreads and CSR, but instead to understand whether CSR benefits bondholders more when a firm's social capital should be more highly valued, such as during a crisis of trust. In Figure 1, we illustrate the time-series pattern of average credit spreads for high- and low-CSR firms, where high-CSR (low-CSR) is defined as those firms whose CSR scores are above (below) the median CSR value of the year. The variation in the spread differential between high- and low-CSR firms over time is striking: up to August 2008 there is little difference between the spreads of high- and low-CSR firms. After August, the differential shoots up, and reaches its maximum level in November 2008. The differential remains high until March 2009, when the stock market hit its lowest point of the crisis; afterwards, there is still a marked difference between the spreads of high- and low-CSR firms, but the magnitude is smaller. The period of August 2008 to March 2009, when the difference becomes considerable, coincides with the crisis of trust described in Sapienza and Zingales (2008) and Lins, et al. (2016), among others. This suggests that CSR is related to bond spreads when a firm's social capital is more highly valued, such as during the 2008-2009 crisis of trust. In the next section, we examine this relation more formally.

4. CSR on Bond Spreads when Trust is Low: Evidence from the Financial Crisis

4.1. CSR and Credit Spreads during an Exogenous Shock to Trust

In this section, we test our main hypothesis that a firm's CSR efforts benefit bondholders more when social capital is more highly valued, i.e., when trust is low. To do so, we use the financial crisis of 2008-2009 as a quasi-experimental setting. The financial crisis constituted an exogenous shock to public trust in corporations, capital markets and institutions, and led to a decline in stock prices and increase in bond spreads for the vast majority of firms (Figure 1 shows the substantial increase in spreads during this time). The exogenous nature of this shock to trust also helps alleviate the endogeneity concerns associated with model (1).

Our sample period for this analysis starts in 2007, prior to the onset of the crisis, and ends in 2013, several years into the economic recovery. We adopt a quasi-difference-in-differences approach and examine whether firms that entered the crisis period with higher CSR scores enjoyed relatively lower spreads during the crisis. In particular, we estimate the following model:

$$Spread_{ijt} = \beta_1 CSR_{i2006} * Crisis_t + \beta_2 CSR_{i2006} * Post\_crisis_t + \sum \gamma_k{}' X_{kjt-1} + \sum \delta_l{}' Z_{lit-1} + FFE_i + TFE_t + \varepsilon_{ijt}, \quad (2)$$

where, as before, $Spread_{ijt}$ denotes the spread of firm *i*'s bond *j* at time *t*, X_{kjt-1} is a (K×1) vector of bond-level controls measured at time *t-1*, and Z_{lit-1} is a (L×1) vector of firm-level controls measured at time *t-1*. We include firm-fixed effects, FFE_i, to control for unobservable time-invariant omitted credit risk factors, and time-fixed effects, TFE_t, specified at the monthly level.[17] We measure CSR as of year-end 2006, well before the onset of the financial crisis, to eliminate any concern that firms adjusted their CSR activities in anticipation of the crisis.[18] $Crisis_t$ is an indicator

[17] We have also estimated this model including indicator variables for the crisis and the post-crisis periods, without time fixed effects. These indicator variables capture the change in spreads during and after the crisis for firms with a *CSR* score of zero. Our inferences remain unchanged.

[18] Our end-2006 CSR measure is static and thus gets absorbed by the firm-fixed effect. In untabulated models we confirm that our results hold when we use a time-varying, lagged measure of CSR.

variable that takes the value of 1 for the crisis of trust period, starting in August 2008 and ending March 2009 (as in Lins, Volpin, and Wagner (2013) and Lins, et al. 2016)), and $Post\_crisis_t$ is an indicator variable that takes a value of 1 from April 2009 to December 2013. As before, we double cluster the standard errors at the firm and time (monthly) levels to control for cross-sectional and time-series dependence, respectively.

In model (2), the coefficient on the interaction variable CSR_{i2006}*$Crisis_t$, β_1, captures the difference between the effect of CSR on credit spreads in the crisis versus the pre-crisis period (the pre-crisis effect itself is captured by the time and firm fixed effects). The coefficient on the interaction variable CSR_{i2006}*$Post\_crisis_t$, β_2, captures the difference between the effect of CSR on credit spreads in the post-crisis and the pre-crisis periods. This coefficient could also be negative given that generalized trust in companies, markets, and institutions continued to be low after the crisis for some time. However, in absolute terms, we expect β_1 to be larger than β_2, given that the most pronounced erosion of trust happened during the crisis.

The results from estimating model (2) are reported in Table 4, Panel A. As before, we first control for bond attributes (column (i)) and then also include firm characteristics (column (ii)). In both models, the impact of CSR on bond spreads is statistically and economically significant during the crisis. For example, a one standard deviation increase in pre-crisis CSR is associated with 36.1 bps lower spreads during the crisis period (based on the column (ii) regression).[19] The benefit accrued to high-CSR firms during the crisis disappears in the post-crisis period (the difference between β_1 and β_2 is statistically significant at the 1% level).

Next, we control for corporate governance, given that bond investors tend to demand lower spreads for better-governed firms (e.g., Bradley and Chen (2015)) and that such firms performed relatively better during the crisis (Lins, et al. (2013) and Nguyen, Nguyen, and Yin (2015)). If

[19] The standard deviation of CSR for the 2007-2013 subperiod is 0.55, slightly smaller than the standard deviation of CSR for the whole period reported in Table 2.

governance is correlated with our CSR measure, we could be suffering from an omitted variable bias. To address this concern, we also control for the entrenchment index (E-index) featuring six governance provisions identified in Bebchuk, Cohen, and Ferrell (2009).[20] We report these results in column (iii) of Panel A of Table 4. The E-index appears to be negatively related to bond spreads (after controlling for numerous factors, including firm characteristics and firm fixed effects), which is counter-intuitive, but the effect is economically very modest (an increase of 1 in E-index – roughly one standard deviation in our sample – is associated with a decrease in spreads of 5 bps). More importantly, the coefficient on CSR remains virtually unchanged. Hence, the impact of CSR on spreads during the crisis cannot be attributed to better governance.[21]

In our last specification (reported in column (iv)), we control for credit ratings. Given that this variable is allowed to change over time and that our regression includes firm fixed effects, *Credit rating* captures changes in credit risk as perceived by credit rating agencies (higher ratings are converted into higher numerical values – see Appendix for full details). As expected, investors demand higher spreads from firms with worse ratings. Our CSR variable, however, remains significant after the inclusion of credit ratings. In fact, its economic importance increases in this specification: a one standard deviation increase in CSR is associated with 40bps lower spreads.

From these analyses, we conclude that the spreads of high-CSR firms' bonds increased less during the financial crisis relative to the spreads of low-CSR firms' bonds. This finding is consistent with bondholders valuing a firm's social capital and its "earned" trust more in periods when being trustworthy is particularly important, such as in a crisis of trust.

[20] The E-index consists of the following six governance provisions that indicate entrenchment: a staggered board, limits to amend the charter, limits to amend bylaws, supermajority voting requirements, golden parachutes for executives, and the ability to adopt a poison pill.

[21] We also construct an alternative governance measure from the governance information available on the ESG Stats database using the same approach as for the CSR elements. Specifically, for each firm, we divide the number of governance concerns by its possible maximum and subtract it from the number of strengths divided by its possible maximum. This yields a governance index that ranges from -1 to +1. Controlling for this alternative governance measure does not affect our inferences.

