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Do banks value the eco-friendliness of the firms in their corporate lending decisions? Some empirical evidence

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ABSTRACT

This study empirically investigates and explores the relationship between firms' environment consciousness and banks lending decision. We consider all US firms in the Kinder, Lydenberg and Domini Research & Analytics, Inc. social performance database for the year 1991 to 2006 and use their environment ranking along with the bank loan data from the Dealscan database with the relevant firm characteristics from Compustat. The findings indicate that bank incorporates firms' environment consciousness in their corporate lending decision. We establish that more eco-friendly firm, defined as a firm with higher environment score in the study, gets favorable loan contract than the firms with lower environment score. By considering firms' environment-consciousness in determining loan contract, banks can reduce their default risk. In addition, the other stakeholders of the business can also get benefits. The social implication of the study is also noteworthy. To get a favorable loan contract if firms become more environment-conscious, it will in turn benefit the whole society. The contribution of the banks can also expedite the Fed government's mitigation target achievement process. In sum, the corporate social responsibility, like eco-consciousness, can also be a determinant of cost of bank debt, which provides new insight to the policy makers and academicians.

Keywords: Corporate lending, Corporate social responsibility, Environment-consciousness, KLD

JEL codes: G21; L21; Q56

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1. Introduction

Recently, one of the major concerns of United States (US) is to slow down the environmental degradation and to protect the environment by integrating the efforts of all stakeholders of the society[2]. Apart from the climate legislation and the efforts of environmentalists, a proper coordination among lenders and borrowers, the two major players in the corporate world, is obvious to hold the global warming below 2-degree Celsius for the progress of economy. To increase the financial performance they devote substantial time and resources in taking care of the stakeholders related to their business (Clarkson, 1995; Lee & Faff, 2009; Waddock & Graves, 1997). Although, the stakeholder theorists (e.g. Eesley & Lenox, 2006; 2009) discuss the firms' and banks responsiveness to their stakeholders, one important but often-neglected stakeholder, the '*environment*' (Holtbrugge & Dogl, 2012), is our main focus of this study. Specifically, we investigate to what extent the environment consciousness of firms affects the loan contract decision of banks.

To meet the financing need of the corporate, one major lender is bank and the most important source is bank loan[3] (Bharath, Sunder, & Sunder, 2008; Chava, Livdan, & Purnanandam, 2009 Graham, Li, & Qiu, 2008). Although, banks are not manufacturing or producing any environmental hazardous products, still they are liable for the damage of the environment (Boyer & Laffont, 1997; Hill & Schneeweis, 1983; Sarokin & Schulkin, 1991). According to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 1980, many US banks are financially liable as they operate, own or somehow take part in the management of a contaminating business (Weber, Fenchel & Scholz, 2008). As per

[2] http://www.msnbc.msn.com/id/34147586/ (accessed on 7 June 2012).
[3] According to Loan Pricing Association and Federal Reserve System in 2005 the total amount of equity issuance was about $115 billion and the total amount of corporate bond issuance was about $700 billion while the total amount of bank loan issuance was about $1500 billion.

the institutional theory, if the survival of the firm is threatened because of disclosed negative operating information (Hunter & Bansal, 2007) then the banks have to bear the credit risk in addition to the expenditure of cleaning. So, while taking the lending decision banks should be more concerned about the environment aspect along with the exercise of other creditors' right (Bae & Goyal, 2009; Thompson & Cowton, 2004). In one of the US bank survey done by the Environmental Data Resources and Dun and Bradstreet, mentions 'environmental risk management procedures are …institutionalized in the banking…industries of the US' (EDR, 1994). On the other hand, the firms remain busy in maintaining proper corporate governance which can relax the bank of being default (Buysse & Verbeke, 2003; Shleifer & Vishny, 1997) and consequently firms can expand their business by getting a proper financial contract (Esty & Megginson, 2003; Qian & Strahan, 2007) because of their reputation gained by adhering to the entire governance norm. This, in turn, helps the bank to retain their reputation in the society (Thompson & Cowton, 2004) and also to reduce the credit default risk (Ahn & Choi, 2009).

To contribute immensely in the increasing importance of clean environment, banks around the world signed the 'Statement by Banks on the Environment and Sustainable Development' (UNEP, 1992). It raises the question that how far the signatories of banks value the eco-friendliness of a firm while taking their loan decision? The existing studies comprehensively focused mainly on the overall concept of corporate social responsibility (hereafter CSR) in which the environment is one of many others aspects (Egri & Ralston, 2008; Lockett, Moon & Visser, 2006) of a firm and explained its impact on the return performance of portfolio (Malkiel, 1991; Orlitzky, Schmidt & Rynes, 2003). Moreover, most of the Global 250 firms and around 10 percent of S&P firms explain in details their CSR activities to the investors, customers (Kitzmueller & Shimshack, 2012; Kotler & Lee, 2004) and to potential employees (Turban &

Greening, 1996) to represent better corporate governance. In explaining the cost of capital, existing studies emphasize more on cost of equity (Ghoul, Guedhami, Kwok & Mishra, 2011; Kempf & Osthoff, 2007) or bond yields (Menz, 2010; Sharfman & Fernando, 2008). The extant literature also shows how the firms respond to environment ratings (Chatterji & Toffel, 2010). The environment, therefore, not only determines banking efficiency (Dietsch & Vivas, 2000), but also impact the firm level corporate governance (Chava, Livdan & Purnanandam 2009). In sum, there exists a gap in research to empirically show the impact of firm's environment consciousness on the cost of bank loan. Despite the study of Goss and Roberts (2011) that examines the impact of social responsibility on cost of bank loans, the subsection '*environment*' included under management discussion and analysis section by most of the US firms' disclosure (Holland & Foo, 2003) has not been examined explicitly yet. This paper fills the gap and extends the literature by considering one of the most important CSR components - the environment, and shows how it can determine the corporate loan decision.

