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A Matter of Trust?
Corporate Social Capital and the Pricing of Public Debt during the Financial Crisis

Hami Amiraslani
London School of Economics

Karl V. Lins
University of Utah

Henri Servaes
London Business School, CEPR, and ECGI

Ane Tamayo
London School of Economics

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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. 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. They also show 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
JEL Classification: G12 G21 G32 M14

"Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time." (Arrow, 1972)

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 et al (2004), p. 527). While the legal enforceability of the contract and the financier's ability to monitor the financee's actions are crucial in determining whether such an exchange can take place, *trus*t 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 less or, if a contract is written, it 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), Huang and Hillary (2016)). These factors lead to increased stock market participation (Guiso, et al. (2004, 2008)), and more economic and financial development (e.g., Putman (1993), Fukuyama (1995), Knack and Keefer (1997), La Porta, et al. (1997)).

There is also evidence that the benefits of social capital and trust accrue to individual firms. *Endowed trust* (i.e., externally "acquired" trust that a firm enjoys from merely being located in a high-trust society/environment) is related to better financial performance, higher

[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 defined as the cooperative networks that exist among agents (e.g., Coleman (1988, 1990), and Lin (2001)).

stock valuations, reduced agency problems (Huang and Hillary (2016)) and moderately better terms in private loan deals (Hasan et al. (2016)). *Earned trust,* which is generated mainly through *a firm's own investments in social capital,* also seems to pay off: during crisis of trust periods, firms with higher earned trust display capital market and real economic benefits (Lins et al. (2016)). Research based on this notion exploits the discretionary nature of earned trust and emphasizes that, while endowed social capital is not something a firm can easily modify, it can choose its own investment level in social capital.

In this paper, we investigate the role of *earned trust* in a setting plagued with moral hazard: public debt financing. Unlike private loan arrangements, the arm's length nature of public debt (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, public debt market payoffs to trust could be lower than its benefits in settings with greater heterogeneity in investor sophistication, such as the equity market. [3]

To capture a firm's own social capital efforts, we follow recent 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 trust is also widely held by practitioners and corporations.[4] Our primary objective is to investigate whether, and to what extent, firms that

[3] Guiso et al. (2008) show that the effect of social capital on stock market participation is weaker for educated individuals than for non-educated individuals.

[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)).

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 earned trust it cultivates, could affect the firm's public debt contracts through 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 but high-expected return projects as a firm gets closer to default on its debt (Jensen and Meckling (1976)). Debtholders will 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 less likely to be 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.

Of course, a competing argument to those noted above is that stakeholder-oriented firms are merely "burning" the firm's resources by investing in CSR activities that do not necessarily add value to the firm and reduce its current cash flows (e.g., Friedman's (1970),

[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.

Cheng et al. (2016), Masulis and Reza (2015)). If bondholders hold this "agency view", they will demand higher compensation to lend to high-CSR firms.

To test our conjectures that debtholders view high-CSR firms more favourably, we focus on secondary bond market trades as well as on bond originations in the primary market. Our main analyses are conducted using a large sample of publicly-traded, non-financial, U.S-domiciled firms with high frequency intraday 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 to the primary market over the same period.

We first conduct some preliminary tests by regressing secondary market bond spreads on firm CSR ratings over the whole sample. We view the evidence from these analyses as merely suggestive of a CSR-bond spread relation as we cannot draw any causal inference from such regressions. Our preliminary findings suggest that on average high-CSR firms enjoy lower spreads; a one-standard deviation increase in CSR ratings is associated with a 6.9 to 10.1 bps decrease in bond spreads in the secondary market, after controlling for bond- and firm-specific characteristics. These modest differences are in line with prior findings using private debt (Goss and Roberts (2011)). However, once we control for time fixed effects, the modest effect of CSR on debt spreads disappears, which indicates that there may be a time component in the CSR effect on the cost of debt.

Next, we examine whether this time component is due to time-variation in the pay-offs associated with CSR: CSR is likely to pay off more when a firm's social capital is more highly valued, such as during a crisis of trust. The agency costs of debt are more pronounced in crisis periods when firm survival might be at stake, but bondholders of high-CSR firms may be more

[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.

confident that the management will not engage in risk-increasing asset substitution. If a crisis is compounded with a loss of trust, the pay-off to CSR activities may be even larger given the additional potential benefits from reciprocity.

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 et al. (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 was not eroded; and the trust crisis - the period of July 2008 through March 2009, when a shock to trust occurred. The exogenous nature of the financial crisis also helps us circumvent potential endogeneity concerns that arise in 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, credit spreads of high-CSR firms did not rise as much as the spreads of low-CSR firms in the secondary market; high-CSR firms were also more able 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, better initial credit ratings and were able to issue bonds with longer maturities. These effects are economically substantial as well. For example, a one-standard deviation increase in CSR is associated with at least 36.4 (35.5) bps lower credit spreads in the secondary (primary) market. The benefits of CSR are considerably larger for firms with poorer credit quality; for instance, a one-standard deviation increase in CSR is associated with 78.9 (28.9) bps lower spreads in the secondary market for firms with worse (better) credit ratings. The reduction in spreads in the secondary market is also present (for a few specifications) in the credit crunch period that preceded the trust crisis and in the post-crisis period up to 2013, although the economic

magnitude of the CSR effect is less half. We find no effect during the credit crunch or the post-crisis periods for bonds originating on the primary market.