4.2. Credit Spreads and CSR during a Shock to the Supply of Credit

Next, we conduct further analyses to corroborate that our results are driven by a shock to market-wide trust rather than a shock to the supply of credit. In July of 2007, LIBOR rates started to increase dramatically as the solvency of the banking sector weakened. This had a negative impact on the ability of firms to borrow (e.g., Duchin, et al. (2010) and Ivashina and Scharfstein (2010)). This shock to the supply of credit persisted until at least March 2009, the end of our crisis of trust period. If high-CSR firms were less affected by the credit crunch, the differential in the spreads that we document could be due to this phenomenon rather than a shock to trust. High-CSR firms may have been more able to borrow over the credit crunch given that the agency costs of debt argument that we describe can hold in any crisis in general. Our contention, however, is that if a firm's CSR investments engender trust, the effect of CSR on debt spreads should be particularly salient when trust is more valued. Furthermore, in a crisis of trust, the (perceived) reduction in the agency costs of debt for high-CSR firms is compounded with positive real effects derived from reciprocity.

Figure 1 suggests that the difference in spreads between high- and low-CSR firms only manifests itself starting in August 2008 and not sooner, but it is important to investigate debt spreads during the credit crunch more formally, after controlling for other factors. To do so, we augment our model in (2) to include an interaction term between CSR and the "pure" credit crunch period, which we define as the period of July 2007 through July 2008. During this period, the shock to credit supply had already happened but the shock to trust had not yet occurred (Sapienza and Zingales (2012), Lins, et al. (2016)). We estimate various specifications of this model, using different sets of control variables, and report the findings in Panel B of Table 4. The effect of CSR on bond spreads is always substantially stronger over the crisis of trust period. Only in one out of four specifications is the interaction term between the credit crunch period and CSR statistically

significant but, even in this case, the economic significance of CSR during the trust crisis period is three times larger. Interestingly, once we control for the interaction between the crunch period and CSR, the effect of CSR on debt spreads becomes statistically significant during the post-crisis period as well, albeit the coefficient is significantly lower than for the crisis period.

In sum, a shock to credit supply is unlikely to explain the positive effect of CSR on debt spreads that we uncover.

4.3. Does the CSR-Spread Relation Depend on a Bond's Default Risk?

Next, we explore whether the relation between lower bond spreads and higher levels of CSR during the crisis depends on a firm's level of default risk. To do so, we split our sample of bonds into two groups: (relatively) high default risk bonds and (relatively) low default risk bonds. We define bonds as high (low) default risk if their credit ratings are worse (better) than the median credit rating of our firms in a given year. The agency costs of debt and the benefits of stakeholder reciprocity should both be more pronounced for firms closer to default.

To examine this conjecture, we modify model (2) to account for a triple-interaction effect:

$$Spread_{ijt} =$$

$$\beta_1 CSR_{i2006} * Crisis_t * High\_default\_risk_{it-1} + \beta_2 CSR_{i2006} * Crisis_t * Low\_default\_risk_{it-1} +$$

$$\beta_3 CSR_{i2006} * Post\_crisis_t * High\_default\_risk_{it-1} + \beta_4 CSR_{i2006} * Post\_crisis_t * Low\_default\_risk_{it-1} +$$

$$\sum \gamma_k{}' X_{kjt-1} + \sum \delta_l{}' Z_{lit-1} + FFE_i + TFE_t + \varepsilon_{ijt}, \quad (3)$$

where *High_default_risk*$_{it-1}$ is an indicator variable taking the value of one if the bond rating is worse than the median bond rating in a given year and, conversely, *Low_default_risk*$_{it-1}$ is an indicator variable taking the value of one if the bond rating is better than the median bond rating in a given year.

The findings from this analysis are presented in Panel C of Table 4. As before, we estimate several specifications and find consistent results across all of them: the effect of CSR on credit spreads is substantially higher for the high-default-risk subsample. For example, the specification in column (iii), which features the most complete set of control variables, has a coefficient on the triple interaction, β_1, of -1.802 for the high-default-risk subsample while it is only -0.442 for the low-default-risk subsample. The economic significance of this difference is striking: a one standard deviation increase in CSR is associated with a 79.8 bps lower spread for the high-default-risk subsample, while the corresponding effect is only 28.9 bps for the low-default-risk subsample.[22] Thus, as we would expect, riskier bonds benefit more from a firm's earned social capital during the crisis of trust period. It is interesting to note that CSR still has an effect for low default risk firms, where the agency costs of debt are low, indicating that some of the real effects such as higher sales growth, gross margins, and sales per employee attributed to reciprocity as documented in Lins, et al. (2016) are viewed favorably by bondholders.

Taken together, we conclude from this analysis that an individual firm's social capital, and the trust that it engenders, reduces the cost of its public debt because it reduces the (perceived) agency costs of debt and also provides real effects via stakeholder reciprocity.

5. Effect of CSR on Debt Market Access and Bond Contracting Terms

Our results thus far show that high-CSR firms benefit from lower yields on their existing bonds during the crisis of trust that occurred in 2008-2009. In this section, we conduct additional tests of the extent to which a firm's earned social capital is beneficial to bondholders during this negative shock to trust. Specifically, we investigate whether high-CSR firms obtained greater bond

[22] The standard deviation of CSR is 0.443 for the high-default-risk subsample and 0.654 for the low-default-risk subsample.

market access during the crisis and whether, among firms that did issue bonds, those with higher CSR ratings obtained more favorable bond terms.

5.1. Debt Market Access

To investigate bond originations in the primary market we follow Faulkender and Petersen (2006) and limit our sample to firms that have credit ratings during the 2006-2012 period (per Compustat) under the premise that unrated firms were unlikely to have had access to bond markets during the financial crisis.[23] Our sample selection procedure is similar to the one described in Section 2 for secondary market bond trades: we obtain from Mergent FISD the details of bonds that were issued between 2007 and 2013 by U.S. domiciled and incorporated publicly-listed firms, excluding bonds with exotic features (e.g., perpetual, preferred, puttable, private placements, Yankee and Canadian bonds). This procedure yields 2,607 new issues by 753 firms. We require that firms have CSR ratings as of year-end 2006, reducing our sample to 1,550 bonds issued by 403 firms, and merge these data with annual fundamental and market data from Compustat and CRSP. Our resulting bond-issuance sample contains 1,484 corporate bonds issued by 382 firms over the 2007 through 2013 period.

To assess the extent to which CSR ratings explain a firm's propensity to issue bonds at a point in time, we estimate the following probit model at the monthly level:

$$DIssue_{it} = \beta_1 CSR_{i2006} + \sum \gamma_k{}' X_{kt-1} + IFE_i + \varepsilon_{it} \quad (4)$$

where $DIssue_{it}$ is an indicator variable that takes the value of one if rated firm i issues a corporate bond at time t, and zero otherwise. CSR_{i2006} is the firm's CSR rating as of year-end 2006 and X_{kt-1} is a (K×1) vector of standard control variables that explain debt market access. As in Faulkender and Petersen (2006), we estimate this model using industry-fixed effects at the two-digit SIC code

[23] More generally, when studying bond market access, we want to make sure that the firms that feature in our analysis have had the opportunity to access the market in the past. Having a credit rating captures past bond market access.

level, IFE_i, to account for unobservable time-invariant omitted industry-level factors associated with the demand for public debt.

We present summary statistics for the variables used in our bond-access estimations in Panel A of Table 5.[24] The mean and median values for the control variables are largely consistent with those reported in Faulkender and Petersen (2006).

In Panel B of Table 5, we estimate our probit model separately for bonds issued during the crunch, crisis, or post-crisis periods. As stated previously, the credit crunch covers the period July 2007-July 2008, the crisis covers August 2008-March 2009, and all subsequent months are included in the post-crisis period. The marginal effects analysis shows that in the crisis and post-crisis periods the propensity of a rated firm to issue a new bond increases with the level of CSR performance. The effect is economically meaningful – increasing CSR by one standard deviation increases the probability of a bond issue by 2 and 1.9 percentage points, respectively. We next estimate models using both probit and OLS regressions for the full time period from 2007 through 2013. In these models, we include interaction terms that reflect the differential effect of CSR over the crunch, crisis, and post-crisis periods. Panels C and D report these difference-in-differences results and show that higher CSR is associated with better bond market access primarily in the crisis of trust period. Across Panels B, C, and D, we find no relation between CSR and bond issuance in the credit crunch period.