We use Kinder, Lydenberg and Domini Research & Analytics, Inc. (hereafter KLD) database for 1026 US firms between1991 and 2006 to construct a composite score of environment dimension as a proxy for environment consciousness. We find a significantly low interest rate and other favorable loan determining terms for firms' associated with the high environment score. To give a more complete solution of the research question we make a comparative study of the loan contract terms between the low and high environment conscious firms'. The findings exhibit that the banks discriminate between low and high environment score firms, which contribute to the existing banking literature. From the empirical analysis, we establish that the non-price terms, such as deal size, loan maturity and covenants (financial) are positively related with high environment score. The result strengthens the existing stakeholder theory. Qian and

Strahan (2007) and Bae and Goyal (2009) etc. show that the creditor protection is associated with favorable loan contract term. Similarly, we show that more eco-friendly firms can serve the interest of the stakeholders by lowering the cost of debt (loan) financing.

The paper is organized as follows. Section 2 provides literature review and outlines the importance of environment for banks. Section 3 develops the hypotheses motivated from the existing literature related to loan contract terms and the eco-friendliness of firms. Section 4 deals with the methodological approach. In Section 5, we analyze the results and reports the robustness checks. Section 6 concludes.

2. Literature review

With the growing eco-consciousness among the corporate world along with the general public concern, it is adding a new challenge in the finance literature to find how banks lending operations can affect or can be affected by the natural environment. So we start investigating the literature to find how important environment is in the debt market and we focus on the role of banks and firms in delegating their responsibility to one common stakeholder, the "environment".

2.1. The bank context

The emerging trend in the corporate finance is to consider the debt market which itself shows an informational efficiency. The most leading credit supplier (Chava, Livdan & Purnanandam, 2009; Graham, Li & Qiu, 2008) and outside monitor in the debt market is bank (Demirguc-Kunt & Levine, 2001; Love & Fisman, 2003; Love, Preve & Sarria-Allende, 2007). The existing studies prove that loan market possesses the capacity to forecast the market default before the

equity market (Allen, Guo & Weintrop, 2004) and also even before the bond market (Altman, Resti & Sironi, 2004). In addition to this, the banks want to assess the borrowers' risk (Strahan, 1999). Because of this growing importance of the bank loan, it has always been a basic research question: what are the key determinants of a loan? A number of studies have investigated this issue. The study of Qian and Strahan (2007) highlights the law and the institutional shape as determinants of financial contract. Bae and Goyal (2009) also mention the importance of the judicial efficiency. Moreover, some studies investigate the lending relationship as loan determinant and show that the distance is a constraint in the foreign lending (Bharath, Dahiya, Saunders & Srinivasan, 2011; Mian, 2006). With the growing need of social responsibility from every institution along with individuals, the role of bank and its liability has started to be addressed. One stream of literature in finance (Goss & Roberts, 2011) focuses on how the various parameters of CSR affect the loan decision. In 1992, by signing the UNEP, the banks of several countries agreed to become more aware of environmental issues in their activities. Most of the banks have started giving loans to firms, which are involved in finding eco-friendly technologies and closely related to pollution control (Dionne & Spaeter, 2003; Thompson, 1998, 1999a, 1999b;Vaughan, 1994). Kitson (1996) puts the example of Co-operative Bank in UK where they were not ready to continue many corporate relations just because such corporate were not environment friendly. Moreover, studies reveal that the green-lending decision of the banks increases the profits of these banks and helps to gain reputation in the society (Cowton, Drake, & Thompson, 2000; Cowton & Thompson, 1999; 2000; Davis & Worthington, 1993; Harvey, 1995). Recently, many banks also continue to release their environment related reports to show their eco-consciousness (e.g. National Westminster Bank, Royal bank of Scotland, HSBC, Barclays etc.). The existing literature though gives a signal (theoretically) that firms'

environment consciousness should be considered by banks but how it changes the terms of loan contract is still a vacant area in empirical research.

2.2. The firm context

The changes in the firm's strategy for eco-friendliness due to the environmental management system to use ecological sustainable resources (Bansal & Roth, 2000) affect the financial performance of the firms (Christmann, 2000; Klassen & Mc Laughlin, 1996; Russo & Fouts, 1997). Although, Goss (2009) and Lee and Faff (2009) argue that the idiosyncratic risk generated by a firm and its governance can change the terms of bank loan, the question arises how do the loan providers determine the cost of bank loan by considering the environmental issues in the firms' strategy? Recent years, the focus of the firm has shifted from the maximization of shareholders value to the satisfaction of the wider set of stakeholders which leads to better performance of the firms (Choi & Wang, 2009; Hillman & Keim, 2001) and enhances the corporate reputation (Prior, Surroca, & Tribo, 2008). Existing studies also discuss the impact of firms' social responsibility on the financial performance in details (Bird, Hall, Momente & Reggiani, 2007; McWilliams & Siegel, 2001; Pava & Krausz, 1996; Verschoor, 1998; Waddock & Graves, 1997) and mostly find negative or inconclusive impact of environment consciousness on the financial performance of firms (Horvathova, 2010). Similarly, by reviewing around 52 studies, Orlitzky et al., (2003) conclude that there exists an unclear relationship between firms' social responsibility and corporate debt. However, recent literature (Lioui & Sharma, 2012; Sharfman & Fernando, 2008) shows a link between environmental responsibility and financial performance, bond yields and higher leverage.