We conclude that firm-level social capital, and the trust that it engenders, affect bond contracting mostly when they matter the most: in periods of crisis of trust. In such periods, a firm's social capital seems to act as an insurance policy against default (see also, Albuquerque et al. (2014), Hong and Liskovich (2015), Jeffers (2015), Lins et al. (2016)).[7] High-CSR firms appear to be perceived as being more trustworthy and, hence, reap real 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 implies 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. Furthermore, the fact that our effects are larger for firms with higher default risk suggests that part of the benefits of CSR to bondholders come from a (perceived) reduction in the agency cost of debt, given that these costs are more pronounced when the credit quality of a firm is worse. This finding also suggests that, while the real effects derived from reciprocity documented in Lins et al. (2016) (higher sales growth, gross margins and sales per employee) may explain part of the benefits accrued to bondholders, these benefits also derive from a reduction in agency costs.

The remainder of the paper proceeds as follows. In Section 2, we describe the sample and present the main summary statistics. Section 3 presents our preliminary results for the secondary market 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.

[7] 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 et al. (2014) document that the level of systematic risk is lower for high-CSR firms and, using an economic cycle proxy, show that this relation is counter-cyclical.

2. Sample and Summary Statistics

2.1. Sample Construction

To construct our sample of corporate bonds on the secondary market, we begin by identifying a subset of the universe of bonds covered in the TRACE database from January 1, 2005 to December 31, 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 (CDEB), corporate medium-term notes (CMTN) and insured corporate debentures (UCID) with a time-to-maturity over one month and less than 30 years. We also limit our estimation to industrial firms only and 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 raw 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 et al. (2007) and Han and Zhou (2008) to remove outliers and observations with likely data errors.[9] Applying these refinements reduces our sample to 2,182 bonds of 336 firms.

We subsequently 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 et al.

[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.

[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.

(2013), Servaes and Tamayo (2013), Albuquerque et al. (2014), Lins et al. (2015)) and covers roughly the 3,000 largest U.S. companies. Finally, we obtain annual fundamentals and monthly market data from Compustat and CRSP, respectively.

Our baseline sample consists 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 of this table presents the annual breakdown of bonds and issuers covered in each period. Consistent with past studies that evaluate the transparency effects of introducing TRACE (e.g. Bessembinder and Maxwell 2008), our sample coverage increases over time. This is likely due to increased post-trade transparency in the bond market as well as the growth in the size and number of corporate bond offerings over the past decade (SIFMA 2016). In terms of the industry composition (Panel C), while manufacturing constitutes the largest proportion of bond issues (14.8%), 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 the first 5 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 industries. 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 et al. (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. We are interested in capturing both elements; accordingly, we construct a *net CSR* measure that adds strengths and subtracts concerns. Since the maximum number of strengths and concerns varies across time for each category, to obtain numerically consistent measures over time, we scale the strengths (or concerns) for each category by dividing the number of strengths (or concerns) for each firm-year by the maximum number of strengths (or concerns) that were possible for that category for that year. From this exercise, we obtain strength and concern indices that range from 0 to 1 for each category-year. Our measure of net CSR involvement in each category-year is then obtained by subtracting the concerns index from the strengths index; thus, the net CSR index per category ranges from -1 to +1. Finally, to obtain our primary explanatory variable, a firm's total net CSR index (CSR hereafter), we combine the net CSR indices for our 5 stakeholder-oriented categories (community, diversity, employment, environment, and human rights). This net measure ranges from -5 to +5.

Table 2 provides descriptive statistics on the CSR index, credit spreads (our measure for the cost of debt) and control variables. The credit spread is our main dependent variable and is estimated as the difference between the bond's yield to maturity from TRACE and the closest benchmark risk-free Treasury yield by rating and time to maturity (e.g., Campbell and Taksler (2003), Chen et al. (2007) and Huang and Huang (2012)).[10]

The mean issue size in our sample is about $573 million with a mean time-to-maturity (time-from-issue) of just over 6.5 (3.8) years. Although there is considerable cross-sectional variation in credit spreads, on average they are not too large (about 200 bps), given that our sample consists of large firms (average size $13.8 billion) with fairly low default risk (average

[10] Maturity-matched risk-free yields are obtained by linearly interpolating benchmark Treasury yields contained in the Federal Reserve H-15 release for constant maturities.

credit rating in the sample is just over 8, equivalent to BBB+ within the investment-grade category) (e.g. Kliger and Sarig 2000; Sufi 2009).[11] 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. Finally, the mean security rank of secondary market bonds is just below 4, revealing that a majority of issues in our sample are senior bonds, while over 50 percent of the bond indentures in our sample include, at minimum, six covenants.[12]

Examining the issuer-level attributes, our sample firms are large and fairly profitable, which is not surprising because past studies show that these firms are more able to gain access to the bond market (Faulkender and Petersen 2006). The average sample firm holds a relatively large amount of long-term debt (27 percent of total assets) and tangible fixed assets (38 percent of assets) to support such debt. The average beta is close to one and the mean equity return volatility is just below 7 percent. Governance, measured based on the entrenchment index of Bebchuk et al. (2009), has an average of 3.4 (on a scale of 0 to 6) in our sample.