5.2. Empirical Evidence on Bond Pricing and Contracting Terms

Given the role of CSR in explaining the probability of gaining bond market access during the financial crisis, we now turn to its effect on the pricing and contracting terms of the new public debt issues. To test pricing effects, we follow an approach similar to the one adopted in Section 4.

[24] All variables follow the definitions outlined in the Appendix.

More specifically, using data from bond issues between 2007 and 2013, we estimate the following quasi difference-in-differences specification:

$$Spread_{ijt} = \beta_1 CSR_{i2006} * Crisis_t + \beta_2 CSR_{i2006} * Post\_crisis_t + \sum \gamma_k{}' X_{kjt} + \sum \delta_l{}' Z_{lit-1} + IFE_i + TFE_t + \varepsilon_{ijt}, \quad (5)$$

where all variables are as described for Model (2). In this model we control for industry-fixed effects, IFE_i, to capture unobservable time-invariant omitted industry-specific determinants of credit risk. We double cluster the standard errors at the firm and time levels to control for cross-sectional and time-series dependence, respectively.

We present bond-level descriptive statistics for bonds originated in the primary market over our sample window in Table 6. The mean credit spread for new bond issues is 2.13%. There are large differences between the credit spreads of investment-grade and speculative bond categories (1.7% versus 4.3%). While 85 percent of the bonds are investment-grade issues (with ratings in the BBB category and above) a large fraction (44% of total issues) are in the bottom of the investment-grade credit rating category (BBB). The mean issue size is about $678 million with an average time to maturity of just over 8 years. The mean covenant score is over 7.2, indicating that a large number of bond issues fall in the medium covenant intensity category.[25]

In Table 7, Panel A we report the results from estimating model (5) for our sample of bonds issued over the 2007 through 2013 period. As before, we first control for bond-level variables (column (i)), then also add firm-level attributes (column (ii)) and then add governance controls (column (iii)). In all specifications, the effect of CSR on offering spreads is both statistically and economically significant. For instance, according the model presented in column (iii), a one standard deviation increase in pre-crisis CSR is associated with 35.5 bps lower spreads during the

[25] Following Chava, Kumar, and Warga (2010), we define covenant intensity by assigning bonds to the four covenant intensity levels: (i) low (0 to 5 covenants), (ii) medium (6 to 10 covenants), (iii) high (11 to 15 covenants), and (iv) very high (16 to 21 covenants).

crisis period. This beneficial CSR effect declines slightly but remains economically important (27.5 bps lower cost of debt) even when we control for a bond's credit rating (column (iv)). Consistent with our prior results, the lower bond spreads accrue to high-CSR firms only during the crisis-of-trust period and not during the post-crisis period (the difference between β_1 and β_2 is significant at the 1% level across all specifications).

As with our secondary market bond spread tests, we next verify that the documented effects are driven by a shock to market-wide trust rather than a shock to the supply of credit by augmenting model (5) with an interaction term between CSR and the crunch indicator variable, as defined earlier. Our findings persist as shown in Panel B of Table 7: the effect of CSR on at-issue bond spreads is only present during the crisis-of-trust period.

We conduct two additional tests that assess to what extent bond investors value the trust-enhancing nature of CSR activities during a crisis of trust. First, we use initial credit ratings to capture the assessment of the rating agencies as to the risk of the bond issue. Panel C of Table 7 shows that at-issue credit ratings are higher for high-CSR issuers during the crisis period.

Second, we assess the relation between CSR and bond maturity. Maturity can be viewed as an extreme type of debt covenant given bondholders' limited flexibility in ex-post recontracting due to unanimous consent requirements (Berger and Udell (1998)). If CSR engenders trust, high-CSR firms may be able to secure financing over relatively longer time horizons when prevailing trust levels have been eroded. To assess the impact of CSR on bond maturity, we regress time-to-maturity on bond- and firm-level controls as in model (5). The results from this estimation are reported in Panel D of Table 7 and show a significant positive relation between CSR and bond maturity. A one standard deviation increase in the pre-crisis level of CSR applied to the 9.600 coefficient on *Crisis*CSR* in model (iii) translates into a 6-month longer time-to-maturity (equivalent to approximately 7 percent of the mean level of maturity in the pooled sample). This

result becomes slightly stronger after we control for the well-established link between credit risk and debt maturity structures (e.g., Strahan (1999); Berger, et al. (2005)) in model (iv).

In sum, our primary bond market tests provide further evidence that bondholders value the trust earned from building social capital: high-CSR firms benefit from greater bond market access and better bond contracting terms in periods characterized by a loss of trust.

6. Conclusion

This paper investigates whether a firm's social capital, and the trust that it engenders, are viewed favorably by bondholders when the markets and the economy at large face a severe crisis of confidence, such as during the 2008-2009 financial crisis. We argue that an individual firm's social capital, built up through investments in CSR, reduces the agency costs of debt because stakeholder-oriented firms are less likely to take risky bets that primarily benefit shareholders, if successful, but damage other stakeholders if unsuccessful. In addition, stakeholder-oriented firms are also likely to benefit from reciprocity and, hence, accrue positive real effects (such as higher cash flows).

Using the financial crisis as an exogenous shock to trust, we show that high-CSR firms benefited from lower debt spreads in the secondary market during the financial crisis. These effects are more pronounced for firms with higher default risk as manifested in poorer credit ratings. Extending this analysis to the primary market, we further show that high-CSR firms had better access to the public debt market during the crisis period. Among those firms that did access the market, high-CSR firms issued bonds with lower offering spreads, longer maturities, and better initial credit ratings, holding everything else constant.

Overall, our results are consistent with the notion that debt investors believe that high-CSR firms are less likely to engage in asset substitution that would be detrimental to creditors or other

(non-shareholder) stakeholder groups in general. They also show that the benefits of CSR that accrued to shareholders during the financial crisis (Lins, et al. (2016)) carry across to another important asset class, debt capital.

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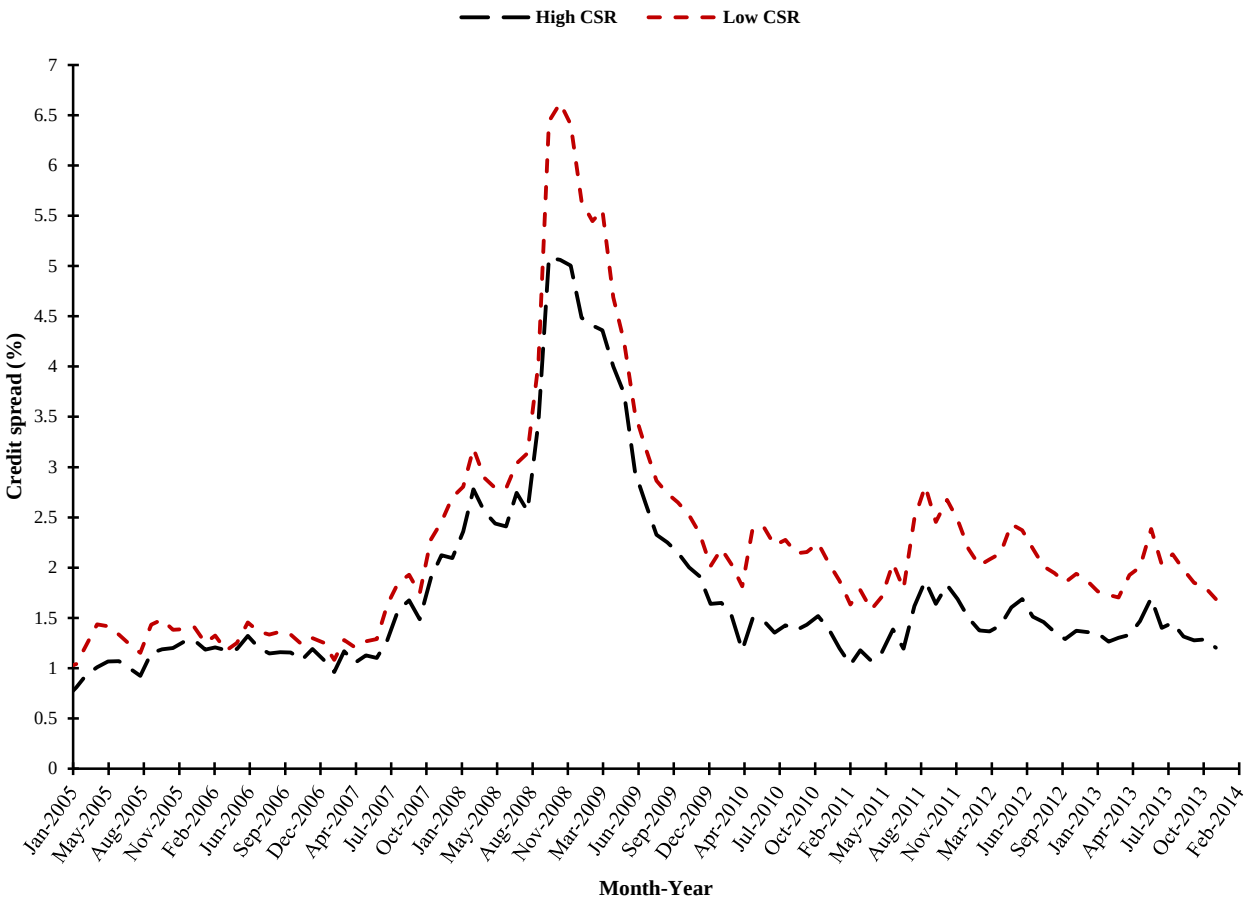
Appendix. Variable Definitions