2.3 Why does the environment matter for banks?

2.3.1. Effect on revenue

While designing the customized debt contract, the banks gather in-depth knowledge about their borrowers (Bharath, Sunder & Sunder, 2008). The direct, indirect and reputational environment risks (Thompson & Cowton, 2004) are the major aspects to be considered by banks. Cleaning a secured land contaminated by an insolvent, borrower imposes direct environmental risk. The poor performance of the firms indirectly affects the banks, if some products of the firms are out of the market because of new environment regulation or the firms are incapable of carrying the cost to follow the new regulation (Thompson & Cowton, 2004). The increase in customer satisfaction improves in customer loyalty (Anderson & Sullivan, 1993) that also helps the firm to expand their business significantly in a cost beneficial way. Moreover, complying with social and legal norms related to environment (Kassinis & Vafeas, 2002), firms enhance their reputation by not polluting and exploiting environment. This develops a positive impact on the future cash flow that reduces the probability of credit default. High firms' revenue helps the bank to manage their reputation risk (Ahn & Choi, 2009) which is one of the most important elements in the banks' risk management process (Fraser, Gup & Kolari 2001).

2.3.2. Effect on information asymmetry

In determining the risk mitigated price and non-price terms of loan (Dennis, Nandy, Sharpe, 2000), banks rely on their monitoring power. Having access to proprietary information, banks always try to become an effective monitor (Diamond, 1984; Fama, 1985). They reduce the informational asymmetry problem by taking care of adverse selection and moral hazard problem (Ahn & Choi, 2009). Environment consciousness of the firms plays a vital role in handling the

above said problems. Adverse selection problems arise when banks are not able to differentiate between the high risk and low risk borrowers and they may make a contract with firms who are having a high probability of default. But when a firm is environment conscious then they are able to attract good number of customers, investors, and suppliers and can get a huge increase in the current and future revenues (Aintablian, McGraw, Roberts, 2007). So, banks do not pool the high risk and low risk firms together. The stability in the future cash flow of the firms is obviously a good parameter in evaluating the probability of default. When the firms are included in the KLD analyst report, the private information related to their environment friendliness are disclosed along with other corporate responsibility measures and the banks by relying on this public information can reduce their monitoring cost.

3. Hypotheses development

3.1. Environment score and price term of loan

According to the existing banking literature lower credit risk is associated with lower interest rate (Graham, Li & Qiu, 2008; Kwark, 2002). Eco-friendly firms (if it is incorporated in the KLD database with a score in the environment dimension during the study period[4]) can increase or maintain their flow of revenues by continuing the business without any legal hazards, which reduce the banks direct and indirect credit risk and the reputation risk. It is expected that banks offer a lower spread because of lower risk (if the environment strength is higher). Moreover, higher information transparency can reduce the cost of capital (Diamond & Verrecchia, 1991) by lowering the information asymmetry and by increasing the liquidity of the securities. The environment disclosure by firms and especially incorporation of firms in the KLD analyst report with a high score in the environment area will reduce the information risk and the banks can

[4] See Appendix A

overcome the adverse selection and moral hazard problem, which lower the spread of the loan. Thus, we hypothesize the following:

Hypothesis 1: *Ceteris paribus, lender decreases the loan spread when firms with high environment score borrow loan.*

3.2. Environment score and non-price terms of loan

The studies on debt conclude that financial contract (loan contract) consists of both price and non-price terms and it cannot be differentiated and traded separately (Melnik & Plaut, 1986). The firms pay higher interest rate when the non-price terms become more restrictive (Strahan, 1999). So, to find out how the environment strength and concerns can affect the loan contract terms in a broader perspective, the non-price terms of a loan contract needs to be emphasized.

3.2.1. Environment score and deal size

When the firms are incorporated in the KLD analyst report, they get a rank in the 13 dimensions, among which, one is environment area and the ranking is done on the basis of the firms' disclosure, government documents like 10K report, peer reviewed journal, reports from media, their own survey etc. In the next hypothesis we try to show whether the differences in the firms' environment score can affect the firms' deal size along with the size, profitability and opaqueness of the firm. It is already proved that the deal size is quite high for large and profitable firms (Strahan, 1999). Dennis and Mullineaux (2000) show that bank refuses to lend to firms, which are not able to disclose enough information. On the basis of those findings, we want to examine whether, besides the traditional determinant of loan size, the environment score can also be a determining factor of the deal size.

Hypothesis 2: *Ceteris paribus, lender increases the deal size when firms with high environment score borrow loan*.

3.2.2. Environment score and loan maturity

Borrower risk can be reflected by loan maturity and it is also correlated with the spread (Goss & Roberts, 2011). According to the credit quality hypothesis, high quality firms show effective signal of their true quality in a market, where the transaction costs are high by choosing short debt maturity. This indicates that the greater the information asymmetry, the shorter the debt maturity. Thus, the lenders prefer short-term debt that allows them to review their lending decision (Diamond, 2004). As the firms with high strengths disclose their information about environment consciousness, leading to less information asymmetry, we predict that they get loan of longer maturity. On the other hand, the trade-off hypothesis states that higher spreads are charged on loans with longer maturities (Gottesman & Roberts, 2004). As, there exists a non-monotonic relationship between maturity and risk (Diamond, 1993), banks can minimize the risk of lending over long period. Thus, both high and low risk borrowers are interested in using short-term debt. As firms with environment concern are too risky to lend, we hypothesize

Hypothesis 3: *Ceteris paribus, lenders give longer loan maturity for the firms with high environment score*.

3.2.3. Environment score and lender number

It is well proved in the literature that the lender will be interested to lend to the firms with less probability of default (Berger & Udell, 1990; Saidenberg & Strahan, 1999). This implies that the number of lender increases in case of firms with less default probability. But sometimes the

number of lenders may be quite high for the risky firms when the lender wants to reduce their losses by diversifying the risk. On the basis of the above two ideas we develop the following hypothesis.

Hypothesis 4. *Ceteris paribus, number of lenders is more for firms with high environment score*.