Finally, turning to our main explanatory variable of interest, CSR, its mean is 0.098, 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, Kang, and Low (2013), Servaes and Tamayo (2013), and Borisov, Goldman, and Gupta (2016) who show that the median firm has negative CSR ratings. There is considerable dispersion in CSR, which should help us in uncovering a CSR effect on bond spreads, if one exists.

[11] We obtain credit ratings issued by S&P, Moody's, and Fitch from Mergent FISD and Bloomberg. Similar to Bongaerts et al. (2012), to select a representative rating when an issue is rated by multiple agencies, we first select the S&P rating; if it is missing, we use ratings from Moody's; if both are missing, we use ratings from Fitch.

[12] To measure the stringency of security, we construct a rank variable that takes the value of 1 to 5 for junior subordinate, subordinate, senior subordinate, senior, and senior secured bond. To measure covenant intensity, we follow Bradley and Roberts (2015) and count of covenants in the five main categories (payout, investment, financing, accounting, and events-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 view the evidence from these analyses as merely suggestive of a CSR-bond spread relation as we cannot draw any causal inference from such regressions.

We build on extant research in the private debt contracting setting (e.g. Bauer and Hann (2010) Goss and Roberts (2011)) and estimate the following pooled regression:

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

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 at time *t-1*, our explanatory variable of interest. X_{kjt-1} is a (K×1) vector of bond-level controls at time *t-1* and Z_{lit-1} is a (L×1) vector of firm-level controls at time *t-1*, following prior studies on factors that explain credit spreads (e.g. Chen et al. 2007). We include firm-fixed effects, FFE_i, to control for unobservable time-invariant omitted credit risk factors. We 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 issues may be redeemed under conditions specified in the indenture agreements), *Fungible* (equal to one if the bond issues are, by virtue of their 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 in debt markets (e.g., Allen et al. (1990), Datta et al. (1999), Khurana and Raman (2003), Melnik and Nissim (2003), Miller and Puthenpurackal (2005), Jiménez et al. (2006), (Bratton 2006), Demiroglu and James (2010), Nini et al. (2012), Bradley and Roberts (2015)).[13] We further control for contemporaneous bond liquidity based on the Amihud (2002) illiquidity measure that captures the price impact of trades.

[13] See the Appendix for details on variable definitions and associated academic references.

To control for issuer-level characteristics, we adopt the standard set of control variables used in prior research on the cost of debt: (i) *Size*, because larger firms are usually more diversified, face lower default risk and, hence, enjoy a lower cost of debt; (ii) *Profitability*, because firms with healthy operating margins are less likely to encounter distress and, therefore, have lower default risk (e.g. Bakshi et al. 2006); (iii-iv) *Short-term and long-term leverage*, as the level of existing debt is shown to be positively associated with the likelihood of default (e.g. Petersen and Rajan 1995); (v) *Cash holdings*, because firms with higher cash holdings might behave as though they face a higher cost of debt, consistent with the implications of the pecking order theory (e.g. Binsbergen et al. (2010), Acharya et al. (2011)), or alternatively, firms that entered the financial crisis with higher cash levels experienced lower declines in firm value (Duchin et al. (2010)); (vi) *Tangibility*, as higher levels of tangible assets in the firms reduce the probability that managers will engage in *ex post* asset substitutions that increase default risk (e.g. Frank and Goyal (2009)); (vii) *Coverage ratio*, as Blume et al. (1998) report this to be an important factor in explaining issuers' credit risk; and (viii) *Volatility*, as Campbell and Taksler (2003) show that idiosyncratic firm-level volatility can explain as much cross-sectional variation in corporate bond yields as credit ratings. We further add controls for *Capital expenditure* and *Beta* as Baghai et al. (2014) document that these factors play an important part in explaining issuers' default risk as reflected in their credit ratings. The accounting-based firm characteristics and CSR are updated annually. To ensure that the data are publicly available, we leave a three-month gap after the fiscal year-end to update the accounting data. CSR is updated annually in April, three months after the ratings are 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 firm-fixed effects (column (i)). The coefficient on CSR is -0.198 (statistically significant at the 1% level), which suggests that high-CSR firms have lower spreads. The effect is also economically significant: a

one-standard deviation (0.742, from Table 2) increase in CSR is associated with a 14.7 basis points lower spread. When applied to the mean issue size of $573 million (Table 2), this indicates annualized interest savings of $0.84 million on average.

Next, we control for bond-level attributes (column (ii)) as well as firm-characteristics (column (iii)) and confirm that our results hold. The coefficient on CSR is slightly lower, -0.136, but the effect is still economically significant, albeit more modest: a one-standard deviation increase in CSR is associated with a 10.1 bps lower spread. Controlling for credit ratings, which capture a firm's credit risk as perceived by credit rating agencies (Panel B of Table 3), reduces the coefficient on CSR further, making the economic significant even more modest (6.9 bps lower spread for a one standard deviation increase in CSR – model in column (iii)).