Bond Characteristics	
Credit spread	Difference between the yield-to-maturity and the maturity-matched Treasury yield. Maturity-matched risk-free yields are obtained by linearly interpolating benchmark Treasury yields contained in the Federal Reserve H-15 release for constant maturities of 1/12, 3/12, 6/12, 1, 2, 3, 5, 7, 10, 20, and 30 years.
Illiquidity	Amihud (2002) measure of illiquidity that is defined based on the price impact of a secondary market bond trade per unit traded, implemented following the approach in Dick-Nielsen, et al. (2012).
Offering amount	Face (nominal) value of the bond issue (in billions of U.S. dollars).
Time-to-maturity	Difference (in months) between a bond's issue date (in the case of new issues on the primary market) or trade date (in the case of outstanding issues on the secondary market) and its fixed maturity date.
Bond age	Difference (in months) between an outstanding corporate bond's trade date on the secondary market and its original issue date.
Coupon	Applicable annual interest rate that the issuer is obligated to pay the bondholders.
Redeemable	Indicator variable that takes the value of one if the bond may be redeemed under certain conditions, and zero otherwise.
Fungible	Indicator variable which takes the value of one if the bonds are, by virtue of their terms, equivalent, interchangeable, or substitutable, and zero otherwise.
Offering market	Indicator variable which takes the value of one if the bond issue is offered globally and zero if the offering is made to the domestic market only.
Security	Rank variable that takes the value of 1 to 5 for a junior subordinate, subordinate, senior subordinate, senior, and senior secured bonds.
Covenant index	Count of covenants in the five main categories (payout, investment, financing, accounting, and event-related restrictions) reported on Mergent FISD.
Credit rating	Rank variable based on the conversion of alphabetical ratings to numerical values (e.g., AAA=1 …, D=21). If an issue is rated by multiple rating agencies, the representative rating is from S&P. When this is not available, credit ratings are from Moody's and if this is not available, the rating is from Fitch.

Firm Characteristics (Compustat data name in parentheses)	
CSR	Total net (strengths minus concerns) corporate social responsibility rating computed based on the sum of the net CSR indices for the following categories: environment, employees, human rights, community, and diversity, available from the MSCI ESG Stats database.
Size	Natural log of the market value of equity (CSHO multiplied by PRCC_F).
Profitability	Operating income before depreciation (OIBDP) divided by net sales (SALE).
Short-term debt	Debt in current liabilities (DLC) scaled by total assets (AT).
Long-term debt	Debt in long-term liabilities (DLTT) scaled by total assets (AT).
Cash holdings	Cash and short-term investments (CHE) scaled by total assets (AT).
Tangibility	Tangible property, plant and equipment (PPENT) scaled by total assets (AT).
Capital expenditure	Capital expenditures (CAPX) scaled by total assets (AT).
Coverage ratio	Interest cover ratio measured as operating income after depreciation (OIADP) plus interest expense (XINT) scaled by interest expense following the four categories in Blume, et al. (1998).
Volatility	Natural log of the standard deviation of daily stock returns from CRSP.
Beta	Dimson (1979) adjusted beta.
Governance	Entrenchment index from Bebchuk, et al. (2009), computed as the sum of the following six anti-takeover indicators from the Institutional Shareholder Service (ISS): (i) classified (staggered) board (CBOARD), (ii) poison pill (PPILL), (iii) golden parachutes for executives (GPARACHUTE), (iv) limited ability to amend charter (LACHTR), (v) limited ability to amend bylaws (LABYLW) and (vi) supermajority voting requirements (SUPERMAJOR).

Bond Market Access Variables	
DIssue	Indicator variable which takes the value of one if the firm issues a corporate bond in a given period, and zero otherwise.
S&P500	Indicator variable which takes the value of one for periods in which the firm is a constituent of the S&P500 index, and zero otherwise.
NYSE	Indicator variable which takes the value of one if the firm's equity trades on the New York Stock Exchange, and zero otherwise.
Market value of assets	Natural log of the market value of assets, computed as book value of total assets (AT) minus the book value of common equity (CEQ) plus the market value of equity (CSHO multiplied by PRCC_F).
Age	Natural log of one plus the number of years the firm has been included in the Compustat database.
%Rated	Natural log of one plus the percentage of firms in the same three-digit SIC industry that have a long-term issuer-level credit rating.
Young	Indicator variable that takes the value of one if the firm is three years old or less, and zero otherwise.
Advertising intensity	Advertising expense (XAD #45) scaled by net sales (SALE).
R&D intensity	Research and development expenditures (XRD) scaled by net sales (SALE).
Market-to-book (assets)	Market value of assets scaled by book value of assets (AT).
Asset volatility	Annualized volatility of monthly equity returns over the past year, multiplied by the ratio of the market value of equity to the market value of assets.
Annual returns	Annualized stock returns over the previous year.

Figure 1
Secondary Market Credit Spreads (2005 - 2013)
High- versus Low-CSR Bond Issuers



This figure plots the average credit spread of corporate bonds of high- and low-CSR firms over the 2005-2013 period. High-CSR (low-CSR) firms are defined as those firms with CSR scores above (below) the median CSR value of the year. For each portfolio, the spread is equally weighted across all the outstanding bonds. The period of August 2008 to March 2009 coincides with the crisis of trust described in Sapienza and Zingales (2008) and Lins, Servaes and Tamayo (2016).

Table 1
Sample of Secondary Market Bond Trades

This table describes the identification of our sample of 2,007 secondary market corporate bonds, their distribution over the sample period, and their issuers' industry affiliation. Panel A reports an overview of the procedure we follow to construct our sample. Panel B shows the distribution of issuers and bonds over the 2005-2013 period. Panel C reports the industry composition of the secondary market sample based on the Fama-French 12 industry classification (excluding financials). Sample period: 2007-2013.