3.2.4. Environment score and loan collateral

Lenders are interested to use collateral when they have risky borrowers (Berger and Udell, 1990, Jimenez et al., 2006). It is mainly used to address the adverse selection and moral hazard problem. Collateral can be used as a good signal about the performance of the firms and that in turn helps to obtain favorable loan interest rates (Bester, 1985). In other words, banks may require less collateral from the firms incorporated in the KLD ranking with a high environment score and can reduce the adverse selection problems. In the moral hazard model (Holmstrom & Tirole, 1997) researchers show that the monitoring is a partial substitute for collateral. So if the firms are incorporated in the environment dimension of KLD with a score, the banks need less collateral from firms with high score and can reduce the problem of moral hazard. So our next hypothesis is

Hypothesis 5: *Ceteris paribus, lenders are less likely to require collateral to secure loans when the borrower has high environment score*.

3.2.5. Environment score and loan covenant

Covenant, which is an agreement between the firms and the creditors, is considered as a condition of borrowings. In most of the cases, it limits other borrowings or the level of gearing of

the firms. Studies argue that the restrictive covenants can reduce the moral hazard cost (Jensen & Meckling, 1976). For the risky firms, covenant can be a substitute for higher spread (Drucker & Puri, 2009; Goss & Roberts, 2011). According to the signaling theory (Demiroglu & James, 2010), strict and detail covenants represents better future prosperity and more private information, which is not a substitute for higher spread. From the above findings, we can predict that the firms in our sample with higher environment score will have more covenants in their loan contract as they show a prosperous future and also provide more private information than the firms with lower environment score. Thus the next hypothesis is

Hypothesis 6: *Ceteris paribus, the number of covenants will be higher for the loans borrowed by firms with higher environment score*.

4. Sample and methodology

4.1. Sample

The information regarding the firms' eco-consciousness is collected from the Kinder, Lydenberg and Domini Research & Analytics, Inc. (KLD[5]) for the period of 1991-2006. The KLD database, available only for United States (US), provides the most popular rating to investigate the effects of CSR of firms on the firm performance or on cost of debt (Goss & Roberts, 2011; Lioui & Sharma, 2012). The validity of the KLD measures and its relation with social performance are also well depicted by Sharfman (1996) and others in recent studies. More

[5] It includes ranking of firms' CSR in 13 dimensions – such as community, corporate governance, diversity, employee relations, environment, human rights, product, alcohol, gambling, firearms, military, tobacco, and nuclear power.

than 3000 firms accounting for 98% of total market value of US public equities are screened[6] and included in KLD from S&P 500, Domini 400, Russell 1000, DS 400 and others. For each of the 13-category ranking, KLD identifies strengths and concerns. For this study, the composite[7] environment KLD score for each of the firms is calculated by deducting the total concerns from the total strengths in the environment dimension. We divide the total sample into two sub-samples on the basis of median value of the composite score. The firms with composite score equals to the median value and greater than that belong to the *High Score* group and firms with composite score lower than the median value is included in *Low Score* group. Note that, the High Score group includes zero and positive score while the Low Score group includes negative score.

The bank loan data is collected from Dealscan database. This database gives detailed information related to loan (like, LIBOR spread, deal size, date deal, date maturity, covenants, collateral, number of lenders etc.) for U.S and foreign commercial loans. We follow the existing literature (e.g. Strahan, 1999) to select the sample size while considering the Dealscan database. By using the database the variables constructed for the empirical analysis are the following and the details are given in Appendix B. *Log (Spread):* calculated as the logarithm of initial all-in-drawn spread over LIBOR; *Log (Deal Size):* which is the logarithm of the amount of a loan in US dollars; *Log (Maturity):* measured as the logarithm of loan duration (difference between the date of maturity and date of deal) in months; *Lenders:* measured as the number of lenders in the loan syndicate; *Collateral:* defined as a dummy variable equals to one if a loan is secured and zero otherwise; Loan Type: dummy variables for Revolver, Limited line, Bridge loan, Demand

[6] Controversial industries- alcohol, tobacco, or gambling or firms that derive more than 2 percent of gross revenues from the production of military weapons or electric utilities that own interests in nuclear power plants or derive electricity from nuclear power plants in which they have an interest- are excluded from the group.
[7] A short description of the strengths and concerns are mentioned in Appendix A.

loan, 364-day facility, and others. The omitted case is Term Loan; Loan Purpose: dummy variables for Acquisition line, CP backup, Debt repay, Debtor-in-possession financing, ESOP, LBO/MBO, Project finance, Real estate, Recapitalization, Securities purchase, Spinoff, Stock buyback, Takeover, and Working capital. The omitted case is Corp. purposes; Covenant General: dummy variable equals to zero when there is no availability of covenant general and equal to one otherwise; Covenant Financial: dummy variable equals to zero when there is no availability of covenant financial and equal to one otherwise.

As the firm characteristics play important role in determining the loan contract, all the essential features of the borrowers in the sample related to cost of debt are collected from the Compustat database for the period 1991-2006. The variables incorporated in the analysis are as follows and the detailed description along with the source is provided in Appendix B. *Log (Total Assets):* measured as the logarithm of the total assets of the firm. As the large firms have less probability of default and can increase their future cash flows by gaining more reputation, most of the time they enjoy lower yields on debt. *Leverage:* calculated as total debt divided by total assets. We have included the lag of leverage in our analysis to rule out the endogeneity issue for it. It is well established that higher spreads are mostly paid by the higher leverage firms. *EBIT:* defined as the earnings before interest and taxes scaled by total assets. It is considered to check the validity of the "Slack Resource Theory", mentioning that more slack resource leads to more CSR orientation. *Z-score:* the Altman's (1968) Z-score is an accounting measure of firm's probability of default and is measured by following Graham, Lemmon, and Schallheim (1998), which is a modified version without leverage. All else equal, there is lower default risk for firms having higher value of Zscore. *Tangibility:* is defined as property, plant, and equipment (PP&E) divided by total assets. *Tobin's Q:* measured as the market value of assets over book value of

assets. Market value of assets is measured as book value of assets minus book value of equity plus market value of equity. Tobin's Q is a good measure of firms' investment opportunity and can be a loan contract determining factor.