The economic magnitudes for CSR-credit spread relation that we document are comparable, or stronger, in comparison to those documented in prior studies using private loans (e.g., Goss and Roberts (2011), Hasan et al. (2016)), even after the inclusion of a more comprehensive set of controls and firm-fixed effects in our models. However, the main difference emerges after the introduction of time-fixed effects (column (iv) in Panels A and B of Table 3): the coefficient on CSR becomes statistically (and economically) insignificant in this specification. From this analysis, we conclude that there may be a time-component in the CSR-credit spread relation.

We visually explore whether this may be the case by plotting the average credit spread of high- and low-CSR firms over time, where high-CSR (low-CSR) is defined as 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 (Figure 1): up to August 2008 there is little difference in the spreads of high- and low-CSR firms; at the end of August 2008/beginning of September 2008, 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 some 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 differential becomes considerable, coincides with the crisis of trust described in Sapienza and Zingales (2008) and Lins et al. (2016), among others.[14] This suggests that CSR appears to pay off more when a firm's social capital is more highly valued, such as during the 2008-2009 crisis of trust.

4. Effect of CSR on Debt Contracts: Evidence from the Financial Crisis

4.1. Overall Effects

In this section, we formally examine whether a firm's CSR efforts pay off 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 generalized negative stock returns and increases in bond spreads (Figure 1 shows the vast increase in spreads during this time). The exogenous nature of this shock to trust also helps alleviate some of 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 lower spreads during the crisis. Thus, 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 at time *t-1*, and Z_{lit-1} is a (L×1) vector of firm-level controls at time *t-1*.

[14] The notion that the crisis led to a decline in public trust in corporations is supported by survey evidence showing that 62% of respondents, from a twenty-country survey, had lower trust in corporations in the aftermath of the financial crisis (Edelman Trust Barometer 2009).

We include firm-fixed effects, FFE_i, to control for unobservable time-invariant omitted credit risk factors, and time-fixed effects, TFE_i, specified at the monthly level.[15] CSR_{i2006} is measured at the year-end of 2006 and, hence, CSR itself gets absorbed by the firm-fixed effect. $Crisis_t$ is an indicator variable that takes the value of 1 for the crisis of trust period, starting in August 2008 and ending March 2009 (as in 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 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 general trust 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 include also firm characteristics (column (ii)). In both models, the impact of CSR on bond spreads is both statistically and economically significant. For example, a one standard deviation increase in pre-crisis CSR is associated with 36.1 bps lower spreads during the crisis period (column (ii)).[16] 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).

[15] 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.

[16] 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.

Next, we control for corporate governance, given that bond investors tend to demand lower spreads for better-governed firms (Bradley and Chen (2015)) and that such firms performed relatively better during the crisis (Lins, Volpin, and Wagner (2013) and Nguyen, Nguyen, and Yin (2015)). If governance is correlated with our CSR measure, we could be suffering from an omitted variable bias. To address this concern, we use two alternative corporate governance proxies: E-index, the entrenchment index featuring the six governance provisions identified in Bebchuk, Cohen, and Ferrell (2009), and a governance measure constructed using the ESG Stats database itself.[17, 18] We report the findings from this analysis for E-index in column (iii) of Panel A, Table 4.[19] 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 insignificant (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 the unchanged. Hence, the impact of CSR on spreads during the crisis cannot be attributed to better governance.

In our last specification (reported in column (iv)), we control for credit ratings. Given that this variable is allowed to change and that the regression includes firm fixed effects, *Credit rating* captures changes in credit risk as perceived by credit rating agencies. 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, the economic importance of CSR increases in this specification: a one standard deviation increase in CSR is associated with 40bps lower spreads. This increase is likely due to credit rating agencies not adjusting the

[17] 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 (see Bebchuk, Cohen, and Ferrell (2009)).

[18] We construct the ESG Stats governance measure as follow: for each firm, the number of governance concerns is divided by its possible maximum and subtracted from the number of strengths divided by its possible maximum, yielding a governance index that ranges from -1 to +1.

[19] The results using the ESG Stats governance index are similar and are available upon request.

ratings over the crisis period given that they rate through the economic cycle (Baghai et al. (2014)).

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 own social capital more in periods when being trustworthy is more important, such as in a crisis of trust.

4.2. Is the CSR Effect on Debt Spreads due to a Perceived Reduction in Agency Costs?

Next, we explore whether the relatively lower spreads enjoyed by high-CSR firms during the crisis can be, at least partly, attributed to bondholders' perception that high-CSR firms are less likely to engage in asset substitution. 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 should be higher for firms with poorer credit ratings, given that the agency costs of debt become more prominent as default risk increases. We argue that, from bondholders' perspective, these are the firms for which investing in social capital pays off more when trust is eroded. Hence, the positive impact of CSR on spreads should be more pronounced for the high default risk subsample.

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 B 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. Take, for example, the specification in column (iii), which features the most complete set of control variables. The coefficient on the triple interaction, β_1, is -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 remarkable: 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.[20] The fact that CSR still has an effect for low default risk firms, where the agency costs of debt are low, is probably a reflection of the real effects attributed to reciprocity, as documented in Lins et al. (2016); stakeholders of high-CSR firms are likely to do "whatever it takes" to help these firms weather the crisis, even when the firms have lower default risk.