Panel A: Bonds at the Intersection of TRACE, FISD, MSCI ESG STATS, CRSP and Compustat

	Issuers	Bonds
Bonds with trade data on TRACE and issue-level data on FISD	340	2,219
Refinements for liquidity biases in TRACE	(4)	(37)
Bond issuers not covered by MSCI ESG STATS	(31)	(140)
Bond issuers with missing data on CRSP and Compustat	(2)	(35)
Sample of secondary market bond trades	303	2,007

Panel B: Distribution of Issuers and Bonds on the Secondary Market by Year

Trade year	Issuers	Bonds
2005	208	717
2006	210	723
2007	206	740
2008	209	754
2009	215	869
2010	239	934
2011	242	940
2012	258	1,148
2013	252	1,204

Panel C: Industry Composition of Secondary Market Trades

Industry	Issuers		Bonds	
	N	%	*N*	%
Consumer non-durables	24	7.9	187	9.3
Consumer durables	7	2.3	33	1.6
Manufacturing	48	15.8	297	14.8
Oil, gas, and coal extraction and products	43	14.2	259	12.9
Chemicals and allied products	20	6.6	159	7.9
Business equipment	21	6.9	185	9.2
Telephone and television transmission	16	5.3	144	7.2
Utilities	46	15.2	210	10.5
Wholesale, retail, and some services	14	4.6	92	4.6
Healthcare, medical equipment, and drugs	28	9.3	186	9.3
Other	36	11.9	255	12.7

Table 2
Descriptive Statistics – Secondary Market Bond Trades

This table presents bond- and firm-level summary statistics for the 2,007 secondary market bonds (303 issuers) included in the main sample. The sample comprises corporate debentures (CDEB) and corporate medium-term notes (CMTN) with a time-to-maturity over one month and less than 30 years. *Credit spread* is the main dependent variable of interest and is measured as the difference between a bond's trade-based yield-to-maturity from TRACE and the maturity-matched Treasury yield from Federal Reserve H-15 release for constant maturities. *CSR* is the primary independent variable of interest and is defined based on the net (strengths minus concerns) CSR rating computed from the MSCI ESG STATS database. Bond- and firm-level control variables follow definitions presented in the Appendix. All continuous firm-level variables are winsorized at the 1st and 99th percentiles, except for variables than cannot take on negative values, which are winsorized at the 99th percentile. Sample period: 2007-2013.

	N	Mean	St. dev.	25th pcntl	50th pcntl	75th pcntl
Bond Characteristics						
Credit spread (%)	73,512	1.959	1.762	0.775	1.353	2.547
Illiquidity	64,733	0.009	0.014	0.001	0.004	0.010
Issue size (USD billions)	73,512	0.573	0.474	0.300	0.475	0.700
Coupon	73,512	5.838	1.801	4.875	5.950	7.000
Time-to-maturity (months)	73,512	78.29	62.06	38.00	67.00	101.00
Bond age (months)	73,512	46.06	40.13	16.56	35.87	63.64
Redeemable	73,512	0.918	0.273	1	1	1
Fungible	73,512	0.801	0.399	1	1	1
Offering market	73,512	0.384	0.486	0	0	1
Security	73,512	3.981	0.233	4	4	4
Covenant intensity	72,286	6.346	3.152	5	6	7
Credit rating	42,099	8.332	2.797	6	8	10
Firm Characteristics						
CSR	73,512	0.098	0.742	-0.369	-0.007	0.440
Size	73,512	9.535	1.297	8.644	9.619	10.387
Profitability	73,512	0.239	0.156	0.132	0.205	0.310
Short-term debt	73,512	0.035	0.042	0.004	0.021	0.048
Long-term debt	73,512	0.272	0.126	0.187	0.254	0.334
Cash holdings	73,512	0.075	0.074	0.021	0.049	0.104
Tangibility	73,512	0.384	0.267	0.141	0.318	0.595
Capital expenditure	73,512	0.062	0.067	0.024	0.042	0.073
Coverage 1	73,512	4.333	1.184	4.017	5	5
Coverage 2	73,512	2.315	2.228	0	1.745	5
Coverage 3	73,512	1.769	3.322	0	0	1.754
Coverage 4	73,512	1.387	7.316	0	0	0
Volatility	72,846	-2.673	0.497	-3.043	-2.701	-2.343
Beta	72,846	1.041	0.821	0.508	0.932	1.451
Governance	69,658	3.373	1.344	2	4	4

Table 3
CSR and Bond Pricing in the Secondary Market

This table reports regression estimates of secondary market credit spreads on *CSR* and bond and firm level control variables. *CSR* is based on a firm's the net (strengths minus concerns) CSR rating computed in each lagged period. Panel A presents the test results using firm fixed effects with and without time (month) fixed effects. Panel B reports findings on the sensitivity of the CSR-credit spread relation to the bonds' default risk. All bond-level and issuer-specific variables included in the estimations follow definitions presented in the Appendix. Figures reported in parentheses are the values of heteroskedasticity robust standard errors based on two-dimensional clustering at the firm- and month-level (significance at the 10, 5, and 1 percent level is indicated by *, **, and ***, respectively). Sample period: 2005-2013.

Panel A: CSR and Credit Spreads

	(i)	(ii)	(iii)	(iv)
CSR	-0.198***	-0.136***	-0.136**	0.009
	(0.059)	(0.049)	(0.057)	(0.036)
Illiquidity		24.17***	17.55***	5.240***
		(3.371)	(2.883)	(0.679)
Offering amount		0.008**	-0.002	0.001
		(0.004)	(0.003)	(0.002)
Coupon		0.108***	0.111***	0.044***
		(0.016)	(0.021)	(0.012)
Time-to-maturity		0.002***	0.002***	0.003***
		(0.000)	(0.000)	(0.000)
Bond age		0.001	-0.002**	-0.001
		(0.001)	(0.000)	(0.000)
Redeemable		0.235***	-0.025	-0.079
		(0.075)	(0.056)	(0.065)
Fungible		0.102*	-0.0763*	-0.053
		(0.061)	(0.0440)	(0.034)
Offering market		0.122**	-0.127**	-0.002
		(0.060)	(0.0588)	(0.031)
Security		-0.509***	-0.479***	-0.403**
		(0.161)	(0.169)	(0.169)
Covenant intensity		0.024**	0.006	0.010
		(0.012)	(0.011)	(0.007)
Size			-0.736***	-0.620***
			(0.195)	(0.129)
Profitability			-1.069*	-0.254
			(0.640)	(0.487)
Short-term debt			2.161**	-1.470**
			(1.025)	(0.722)
Long-term debt			-0.797	0.107
			(0.656)	(0.452)
Cash holdings			-1.858***	0.0404
			(0.687)	(0.475)

Tangibility			-0.576	0.687
			(0.825)	(0.517)
Capital expenditure			5.871***	0.619
			(1.657)	(0.846)
Coverage 1			0.030	-0.098**
			(0.063)	(0.043)
Coverage 2			-0.009	-0.045**
			(0.024)	(0.021)
Coverage 3			0.006	0.006
			(0.013)	(0.011)
Coverage 4			0.001	0.001
			(0.003)	(0.002)
Volatility			0.399**	0.070
			(0.200)	(0.082)
Beta			-0.152***	-0.005
			(0.0583)	(0.033)
Governance			0.120***	0.016
			(0.019)	(0.016)
Firm fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	73,512	63,617	59,985	59,985
R-squared	0.47	0.54	0.61	0.82

Panel B: CSR and Credit Spreads – Sensitivity to Default Risk

	(i)	(ii)	(iii)	(iv)
CSR	-0.167***	-0.0972**	-0.0934*	0.0487
	(0.050)	(0.045)	(0.055)	(0.040)
Illiquidity	23.78***	22.53***	17.71***	4.659***
	(3.160)	(3.195)	(2.943)	(0.719)
Credit rating	0.135***	0.113**	0.103***	0.0951***
	(0.046)	(0.051)	(0.039)	(0.033)
Bond controls	No	Yes	Yes	Yes
Firm controls	No	No	Yes	Yes
Governance controls	No	No	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	38,055	37,302	35,762	35,762
R-squared	0.56	0.57	0.63	0.83

Table 4
Economic Consequences of CSR in the Secondary Bond Market during the Financial Crisis