First we merge the data from KLD with Compustat on the basis of available ticker and by firm name and then we select all the deals with available ticker for the borrower or the borrower's parent company to merge it with the previous merged data. We consider only the non-financial firms, as these are more pollution intensive in our sample for the sample period 1991-2006. After matching all the datasets and dropping observations with missing collateral, finally we have 1026 firms with 3153 deals in our study period.

4.2. Data Summary

In this section the data summary is depicted. In Table 1, all the main variables, relevant to the study, are considered and the detail summary statistics is provided. The full sample is divided into high and low score based on the median value of the composite environment score. As the composite environment score varies from -4 to +5, the low score firms' have negative composite environment score and the high score firms' have zero or positive composite environment score. The negative score means environment strength is lower than the environment concern. So the firms' with negative score can be considered as risky firms from lenders point of view. On the other hand, high score means the environment strength is either equal or greater than environment concern. The full sample consists of 3153 deals with the mean all-in drawn spreads of 172 basis points. The summary statistics of the non-price terms are consistent with the existing literature.

[Insert Table 1 about here]

Table 2 shows the correlation matrix among the main variables. The environment score is significantly correlated with the other major variables considered in the study. But the correlations are not too high to create concern in the following analysis. We have also checked the variance inflation factor (VIF), which shows the value less than 5. So, there is no problem of severe multicollinearity.

[Insert Table 2 about here]

5. Empirical model and estimation

In this section, we provide the answer to our research questions. As stated above, we are interested in investigating how the environment consciousness of a firm affects the decision of loan contract terms of their lenders. More precisely, to what extent the environment strengths of the firm help it to get an attractive loan contracts. Empirically, we examine the impact of environment score on the price and non-price terms of loan contracts, namely loan spread (interest), loan amount, loan maturity, number of lenders, collateral and covenant (general and financial). For this, we estimate the following model:

$$Loan\ Contract\ Terms = \beta_0 + \beta_1 Environment\ Score\ (S) + \beta_2 Firm\ and\ loan\ Characteristics\ (X) + \beta_3 Year\ and\ Industry\ effect + \epsilon \quad (1)$$

A bank loan contract is a combination of various price and non-price terms (Qian & Strahan, 2007) that depends not only on one single factor but several other characteristics, which is hard to cover in any one study. The main variable of interest in this study is the Composite Environment Score (hereafter environment score). We can estimate the coefficient of the mentioned independent variables by pooled OLS given the panel structure of the data, but that will be inconsistent even though we have consistency in the within-group estimators. So, we use

fixed effect models that assumes individual groups have different intercepts in the regression model. The Hausman test rejects the null hypothesis in favor of random effect model. Moreover, to determine whether the sample selection biases the results, we perform the Wald test (not reported) that confirms that the sample selection and regression models are independent.

5.1. Estimation results

To test our hypotheses, we divide our sample into two groups- Low and High Score, as discussed above. Table 3 shows the firm fixed effect regression coefficients for Log (Spread) as the dependent variable. Columns 2 and 4 of Table 3 present the results from the estimation of Equation (1). The specifications in Columns 1 and 2 examine whether the environment score affects the loan spread when the focal firms have low or negative environment score (Panel A). The coefficients are inconclusive. However, the Column 4 of Panel B shows statistically significant result. We see that with each unit increase in environment score, the banks decreases the loan spread by about 10%. The result is significant at 5% level. The result is still consistent in Column 3 when we do not control for the loan characteristics. This supports our Hypothesis 1, which states that lenders decrease the interest on loan amount for firms with high environment score. From Columns 3 and 4, it is also clear that the loan spread is negatively related to the total assets (proxy for firm size).

[Table 3 about here]

In Table 4, we report the coefficients of the firm fixed effect regressions for all the non-price loan terms as dependent variables. As before, the results are presented in Panel A (for Low Score) and Panel B (for High Score). Similar to Table 3, the coefficients for the Low Score firms

are not statistically significant, except the loan maturity variable. In Panel B, we have significant results in support of the hypotheses. The regression of the deal size (loan amount) on the environment score yields a statistically significant coefficient of 0.184 at the 1% significance level and an R^2 of 0.335 (shown in Column 7). Thus, if a firm's loan amount is largely an outcome of high strength in environment dimensions, the correlation indicates that the loan amount captures the inter-industry variation in the loan decision of the banks. This supports our Hypothesis 2. After controlling for firm characteristics, loan characteristics, year effect, industry effect, loan type and loan purpose, the deal size still remains quite low and statistically not significant. The result is shown in Column 1 of Panel A. Hypothesis 3 states that banks allow longer loan maturity period for firms with higher environment score. Column 8 shows that with one unit increase of environment score, the lenders increase the maturity period by 5%. This supports the Hypothesis 3. The low score firms may require more capital investment than the high score firms for environment projects. So, the number of lenders can be more for low score firms in comparison with the high score firms. The banks can also invest small amount in such risky firms to diversify their risks. On the other hand, less risky firms get loans from several banks very easily. Accordingly, Hypothesis 4 predicts that the number of lenders increases with increase of environment score. However, we do not see any significant effect for this from both the Panels in Columns 3 and 9. According to Hypothesis 5, the environment score should be negatively correlated with the collateral. Column 10 shows the effect of environment score on collateral to secure the loan. Our result shows the opposite condition. It can be explained in the following way. In Column 10 the firm size is negatively correlated with collateral variable. So, it can be the case that small and risky firms are getting more loans with large number of collaterals that drives the coefficient. This indicates that the effect of high environment score on collateral

for the big firms does not show up in Column 10. In other words, it seems that the collateral variable cannot capture the effect of the environment score of the borrowers. Hypothesis 6 states that as the borrowers get higher environment score, the number of covenants will also be higher. We test this by categorizing the number of covenants into general and financial types. Column 11 shows that the general covenant is negatively correlated with the environment score. However, the financial covenant is positively correlated with the environment score, although it is low (0.006) and significant at 5% level, shown in Column 12 in Panel B. This coefficient, therefore, indicates that the Hypothesis 6 holds only for the financial covenants.