From this analysis, we conclude that an individual firm's social capital, and the trust that it engenders, has a positive effect on the cost of its public debt because it reduces the (perceived) agency costs of debt and derives real effects via reciprocity.

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

Next, we conduct an analysis 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 dramatically increase as the solvency of the banking sector weakened, which impacted negatively on the ability of firms to borrow (e.g., Duchin, Ozbas, and Sensoy (2010) and Ivashina and Scharfstein (2010)). This shock to the supply of credit persisted until at least

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

March 2009, the end of our crisis of trust period. If high-CSR firms were less affected by this credit crunch, the differential in the spreads that we document could be due to this phenomenon rather than a shock to trust. Of course, 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 argument, however, is that if a firm's CSR investments engenders trust, the effect of CSR on debt spreads should be relatively higher in a crisis of trust, when the agency costs of debt are exacerbated. Furthermore, in such a crisis, the (perceived) reduction in the agency costs of debt for high-CSR firms is compounded with the real effects derived from reciprocity.

To investigate this possibility, we augment our model in (2) to include an interaction term between CSR and the "pure" 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 run a series of specifications and find that the effect of CSR on bond spreads is always substantially stronger over the crisis of trust period (Panel C of Table 4). Only in one out of four specifications is the interaction term between crunch and CSR statistically significant but, even in this case, the economic significance of CSR during the crisis is threefold. 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, 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.

5. Effect of CSR on Debt Market Access and Bond Issues in the Primary Market

5.1. Debt Market Access

In this section, we examine whether CSR ratings affect firms' ability to access the corporate bond market during a crisis of trust. To do so, we rely on prior literature on the determinants of public debt market access and investigate whether CSR ratings play a role in this process over and beyond these factors. As in Faulkender and Petersen (2006), we first select the subset of firms on the Compustat database with credit ratings during the 2006-2012 period. Next, we merge this sample of rated firms with those with CSR ratings on the MSCI ESG Stats database in 2006 as well as firms with new bond issues between 2007 and 2013 as reported on Mergent FISD.

To assess whether, and to what extent, CSR ratings explain a firm's propensity to issue bonds, we estimate the following probit model.

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

where $DIssue_{it}$ is an indicator variable that takes the value of one if the rated firm issues a corporate bond at time t, and is zero otherwise. CSR_{i2006} is the firm-level CSR rating at the year-end of 2006 and X_{kt-1} is a (K×1) vector of standard variables that explain debt market access. Consistent with Faulkender and Petersen (2006), we estimate this model using industry-fixed effects, IFE_i to account for unobservable time-invariant omitted industry-level factors associated with demand for public debt.

Panel A of Table 5 presents summary statistics for the variables used in our estimations.[21] The mean and median values for the control variables are largely consistent with those reported in Faulkender and Petersen (2006). To facilitate the interpretation of the marginal effects of the coefficient on *CSR* within a probit estimation framework, we first execute model (4) separately over the crunch, crisis and post-crisis periods. In additional

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

analysis, we re-estimate the model using both probit and OLS regressions that include interaction terms reflecting the differential effect of CSR over the three time periods.

Panel B reports the results from estimating model (4) across the three time periods of interest in our analysis. The results suggest that on average the propensity of a rated firm to issue a new bond increases with the level of CSR performance. Economically the effect is significant: an increase in CSR by one standard deviation increases the probability of a bond issue by 2 and 1.9 percent in the crisis and post_crisis periods respectively. The difference-in-differences results reported in Panels C and D largely corroborate the direction and economic magnitudes of the cross-sectional findings using both probit (columns (i) and (ii)) and OLS (columns (iii) and (iv)) regressions.

Given the role of CSR in explaining the probability of gaining bond market access during the crisis, we now turn to its effect on the pricing and contracting terms of the new public debt issues.

5.2. Bond Origination in the Primary Market

5.2.1 Data Construction and Description

To construct our sample of bond originations in the primary market, we follow a sample selection procedure similar to the one described in Section 2 for secondary market bond trades. Specifically, we select a sample of corporate bonds covered in the Mergent FISD database which 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), we obtain an initial sample consisting of 2,607 new issues by 753 firms for which we are able to compile contract-level and initial credit ratings data.

We subsequently merge our bond data with CSR ratings as at the end of 2006, obtained from the MSCI ESG Stats database. This step reduces our sample to 1,550 bonds issued by 403 firms over the 2007-2013 period. Finally, we obtain annual fundamentals and market data from Compustat and CRSP. The resulting sample contains 1,484 corporate bonds issued by 382 firms.

Panel A of Table 6 summarizes the descriptive statistics for bonds originated in the primary market over our sample window. The mean credit spread for new bond issues is 2.13 percent. There are large differences between the credit spreads of investment-grade and speculative bond categories (1.7 versus 4.3), which is consistent with prior studies (e.g. Sufi 2009). Over 85 percent of the bonds are investment-grade issues (with ratings in the BBB category and above), although the average initial ratings (8.2) is tilted more toward the far lower tail of the investment-grade credit rating category (between BBB+ and 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.[22] Finally, more than 97 percent of the new bond issues belong to the senior secured bonds category.