This table presents the results from difference-in-differences tests (with firm and time fixed effects) of the economic consequences of CSR in the secondary bond market during the financial crisis. The models are estimated from 2007 to 2013. In this table, *CSR* is the proxy for corporate social responsibility, and is measured at the end of 2006. Panel A reports regressions estimates of on-the-run credit spreads on CSR during the crisis and post-crisis periods. *Crisis* is an indicator variable that takes the value of 1 if the bond trade falls in the period from August 2008 to March 2009, and is zero otherwise. *Post-crisis* is an indicator variable that takes the value of 1 if the bond trades are in the period from April 2009 to December 2013, and is zero otherwise. In Panel B, we re-estimate the regression but report separate results on the role of CSR during the credit crunch. In this Panel, *Crunch* is an indicator variable that takes the value of 1 if the bond trade is in the period from July 2007 to July 2008, and is zero otherwise. Panel C reports test results on the economic consequences of CSR across subsets of bonds with high and low default risk. In this panel, *High (Low) default risk* are indicator variables that take the value of 1 if the bond's credit rating is in the top (bottom) quantile of the distribution, and are zero otherwise. All bond-level and issuer-specific variables included in the estimations follow definitions presented in the Appendix. Except when stated otherwise, figures reported in parentheses are the values of heteroskedasticity robust standard errors based on two-dimensional clustering at the firm- and month-level (significance at the 10, 5, and 1 percent level is indicated by *, **, and ***, respectively). Sample period: 2007-2013.

Panel A: Credit Spreads during the Financial Crisis

	(i)	(ii)	(iii)	(iv)
*Crisis*CSR*	-0.568**	-0.657***	-0.680***	-0.737***
	(0.258)	(0.254)	(0.247)	(0.242)
*Post-crisis*CSR*	-0.043	-0.115	-0.132	-0.170
	(0.100)	(0.085)	(0.085)	(0.116)
Illiquidity	5.87***	4.888***	4.886***	4.502***
	(0.725)	(0.625)	(0.637)	(0.711)
Offering amount	0.001	0.001	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)
Coupon	0.054***	0.039***	0.044***	0.058***
	(0.014)	(0.013)	(0.013)	(0.013)
Time-to-maturity	0.002***	0.003***	0.003***	0.003***
	(0.000)	(0.001)	(0.001)	(0.001)
Bond age	-0.001	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
Redeemable	-0.031	-0.072	-0.074	-0.151**
	(0.072)	(0.068)	(0.069)	(0.073)
Fungible	-0.130***	-0.111***	-0.097***	-0.115***
	(0.032)	(0.034)	(0.032)	(0.034)
Offering market	0.037	0.026	0.014	0.033
	(0.038)	(0.034)	(0.032)	(0.037)
Security	-0.732***	-0.703***	-0.667***	-0.526*
	(0.160)	(0.161)	(0.194)	(0.305)
Covenant intensity	0.010	0.007	0.011*	0.009
	(0.007)	(0.006)	(0.006)	(0.007)

Credit rating				0.104***
				(0.038)
Size		-0.733***	-0.746***	-0.549***
		(0.139)	(0.147)	(0.153)
Profitability		0.114	-0.0393	-0.494
		(0.425)	(0.426)	(0.509)
Short-term debt		-1.249	-1.380	-0.531
		(0.832)	(0.871)	(0.857)
Long-term debt		1.075*	1.014*	0.446
		(0.558)	(0.599)	(0.632)
Cash holdings		-0.454	-0.482	-0.199
		(0.519)	(0.536)	(0.682)
Tangibility		-0.436	-0.293	-0.490
		(0.692)	(0.684)	(0.867)
Capital expenditure		0.0853	0.509	2.205*
		(0.792)	(0.870)	(1.228)
Coverage 1		-0.075*	-0.059	-0.015
		(0.040)	(0.044)	(0.054)
Coverage 2		-0.010	-0.014	-0.030
		(0.022)	(0.021)	(0.026)
Coverage 3		-0.003	-0.003	0.000
		(0.011)	(0.011)	(0.013)
Coverage 4		-0.001	-0.001	-0.002
		(0.001)	(0.001)	(0.002)
Volatility		0.021	0.007	-0.042
		(0.090)	(0.088)	(0.117)
Beta		-0.017	-0.013	-0.002
		(0.038)	(0.038)	(0.056)
Governance			-0.055*	-0.068
			(0.033)	(0.043)
(*Crisis – Post-crisis*)**CSR*	-0.525	-0.542	-0.548	-0.567
(*p-value*)	(0.01)	(0.01)	(0.01)	(0.00)
Firm fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	52,520	50,995	48,715	30,520
R-squared	0.82	0.84	0.84	0.84

Panel B: Credit Spreads during the Credit Crunch and Financial Crisis

	(i)	(ii)	(iii)	(iv)
*Crunch*CSR*	-0.052	-0.137	-0.180	-0.395**
	(0.094)	(0.106)	(0.114)	(0.166)
*Crisis*CSR*	-0.604*	-0.753**	-0.809***	-1.059***
	(0.309)	(0.308)	(0.297)	(0.332)
*Post-crisis*CSR*	-0.079	-0.212	-0.261**	-0.490**
	(0.145)	(0.131)	(0.126)	(0.200)
Credit rating	–	–	–	0.104***
				(0.038)
(*Crunch – Crisis*)**CSR*	-0.552	-0.616	-0.629	-0.664
(*p-value*)	(0.02)	(0.00)	(0.00)	(0.00)
(*Crisis – Post-crisis*)**CSR*	-0.525	-0.541	-0.548	-0.569
(*p-value*)	(0.01)	(0.01)	(0.01)	(0.00)
(*Crunch – Post-crisis*)**CSR*	0.027	0.075	0.081	0.095
(*p-value*)	(0.76)	(0.32)	(0.32)	(0.35)
Bond controls	Yes	Yes	Yes	Yes
Firm controls	No	Yes	Yes	Yes
Governance controls	No	No	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	52,520	50,995	48,715	30,520
R-squared	0.82	0.83	0.83	0.84

Panel C: Credit Spreads during the Financial Crisis – High versus Low Default Risk Bonds

	(i)	(ii)	(iii)
*Crisis*CSR*High default risk*	-1.714***	-1.844***	-1.802***
	(0.460)	(0.486)	(0.491)
*Crisis*CSR* Low default risk*	-0.411*	-0.408*	-0.442**
	(0.239)	(0.225)	(0.221)
*Post-crisis*CSR* High default risk*	-0.420	-0.384	-0.396
	(0.289)	(0.274)	(0.268)
*Post-crisis*CSR* Low default risk*	-0.002	-0.011	-0.033
	(0.097)	(0.094)	(0.096)
(*High – Low*)**Crisis*CSR*	-1.303	-1.436	-1.360
(*p-value*)	(0.00)	(0.00)	(0.00)
(*High – Low*)**Post-crisis*CSR*	-0.418	-0.373	-0.363
(*p-value*)	(0.14)	(0.17)	(0.17)
Bond controls	Yes	Yes	Yes
Firm controls	No	Yes	Yes
Governance controls	No	No	Yes
Firm fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time
Observations	32,508	32,139	31,313
R-squared	0.83	0.84	0.84

Table 5
CSR and Bond Market Access

This table reports the results from cross-sectional and difference-in-differences tests on the role of CSR in bond market access during the financial crisis. Panel A reports the descriptive statistics for the variables used in the estimations. All variables are based on Faulkender and Petersen (2006) and follow definitions presented in the Appendix. Panel B presents separate probit regression estimates (with industry fixed effects) of the bond issue indicator (*DIssue*) on *CSR* for each of the three time periods of interest. *Crunch* is an indicator variable that takes the value of 1 if the bond origination is in the period from July 2007 to July 2008, and is zero otherwise. *Crisis* is an indicator variable that takes the value of 1 if the bond origination is in the period from August 2008 to March 2009, and is zero otherwise. *Post-crisis* is an indicator variable that takes the value of 1 if the bond issue is in the period from April 2009 to December 2013, and is zero otherwise. Marginal effects are reported for *CSR* as the main variable of interest. Panel C reports the results from the difference-in-differences estimations on the effect of *CSR* on the propensity to access the bond market during the crisis and post-crisis periods. Columns 1 and 2 report the results from probit estimations (with and without time fixed effects). Columns 3 and 4 provide results from OLS estimations (with and without time fixed effects). Panel D presents difference-indifferences test results from probit and OLS estimations (with and without time fixed effects) that separately identify the credit crunch period. Except when stated otherwise, figures reported in parentheses are the values of heteroskedasticity robust standard errors based on two-dimensional clustering at the firm- and quarter-level (significance at the 10, 5, and 1 percent level is indicated by *, **, and ***, respectively). Sample period: 2007-2013.