[Table 4 about here]

Under the firm characteristic, in all the columns we control for the total asset, leverage- to assess the probability of default, EBIT - to see the profitability, Tobin's q- to find out the firms growth opportunities which in turn assess the default probability, tangibility- that reduces the informational asymmetry, and the Z score- the probability of default. Overall, we get support for the Hypothesis 1, 2 and 3 and partly for Hypothesis 6.

5.2. Robustness Checks

In this section, we run sensitivity tests to investigate whether our core evidence that the environment score influences the loan contract terms, shown in Table 3 and 4, is robust to alternative model specifications and endogeneity. Overall, the results from these sensitivity tests reported in Table 5 and Table 6 (a & b) are not qualitatively different from those of previous analyses.

In the first method of the robustness tests, we use the fixed effect regression on the full sample. The advantage of the approach is that by controlling for the average differences across

the firms (in our case, firm fixed effect), the across-group activities can be absorbed. So it is possible to find out the within-group activities. In this way, the threat of omitted variable bias can be greatly reduced. Moreover, the Hausman test confirms the rejection of random effect regression.

The results are documented in Table 5. From the coefficients, it can be noted that the results do not deviate very much.

[Table 5 is about here]

Studies related to CSR (see Goss and Roberts, 2011; page 1802) report the potential endogeneity in the analyses, which may affect the interpretation of causal relation between environment score and loan contracts. To deal with the endogeneity, in the second method for the robustness checks, we adopt the two-stage quantile regression (2SQR) approach[8]. The method is applied to both the first stage estimation of independent variables that are endogenous (e.g. location of a firm also affects its environment consciousness, and consequently its environment scores), using the least absolute deviation, and plugging the fitted values from the first stage in the second stage. This provides a better robust estimates in comparison with generalized methods of moment (GMM) and maximum likelihood (ML) estimates, especially in case of misspecification errors related to heteroscedasticity and measurement errors, like endogeneity issues (Kim and Muller 2004). Moreover, this method helps to focus on specific part of the distribution. So, this is appropriate in loan contract analysis when the loan contract equation (1) contribute to a small part of the variance of the environmental score[9].

[8] For details on Quantile regression see Amemiya (1982) and Koenker & Kevin (2001).
[9] Goss and Roberts (2011) show that the effect of corporate social responsibility, where the environment parameter is one of the 13 factors in KLD data, on the loan contract.

Following Kim and Muller (2004), we obtain the coefficients for 25th, 50th and 75th quantiles. The results are shown in the Table 6a that indicate the similar results that we find in the previous analysis. We have only reported the 50th quantile in the Table 6a.

[Table 6a about here]

For the validity of the approach and the finite sample properties, we adopt the following simulation models.

Let us consider S as the borrowers' environment score that affects the banks lending decision D. So, if D is the loan contract term then the outcome can be written as

$$D = \beta_1 S' + \beta_2(A^*), \quad for\ a\ given\ quantile\ \tau \in (0,1) \qquad (2)$$

where, A^* is the firms' technological capability that makes them eco-conscious and this capability is unobserved. However, the linear conditional quantile model can be rewritten as:

$$D = \beta S'(A^*), \quad where\ A^* \mid S \sim uniform\ (0,1) \qquad (3)$$

In fact, $\tau \longmapsto \beta S'(\tau)$ is strictly increasing in τ. In other words, $\beta S'(\tau)$ is the τ-quantile of D conditional on S.

It can be noted that, it becomes difficult to conclude the true causal effect of S on the loan contract terms because of the unobserved factor, such as the technological capability of firms. To overcome this problem, we need to rewrite the Equation (3) as follows:

$$D = \mu S'(A), \quad where\ A \mid Z \sim uniform\ (0,1) \qquad (4)$$

This means that the environment score (S) statistically depends on the unobserved factor (A) of the firms and Z is the instrument, which is independent of the unobserved factor of the firms but statistically correlated to environment score. Goss and Roberts (2011) argue that the geographical location of a firm influences the behavior of the firm. So, we use the number of

firms located in a particular state as an instrument for S. Note that, we only consider the firms, which are in our sample.

Thus, formally we write the relationship as

$$D = \gamma_0 S'(A) + \gamma_1 X'(A) + \varepsilon, \qquad A|\, X, Z \sim uniform\ (0,1) \qquad (5)$$

where, $S = f(X, Z, \vartheta)$, ϑ is the error terms determining S and correlated with the unobserved factors such as technological capability of firms. X is a matrix of exogenous variables. In the next equation we use the fitted value $\widehat{\gamma_0}$.

$$D = \alpha_0 + \alpha_1 S' + \delta_1 X' + \widehat{\gamma_0} + \epsilon_0 \qquad (6)$$

The results for the 2SQR estimator, represented by ($\widehat{\gamma_0}$, $\widehat{\alpha_1}$, $\widehat{\delta_1}$), based on the quantile prediction in the first stage (Equations 5) and the second stage (Equation 6) are given in the Table 6b. The means are much closer to the true parameters than the one-step quantile estimators. In the data generating process used in the Monte Carlo simulation, we find that the bias tends to disappear and standard deviation becomes smaller as the sample size increases (from 100 to 400). We set the number of replications in all experiments to 1000. Thus the process gives robust estimates for a finite sample, although for small sample it can be a disadvantageous approach.

[Table 6b is about here]

6. Conclusion

The findings of our study suggest that the loan creditors are interested in the environmental information of the firms while taking their loan decision. Firms, that are more consciously

engaging themselves in the environmental management activities, are benefited from more favorable loan contracts from banks by reducing the cost of loan negotiation.