In Panel B, we report the firm-level attributes of issuers on the primary market. The issuers are not dissimilar to the sample of firms in the secondary market described before: they are relatively large (mean market capitalization of $15.7), profitable (mean profitability rate 23 percent), with a fair amount of tangible assets (34 percent of total assets) and similar return volatility (around 7%, based on daily returns). They have, however, relatively less long-term debt finance (23% versus 27% of assets). As before,

[22] Following Chava et al. (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).

while the mean of CSR is positive (0.017), over 50 percent of our sample firms display more concerns than strengths (median is negative and equal to -0.025).

5.2.2 Empirical Evidence on Contracting Terms

To establish the effect of CSR on public debt contracting in the primary bond market, we follow an approach similar to the one adopted in Section 4. More specifically, using data from bond issues between 2007 and 2013, we implement a quasi-difference-in-differences approach by estimating the following model:

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

where $Spread_{ijt}$ denotes the at-issue spread of firm i's bond j at time t, X_{kjt} is a (K×1) vector of bond-level controls at time t (time of issue), and Z_{lit-1} is a (L×1) vector of firm-level controls at time t-1. We include industry-fixed effects, IFE_i, to control for unobservable time-invariant omitted industry-specific determinants of credit risk, and time-fixed effects, TFE_i, specified at the quarterly level. CSR_{i2006} is measured at the year-end of 2006. $Crisis_t$ is an indicator variable that takes the value of 1 for the crisis of trust period, starting in August 2008 and ending March 2009, and $Post\_crisis_t$ is an indicator variable that takes a value of 1 from April 2009 to December 2013. We cluster the standard errors at the firm and time levels to control for cross-sectional and time-series dependence, respectively.

The results from estimating model (5) are reported Panel A of Table 7, Panel A. As before, we first control for bond-level variables (column (i)), and then proceed to include a range of firm-level attributes (column (ii)) and governance controls (column (iii)). In all specifications, the effect of CSR on offering spreads is both statistically and economically significant. For instance, a one standard deviation increase in pre-crisis CSR is associated with 35.5 bps lower spreads during the crisis period (column (iii)). This favorable effect declines slightly but remains economically important (27.5 bps lower cost of debt) once we account for

differences in bonds' credit quality in column (iv). As with the results reported for the secondary market, the benefits accrued to high-CSR firms during the crisis disappear in the post-crisis period (the difference between β_1 and β_2 is statistically significant at the 1% level across all specifications).

We conduct three additional tests in relation to new bond issues in the primary market.

First, we 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 (Panel B of Table 7): the effect of CSR on at-issue bond spreads is consistently stronger over the crisis of trust period.

Second, we use initial credit ratings as an alternative proxy for the cost of debt (Panel C of Table 7). Consistent with our findings on the effect of CSR of offering spreads, at-issue credit ratings tend to be more favorable for high-CSR issuers during the crisis period, although the economic significance is a bit lower (a one standard deviation increase in the pre-crisis level of CSR is on average associated with a 0.20 notch improvement in assessments of the issue's credit rating).

And third, we evaluate the effect of CSR ratings on the maturity structure of new bond issues. 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)). Consistent with CSR engendering trust, we argue that if high-CSR firms are perceived to be more trustworthy by bondholders, they may be able to secure financing over longer time horizons when trust is eroded. To assess the impact of CSR on bond maturity, we regress time-to-maturity on bond- and firm-level controls using model (5). The results from this estimation are reported in Panel D and suggest that the time-to-maturity of bonds issued by high-CSR firms during the crisis tends to be longer (e.g., a one standard deviation increase in the pre-crisis level of CSR translates into a 6-month longer time-to-maturity (column (iii)), equivalent

to approximately 7 percent of the mean level of maturity in pooled sample). This result holds and becomes economically 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 sum, our findings from the primary market corroborate that high-CSR firms benefit from 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 favourably 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, could affect its public debt contracts by reducing the agency costs of debt; since such firms are more stakeholder oriented they are less likely to take risky bets that primarily benefit shareholders if successful but damage other stakeholders if unsuccessful. In addition, more stakeholder oriented firms are also likely to benefit from reciprocity and, hence, accrue 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 in 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.

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	=	Time 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	=	Time 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 issue may be redeemed under certain conditions, and is zero otherwise.
Fungible	=	Indicator variable which takes the value of one if the bond issues are, by virtue of their terms, equivalent, interchangeable, or substitutable, and is zero otherwise.
Offering market	=	Indicator variable which takes the value of one if the bond issues are offered globally and is zero if the offerings are made to the domestic market only.
Security	=	Rank variable defined based on the following collateral stringency levels: senior secured (1), senior (2), subordinate (3), and unsecured (4).
Covenant index	=	Rank variable defined based on the aggregate number of restrictions stipulated in payout, investment, financing, accounting, and events-related covenants in indenture agreements.
Credit rating	=	Rank variable based on the conversion of alphabetical ratings from to numerical values (e.g. AAA=1 …, D=21). If an issue is rated by multiple credit rating agencies, the representative rating is from S&P. When this is not available, credit ratings are from Moody's and if this is missing, the rating is from Fitch.