Panel A: Descriptive Statistics

	N	Mean	St. dev.	25th pcntl	50th pcntl	75th pcntl
CSR	67,248	-0.131	0.472	-0.400	-0.143	0.125
DIssue	67,248	0.295	0.456	0	0	1
S&P500	67,248	0.451	0.497	0	0	1
NYSE	67,248	0.702	0.457	0	1	1
Market value of assets	64,224	8.976	1.456	7.902	8.839	9.992
Age	67,248	3.375	0.643	2.890	3.433	3.988
%Rated	67,248	0.299	0.176	0.154	0.287	0.405
Young	67,248	0.002	0.044	0	0	0
Profitability	63,696	0.193	0.143	0.102	0.169	0.264
Tangibility	63,696	0.339	0.251	0.124	0.263	0.551
Advertising intensity	63,696	0.011	0.023	0	0	0.012
R&D intensity	63,696	0.021	0.045	0	0	0.017
Market-to-book (assets)	64,224	1.636	0.701	1.151	1.421	1.900
Asset volatility (Ln)	65,556	-2.413	0.558	-2.793	-2.422	-2.059
Annual returns	65,556	0.125	0.471	-0.32	0.096	0.311

Panel B: CSR and Bond Market Access – Separate Estimation during the Credit Crunch, Financial Crisis, and the Post-Crisis Periods

	(i) *Crunch* = 1	(ii) *Crisis* = 1	(iii) *Post-crisis* = 1
CSR	0.033	0.162**	0.117
	(0.114)	(0.073)	(0.078)
S&P500	0.241*	0.291**	0.299***
	(0.133)	(0.116)	(0.103)
NYSE	0.216	0.254**	0.161*
	(0.137)	(0.114)	(0.090)
Market value of assets	0.395***	0.480***	0.351***
	(0.084)	(0.085)	(0.042)
Age	0.234***	0.329***	0.003
	(0.070)	(0.046)	(0.069)
%Rated	0.683*	0.269	-0.287
	(0.356)	(0.464)	(0.274)
Young	1.184	0.000	0.000
	(0.805)	(0.000)	(0.000)
Profitability	0.557	0.779***	0.639***
	(0.447)	(0.189)	(0.229)
Tangibility	0.954***	0.847***	0.521**
	(0.259)	(0.225)	(0.230)
Market-to-book (assets)	0.016	0.039	-0.064
	(0.081)	(0.110)	(0.056)
Advertising intensity	-4.039	-6.128***	-2.781
	(2.674)	(2.275)	(1.863)
R&D intensity	-2.422*	-4.101***	-2.515**
	(1.332)	(1.222)	(1.018)
Asset volatility	-0.049	0.283***	0.040
	(0.127)	(0.117)	(0.073)
Annual returns	-0.120	-0.658***	-0.131**
	(0.148)	(0.116)	(0.053)
CSR marginal effects (*p-value*)	0.007	0.043	0.042
	(0.44)	(0.00)	(0.00)
Industry fixed effects	Yes	Yes	Yes
SE clustered by	Firm	Firm	Firm
Observations	9,653	5,776	41,667
Pseudo *R*-squared	0.27	0.32	0.18

Panel C: CSR and Bond Market Access during the Financial Crisis

	(i)	(ii)	(iii)	(iv)
*Crisis*CSR*	0.171**	0.102*	0.043**	0.019
	(0.079)	(0.062)	(0.021)	(0.020)
*Post-crisis*CSR*	0.079	0.131*	0.024	0.040
	(0.076)	(0.071)	(0.024)	(0.025)
(*Crisis – Post-crisis*)**CSR*	0.092	-0.029	0.019	-0.021
(*p-value*)	(0.24)	(0.62)	(0.38)	(0.22)
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	No	Yes	No	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	62,628	62,628	63,336	63,336
Pseudo *R*-squared	0.21	0.22	–	–
R-squared	–	–	0.24	0.25

Panel D: CSR and Bond Market Access during the Credit Crunch and Financial Crisis

	(i)	(ii)	(iii)	(iv)
*Crunch*CSR*	0.153*	0.005	0.034	-0.012
	(0.093)	(0.099)	(0.028)	(0.028)
*Crisis*CSR*	0.184**	0.102*	0.046**	0.019*
	(0.085)	(0.060)	(0.023)	(0.011)
*Post-crisis*CSR*	0.092	0.131*	0.026	0.039*
	(0.079)	(0.075)	(0.025)	(0.023)
(*Crisis – Crunch*)**CSR*	0.031	0.097	0.012	0.031
(*p-value*)	(0.60)	(0.55)	(0.41)	(0.45)
(*Crisis – Post-crisis*)**CSR*	0.092	-0.029	0.020	-0.020
(*p-value*)	(0.26)	(0.62)	(0.75)	(0.22)
(*Crunch – Post-crisis*)**CSR*	0.061	-0.126	0.008	0.051
(*p-value*)	(0.50)	(0.14)	(0.78)	(0.03)
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	No	Yes	No	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	62,628	62,628	63,336	63,336
Pseudo *R*-squared	0.20	0.22	–	–
R-squared	–	–	0.23	0.25

Table 6
Descriptive Statistics – Primary Market Bond Issues

This table presents attributes of corporate bonds in our sample. All data are from the Mergent Fixed Income Securities Database (FISD). The sample comprises 1,484 bonds issued from January 2007 to December 2013 by 382 U.S. domiciled and incorporated non-financial firms that are at the intersection of the CRSP, Compustat, MSCI ESG STATS, and Mergent FISD databases. The sample is restricted to corporate debentures (CDEB) and corporate medium-term notes (CMTN. Excluded from the sample are variable- and zero-coupon bonds, as well as putable, convertible, perpetual, foreign currency, preferred, exchangeable, private placement (Rule 144A), Yankee and Canadian bonds. Panel A presents the basic bond characteristics. Panel (B) reports summary statistics for firm-level variables used in the multivariate analyses. Issuer-level control variables are winsorized at the 1st and 99th percentiles. All variables follow definitions noted in the Appendix.