Our study complements and extends the existing literature in several ways. To our knowledge, this is the first study where the impact of the environment consciousness on the cost of debt financing is examined. The existing studies (Chava, Livdan & Purnanandam, 2009; Sharfman & Fernando, 2008) mainly focus on relation between CSR and cost of equity or bond yields. But, in our study we emphasize on the importance of firms' environment consciousness in the corporate lending literature. We establish that along with the firm level governance and loan characteristics the firms' environment responsibility could be a good measure in taking a loan-granting decision. This is empirically proved that the firms with high composite environment score are getting a favorable price and non-price contract terms than the firms with low environment score. The firms' environment consciousness benefits the economy and the whole society to a great extent. By getting more detailed information of the firms, the bank can reduce the probability of default and can stabilize the financial economy of the country. Other stakeholders can also use this reliable information while taking their respective decision. All of these together contribute to the risk management literature. The existing literature (Bae & Goyal, 2009; Qian & Strahan, 2007) proves how the creditor protection is associated with favorable loan contract term. Our results, thus, strengthen the existing stakeholder theory because it exhibits the eco-consciousness disclosures as an important indicator of better corporate governance, which impacts the terms of firm's loan contract.

The results will provide a new insight to the policy makers. They can assess the contribution capability of the banks in US to meet the mitigation target declared by the Federal Government

and can introduce new policies to increase the banks and firms contribution for the betterment of the society.

As the KLD environment score is not too high in our sample, the future research can investigate if an investment in environment related issues beyond a certain threshold can be a value destroying agency cost. It is also interesting to capture the effect of financial crisis by extending the data period in the similar context of our study.

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Appendix A

KLD STATS data description related to "Environment" dimension (Source: KLD Research and Analytics, Inc.)

KLD STATS includes binary summary of KLD's positive and negative ratings. In each case, if KLD assigned a rating in a particular issue (either positive or negative) KLD indicates this with a 1 in the corresponding cell and 0 otherwise.

STRENGTHS

Beneficial Products and Services: If the firm derives substantial revenues from innovative remediation products, environmental services, or products that promote the efficient use of energy, or it has developed innovative products with environmental benefits.

Pollution Prevention: If the firm has notably strong pollution prevention programs including both emissions reductions and toxic-use reduction programs.

Recycling: If the firm either is a substantial user of recycled materials as raw materials in its manufacturing processes, or a major factor in the recycling industry.

Clean Energy: If the firm has taken significant measures to reduce its impact on climate change and air pollution through use of renewable energy and clean fuels or through energy efficiency. KLD renamed the Alternative Fuels strength as Clean Energy Strength.

Communications: If the firm is a signatory to the CERES Principles, publishes a notably substantive environmental report, or has notably effective internal communications systems in place for environmental best practices.

Corporate Governance: Transparency rating which was added in 2005.

Property, Plant, and Equipment: If the firm maintains its property, plant, and equipment with above average environmental performance for its industry.

Management Systems: If the firm has demonstrated a superior commitment to management systems through ISO 14001 certification and other voluntary programs.

Other Strength: If the firm has demonstrated a superior commitment to management systems, voluntary programs, or other environmentally proactive activities.

CONCERNS

Hazardous Waste: If the firm's liabilities for hazardous waste sites exceed $50 million, or the company has recently paid substantial fines or civil penalties for waste management violations.

Regulatory Problems: If the firm has recently paid substantial fines or civil penalties for violations of air, water, or other environmental regulations, or it has a pattern of regulatory controversies under the Clean Air Act, Clean Water Act or other major environmental regulations.

Ozone Depleting Chemicals: If the firm is among the top manufacturers of ozone depleting chemicals such as HCFCs, methyl chloroform, methylene chloride, or bromines.

Substantial Emissions: If the firm's legal emissions of toxic chemicals (as defined by and reported to the EPA) from individual plants into the air and water are among the highest of the companies followed by KLD.

Agricultural Chemicals: If the firm is a substantial producer of agricultural chemicals, i.e., pesticides or chemical fertilizers.
Climate Change: If the firm derives substantial revenues from the sale of coal or oil and its derivative fuel products, or the company derives substantial revenues indirectly from the combustion of coal or oil and its derivative fuel products.
Other Concern: If the firm has been involved in an environmental controversy that is not covered by other KLD ratings.

Appendix B
Brief Descriptions of the Variables and their Sources

Variables	Description	Sources
Environment Score	Composite score is the difference of sum of strengths and weaknesses in the environment area	KLD Analytics
Firm Characteristics		
Log (Total Asset)	The logarithm of total assets	Compustat
Leverage	Total debt/total assets.	Compustat
EBIT	Net income / total assets.	Compustat
Tangibility	PP&E/total assets.	Compustat
Z-score	3.3(EBIT/total assets)+1.0(sales/total assets)+1.4(retained earnings/total assets) +1.2(working capital/total asset).	Compustat
Tobin's Q	Market value of assets over book value of assets. Market value of assets are calculated as book value of assets minus book value of equity plus market value of equity	Compustat
Loan Contracting Terms		
Log (Deal Size)	The logarithm of the loan facility amount. Loan amount is measured in millions of dollars.	Dealscan
Log (Loan Maturity)	The logarithm of the loan maturity (maturity is measured in months).	Dealscan
Collateral	Equals one if the loan is secured, otherwise zero.	Dealscan
Log (Loan Spread)	The logarithm of all-in spread drawn in the Dealscan database. All-in spread drawn is defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down.	Dealscan
Lenders	Total number of lenders for a single loan	Dealscan
Covenant General	Dummy variable. Equals to zero when there is no availability of covenant general	Dealscan
Covenant Financial	Dummy variable. Equals to zero when there is no availability of covenant financial	
Control Variables		
Industry Dummy	There are 10 industry dummies based on 2 digit SIC codes	Dealscan
Loan Type	Dummy variables for loan types, including term loan (A, B, C, D), revolver greater than one year, revolver less than one year, and 364 day facility.	Dealscan
Loan Purpose	Dummy Variables for loan purposes, including corporate purposes, debt repayment, working capital, takeover, etc.	Dealscan