Firm Characteristics and Equity Market Variables

CSR	=	Total net (strengths minus concerns) corporate social responsibility rating computed based on the sum of the net CSR indices for the following five stakeholder-oriented categories: environment, employees, human rights, community, and diversity, available from the MSCI ESG Stats database (formerly KLD Research & Analytics).
Size	=	Natural log of the market value of equity (CSHO #25 multiplied by PRCC_F #199).
Profitability	=	Operating return on sales is measured by dividing operating income before depreciation (OIBDP #13) by net sales (SALE #12).
Short-term debt	=	Debt in current liabilities (DLC #34) scaled by total assets (AT #6).
Long-term debt	=	Debt in long-term liabilities (DLTT #142) scaled by total assets (AT #6).
Cash holdings	=	Cash and short-term investments (CHE #1) scaled by total assets (AT v#6).
Tangibility	=	Tangible property, plant and equipment (PPENT #8) scaled by total assets (AT #6).
Capital expenditure	=	Capital expenditures (CAPX #128) scaled by total assets (AT #6).
Coverage ratio	=	Interest cover ratio measured as operating income after depreciation (OIADP #178) plus interest expense (XINT #15) 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) and is the sum of six anti-takeover indicators from the Institutional Shareholder Service (ISS) including: (i) classified (staggered) board (CBOARD), (ii) poison pills (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, and is 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 is zero otherwise.
NYSE	=	Indicator variable which takes the value of one if the firm's equity trades on the New York Stock Exchange, and is zero otherwise.
Market value of assets	=	Natural log of the market value of assets, computed as book value of total assets (AT #6) minus the book value of common equity (CEQ #60) plus the market value of equity (CSHO #25 multiplied by PRCC_F #199).
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 is zero otherwise.
Advertising intensity	=	Advertising expense (XAD #45) scaled by net sales (SALE #12).
R&D intensity	=	Research and development expenditures (XRD #46) scaled by net sales (SALE #12).
Market-to-book (assets)	=	Market value of assets scaled by book value of assets (AT #6).
Asset volatility	=	Annualized volatility of monthly equity returns over the past year, multiplied by the ratio of the market value equity to market value of assets.
Annual returns	=	Annualized stock returns over the previous year.

Table 1
Sample of Secondary Market Bond Trades

This table describes the identification of the 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 select the corporate bonds at the intersection of the TRACE, Mergent FISD, MSCI ESG, CSRP, and Compustat databases. Panel B delineates the distribution of issuers and bonds in each cross-section from 2005 to 2013. Panel C reports the industry composition of the secondary market sample based on the Fama-French 12 industry classification (excluding financials).

Panel A: Bonds at the Intersection of TRACE, FISD, KLD, CRSP and Compustat

	Issuers	Bonds
Bonds with required issue-level data on FISD	766	3,789
Bonds without secondary market trade data on TRACE	(426)	(1,570)
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 2,007 secondary market bonds (303 issuers) included the main sample. The sample comprises corporate debentures (CDEB), corporate medium-term notes (CMTN) and corporate insured debentures (UCID) with a time-to-maturity over one month and less than 30 years. In this table *Credit spread* is the main dependent variable of interest and is measured based on 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 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 1st and 99th percentiles.

	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 the bond-level and firm-specific control variables. Credit spreads are measured from January 2005 to December 2013. In this table, we adopt a dynamic measure of *CSR* that is based on 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).

Panel A: CSR and Credit Spreads

	Credit spread			
	(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)
Observations	73,512	63,617	59,985	59,985
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
R-squared	0.47	0.54	0.61	0.82

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

	Credit spread			
	(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)
Observations	38,055	37,302	35,762	35,762
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
R-squared	0.56	0.57	0.63	0.83