Panel A: Bond Characteristics

	Bonds	Mean	St. dev.	25th pcntl	50th pcntl	75th pcntl
Credit spread (%):						
Full sample	1,484	2.131	1.675	0.963	1.604	2.856
Investment-grade	1,270	1.757	1.330	0.866	1.424	2.193
Speculative-grade	214	4.349	1.795	3.153	4.085	5.353
Issue size (USD bn)	1,484	0.678	0.598	0.350	0.500	0.850
Time-to-maturity (months)	1,484	98.97	46.22	60	120	120
Market	1,484	0.700	0.458	0	1	1
Redeemable	1,484	0.979	0.143	1	1	1
Fungible	1,484	0.903	0.296	1	1	1
Security:			Frequency		Percentage	
Senior secured			12		0.81	
Senior			1,453		97.91	
Senior subordinate			19		1.28	
Covenant intensity:			Frequency		Percentage	
Low (0 to 5 covenants)			352		24.09	
Medium (6 to 11 covenants)			1,017		69.61	
High (12 to 17 covenants)			88		6.02	
Very High (18 to 23 covenants)			4		0.27	
Credit rating (*at-issue*)			Frequency		Percentage	
AAA			31		2.09	
AA			89		6.01	
A			493		33.27	
BBB			657		44.33	
BB			144		9.72	
B			65		4.39	
CCC and below			3		0.20	

Table 7
Economic Consequences of CSR in the Primary Bond Market during the Financial Crisis

This table presents the results from difference-in-differences tests (with industry and time fixed effects) of the economic consequences of CSR in the primary bond market during the financial crisis. The models are estimated from 2007 to 2013. In this table, *CSR* is the proxy for corporate social responsibility, and is measured at the end of 2006. Panel A reports regressions estimates of at-issue credit spreads on CSR during the crisis and post-crisis periods. *Crisis* is an indicator variable that takes the value of 1 if the bond originates in the period from August 2008 to March 2009, and is zero otherwise. *Post-crisis* is an indicator variable that takes the value of 1 if the bond issue is in the period from April 2009 to December 2013, and is zero otherwise. In Panel B, we re-estimate the regression but report separate results on the role of CSR during the credit crunch. In this Panel, *Crunch* is an indicator variable that takes the value of 1 if the bond origination is in the period from July 2007 to July 2008, and is zero otherwise. Panel C uses at-issue initial credit ratings as an alternative proxy for the cost of debt. In Panel D, we report regression estimates of time-to-maturity on CSR during the crisis and post-crisis periods. All bond-level and issuer-specific variables included in the estimations follow definitions presented in the Appendix. Except when stated otherwise, figures reported in parentheses are the values of heteroskedasticity robust standard errors based on two-dimensional clustering at the firm- and quarter-level (significance at the 10, 5, and 1 percent level is indicated by *, **, and ***, respectively).

Panel A: At-issue Credit Spreads during the Financial Crisis and in the Post-Crisis Period

	Credit spread (at-issue)			
	(i)	(ii)	(iii)	(iv)
*Crisis*CSR*	-0.614***	-0.529***	-0.548***	-0.424**
	(0.120)	(0.164)	(0.178)	(0.192)
*Post-crisis*CSR*	-0.134	-0.003	0.004	0.012
	(0.098)	(0.061)	(0.063)	(0.056)
Offering amount	-0.001	0.002***	0.003***	0.002***
	(0.001)	(0.000)	(0.000)	(0.000)
Time-to-maturity	0.001**	0.001	0.000	0.001*
	(0.001)	(0.000)	(0.001)	(0.001)
Redeemable	0.150	-0.148	-0.126	-0.427***
	(0.216)	(0.129)	(0.130)	(0.160)
Fungible	0.044	-0.052	-0.051	-0.036
	(0.168)	(0.108)	(0.114)	(0.116)
Offering market	-0.306**	0.015	0.019	-0.024
	(0.127)	(0.095)	(0.104)	(0.097)
Security	0.089	-0.446	-0.436	-0.147
	(0.434)	(0.402)	(0.426)	(0.371)
Covenant intensity	0.228***	0.073***	0.065**	0.031
	(0.026)	(0.026)	(0.027)	(0.027)
Credit rating				0.243***
				(0.034)
Size		-0.556***	-0.573***	-0.302***
		(0.073)	(0.077)	(0.068)
Profitability		0.498	0.740	0.396
		(0.435)	(0.454)	(0.369)
Cash holdings		0.712**	0.540	0.882**
		(0.348)	(0.394)	(0.385)

Short-term debt		0.593	0.629	1.913*
		(0.989)	(1.056)	(1.114)
Long-term debt		1.090**	0.832*	0.525
		(0.432)	(0.465)	(0.460)
Tangibility		-0.502	-0.399	-0.186
		(0.318)	(0.333)	(0.336)
Capital expenditure		2.380**	1.596	1.004
		(1.189)	(1.246)	(1.183)
Coverage 1		-0.230***	-0.241***	-0.165**
		(0.076)	(0.075)	(0.072)
Coverage 2		-0.092***	-0.089***	-0.047**
		(0.023)	(0.023)	(0.023)
Coverage 3		0.017	0.011	0.022
		(0.012)	(0.013)	(0.014)
Coverage 4		0.0001	0.001	0.001
		(0.002)	(0.002)	(0.002)
Volatility		0.318**	0.306**	0.221*
		(0.128)	(0.129)	(0.121)
Beta		-0.064	-0.066	-0.112*
		(0.062)	(0.069)	(0.064)
Governance			-0.022	-0.021
			(0.015)	(0.013)
Crisis – Post-Crisis	-0.480	-0.526	-0.544	-0.412
(*p-value*)	(0.00)	(0.00)	(0.00)	(0.01)
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	1,461	1,333	1,278	1,276
R-squared	0.61	0.77	0.76	0.79

Panel B: At-issue Credit Spreads during the Credit Crunch and Financial Crisis

	Credit spread (at-issue)			
	(i)	(ii)	(iii)	(iv)
*Crunch*CSR*	0.095	0.120	0.134	0.144
	(0.142)	(0.082)	(0.100)	(0.098)
*Crisis*CSR*	-0.606***	-0.515***	-0.531***	-0.405**
	(0.123)	(0.168)	(0.183)	(0.193)
*Post-crisis*CSR*	-0.128	0.007	0.016	0.025
	(0.099)	(0.065)	(0.066)	(0.058)
Credit rating	–	–	–	0.243***
				(0.034)
(*Crunch – Crisis*)**CSR*	-0.511	-0.395	-0.397	-0.261
(*p-value*)	(0.00)	(0.00)	(0.00)	(0.01)
(*Crisis – Post-crisis*)**CSR*	-0.478	-0.522	-0.515	-0.380
(*p-value*)	(0.00)	(0.00)	(0.00)	(0.01)
(*Crunch – Post-crisis*)**CSR*	0.223	*0.113	0.118	0.119
(*p-value*)	(0.14)	(0.07)	(0.16)	(0.17)
Bond controls	Yes	Yes	Yes	Yes
Firm controls	No	Yes	Yes	Yes
Governance controls	No	No	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time	Firm and time
Observations	1,461	1,333	1,278	1,276
R-squared	0.61	0.77	0.77	0.79

Panel C: At-issue Credit Ratings and CSR during the Financial Crisis

	Credit rating (at-issue)		
	(i)	(ii)	(iii)
*Crisis*CSR*	-0.860***	-0.548***	-0.526***
	(0.304)	(0.186)	(0.186)
*Post-crisis*CSR*	-0.548**	-0.061	-0.048
	(0.224)	(0.123)	(0.127)
(*Crisis – Post-crisis*)**CSR*	-0.312	-0.487	-0.478
(*p-value*)	(0.11)	(0.00)	(0.00)
Bond controls	Yes	Yes	Yes
Firm controls	No	Yes	Yes
Governance controls	No	No	Yes
Industry fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
SE clustered by	Firm and time	Firm and time	Firm and time
Observations	1,459	1,331	1,276
R-squared	0.61	0.82	0.82

Panel D: Time-to-Maturity of New Bond Issues and CSR during the Financial Crisis

	Time-to-maturity (at-issue)			
	(i)	(ii)	(iii)	(iv)
*Crisis*CSR*	0.746	8.753***	9.600***	9.752***
	(2.080)	(1.610)	(1.446)	(2.604)
*Post-crisis*CSR*	-5.631**	-3.669	-4.150	-3.998
	(2.867)	(3.690)	(3.675)	(3.717)
Credit rating	–	–	–	-5.032***
				(1.358)
(*Crisis – Post-crisis*)**CSR*	6.377	12.422	13.750	13.750
(*p-value*)	(0.00)	(0.00)	(0.00)	(0.00)
Bond controls	Yes	Yes	Yes	Yes
Firm controls	No	Yes	Yes	Yes
Governance controls	No	No	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
SE clustered by	Industry and time	Industry and time	Industry and time	Industry and time
Observations	1,461	1,333	1,278	1,276
R-squared	0.09	0.10	0.10	0.12