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

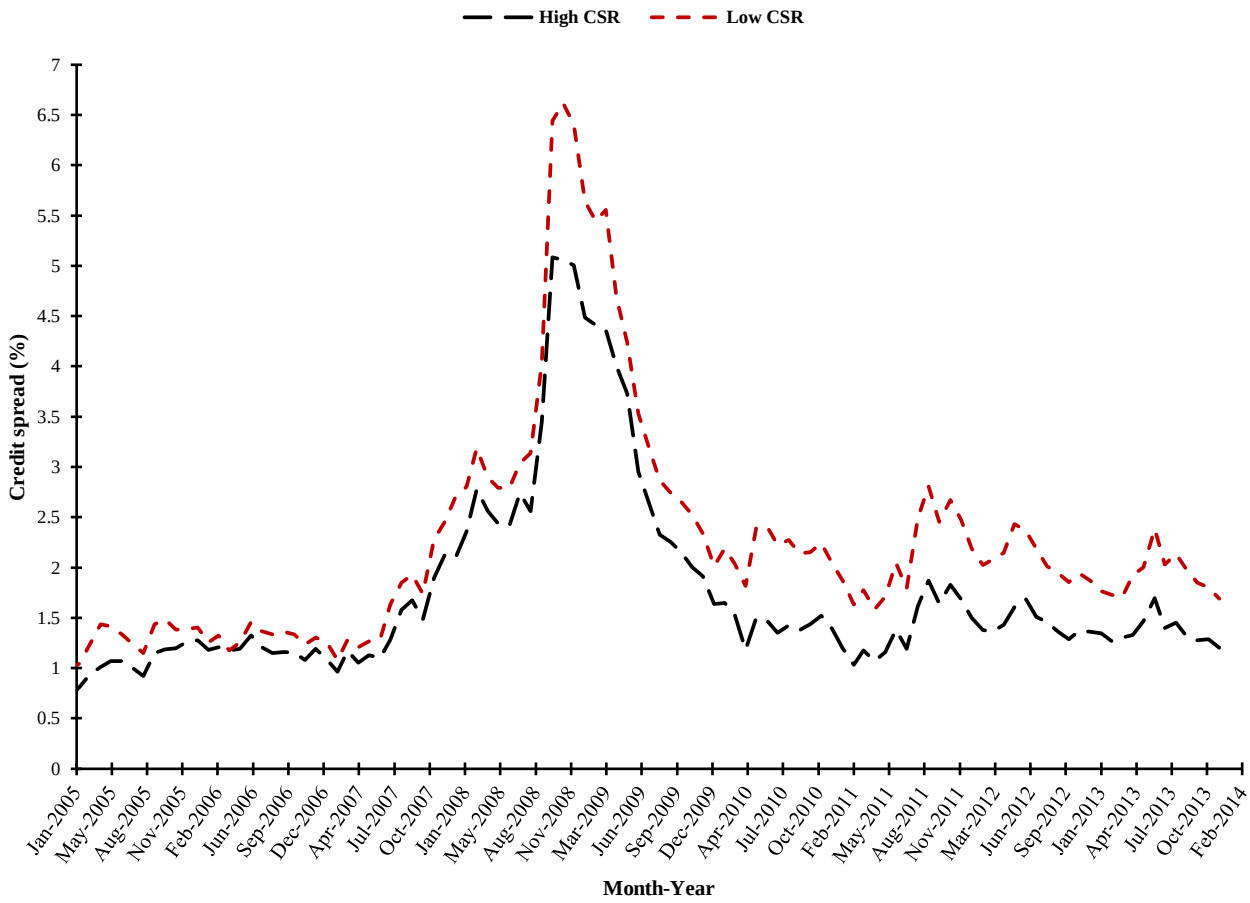

Table 4
Economic Consequences of CSR in the Secondary Bond Market during the Financial Crisis

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).

Panel A: Credit Spreads during the Financial Crisis

	Credit spread			
	(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)
Observations	52,520	50,995	48,715	30,520
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
R-squared	0.82	0.84	0.84	0.84

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

	Credit spread			
	(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)
Observations	52,520	50,995	48,715	30,520
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
R-squared	0.82	0.83	0.83	0.84

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

	Credit spread		
	(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)
Observations	32,508	32,139	31,313
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
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).

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 – Estimation during the Credit Crunch, Financial Crisis, and the Post-Crisis Period

	DIssue		
	(i)	(ii)	(iii)
	Crunch = 1	*Crisis* = 1	*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)
Observations	9,653	5,776	41,667
Industry fixed effects	Yes	Yes	Yes
SE clustered by	Firm	Firm	Firm
Pseudo *R*-squared	0.27	0.32	0.18

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

	DIssue			
	(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)
Observations	62,628	62,628	63,336	63,336
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
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

	DIssue			
	(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)
Observations	62,628	62,628	63,336	63,336
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
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) and corporate insured debentures (UCID). 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	

Panel B: Issuer Characteristics

	N	Mean	St. dev.	25th pcntl	50th pcntl	75th pcntl
CSR	1,484	0.017	0.648	-0.400	-0.025	0.401
Size	1,484	9.664	1.409	8.649	9.698	10.507
Profitability	1,468	0.233	0.152	0.1288	0.202	0.308
Short-term debt	1,484	0.037	0.043	0.004	0.024	0.056
Long-term debt	1,484	0.229	0.131	0.139	0.213	0.302
Cash holdings	1,468	0.094	0.103	0.023	0.056	0.128
Tangibility	1,483	0.344	0.259	0.121	0.275	0.564
Capital expenditure	1,467	0.062	0.063	0.024	0.043	0.075
Coverage 1	1,484	4.569	1.029	5	5	5
Coverage 2	1,484	3.105	2.186	0.279	4.869	5
Coverage 3	1,484	3.289	4.219	0	0	8.306
Coverage 4	1,484	6.715	19.355	0	0	0
Volatility	1,372	-2.629	0.490	-2.994	-2.637	-2.299
Beta	1,372	1.023	0.779	0.506	0.939	1.401
Governance	1,406	3.530	1.281	3	4	4

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)
Observations	1,461	1,333	1,278	1,276
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
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)
Observations	1,461	1,333	1,278	1,276
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
R-squared	0.61	0.77	0.77	0.79

Panel C: CSR and At-issue Credit Ratings 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)
Observations	1,459	1,331	1,276
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
R-squared	0.61	0.82	0.82

Panel D: CSR and Time-to-Maturity of New Bond Issues 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)
Observations	1,461	1,333	1,278	1,276
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
R-squared	0.09	0.10	0.10	0.12