Table 1
Summary Statistics of Full Sample and for Firms with Low and High Scores

	Low Score				High Score				Full Sample						
	Obs.	Mean	Std. Dev.	Median	Obs.	Mean	Std. Dev.	Median	Obs.	Mean	Std. Dev.	Median	Min	Max	Diff
Environment Score	482	-1.564	0.814	-1	2672	0.126	0.393	0	3154	-0.132	0.776	0	-4	5	-1.690***
Log (Spread)	450	4.462	1.084	4.712	2551	4.770	0.882	5.011	3001	4.724	0.921	5.011	1.792	7.496	-0.308***
Log (Deal Size)	482	20.089	1.427	20.212	2671	19.458	1.280	19.519	3153	19.554	1.323	19.599	13.528	23.901	0.631***
Log (Maturity)	468	3.703	0.716	4.111	2616	3.763	0.653	4.111	3084	3.754	0.663	4.111	0	5.9	-0.06**
Lenders	482	12.963	10.206	10	2656	9.872	9.771	7	3138	10.347	9.901	8	1	76	3.091***
Collateral	482	0.515	0.500	1	2672	0.625	0.484	1	3154	0.608	0.488	1	0	1	-0.110***
Log (Total Assets)	475	8.677	1.662	8.613	2608	7.368	1.365	7.351	3083	7.570	1.491	7.503	-0.309	13.112	1.309***
Leverage	475	0.325	0.187	0.309	2603	0.302	0.223	0.279	3078	0.305	0.218	0.284	0	2.177	0.024*
EBIT	475	0.079	0.065	0.074	2598	0.104	0.102	0.094	3073	0.100	0.097	0.090	-0.848	0.930	-0.0252***
Tobin's Q	475	1.254	0.721	1.031	2585	1.700	1.336	1.360	3060	1.631	1.271	1.306	0.228	19.985	-0.446***
Tangibility	475	0.688	0.370	0.643	2586	0.512	0.362	0.431	3061	0.539	0.369	0.462	0.000	3.607	0.176***
Z Score	425	1.315	0.916	1.278	2486	1.543	1.171	1.535	2911	1.509	1.140	1.491	-10.708	8.320	-0.228***

This table shows the summary statistics of the main variables used in the study with high environment score and low environment score divided on the basis of median value of the composite score for the sample period 1991 to 2006. The firms with composite environment score of zero or above is the high score group and the composite environment score of less than zero is the low score group. The sample consists of 1026 non-financial firms with 3153 loan information. The loan covenants general dummy, covenants financial dummy, loan purpose, loan type dummy, industry dummy are considered but not reported. Significance at the 5%, 1% and 0.1% levels is indicated by *, ** and *** respectively for the differences in mean.

Table 2
Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Environment Score (1)	1											
Log (Spread) (2)	0.070***	1										
Log (Deal Size) (3)	0.147***	-0.309***	1									
Log (Maturity) (4)	0.016*	0.198***	0.151***	1								
Lender No (5)	-0.102***	-0.274***	0.560***	0.060**	1							
Collateral (6)	0.063**	0.702***	-0.172***	0.268***	-0.159***	1						
Log (Total Assets) (7)	-0.218***	-0.440***	0.727***	-0.086***	0.470***	-0.337***	1					
Leverage (8)	-0.002	0.246***	0.271***	0.139***	0.140***	0.223***	0.0475*	1				
EBIT (9)	0.049*	-0.239***	0.040*	0.015	0.051**	-0.174***	-0.058**	0.170***	1			
Tobin's q (10)	0.099***	-0.091***	-0.143***	-0.067***	-0.070***	-0.053**	-0.196***	0.190***	0.630***	1		
Tangibility (11)	-0.149***	-0.047*	0.029	0.003	0.016	-0.064***	0.0526**	0.045*	-0.055**	-0.141***	1	
Z Score (12)	0.059**	-0.233***	-0.029	-0.015	-0.001	-0.206***	0.008	-0.343***	0.252***	-0.081***	-0.081***	1

This table shows the correlation between the main variables of the full sample for the sample period 1991 to 2006. The sample consists of 1026 non-financial firms. The loan collateral dummy, covenants general dummy, covenants financial dummy, loan purpose, loan type dummy, industry dummy are considered but not reported. Significance at the 5%, 1% and 0.1% levels is indicated by *,** and *** respectively.

Table 3
Fixed Effect regression for the effect of Environment Score on Loan Terms

Dependent Variables	**Panel A** *Log (Spread)*		**Panel B** *Log (Spread)*	
	1	2	3	4
Environment Score	0.023	-0.018	-0.088*	-0.097*
	(0.045)	(0.042)	(0.041)	(0.038)
Firm Characteristics				
Log (Total Assets)	-0.547***	-0.331*	-0.444***	-0.265***
	(0.143)	(0.140)	(0.056)	(0.054)
Leverage $_{(t-1)}$	0.424	0.239	0.725***	0.574***
	(0.444)	(0.414)	(0.151)	(0.141)
EBIT	-0.404	-0.441	-1.678***	-1.145***
	(0.989)	(0.935)	(0.348)	(0.328)
Tobin's Q	-0.074	-0.038	-0.031	-0.040**
	(0.069)	(0.065)	(0.016)	(0.015)
Tangibility	-1.003***	-0.890**	-0.227	-0.094
	(0.299)	(0.279)	(0.155)	(0.144)
Z Score	-0.172	-0.218	-0.182***	-0.209***
	(0.144)	(0.138)	(0.054)	(0.051)
Loan Characteristics				
Log (Deal Size)		-0.143***		-0.114***
		(0.032)		(0.017)
Log (Maturity)		-0.035		0.056**
		(0.033)		(0.019)
Lenders		-0.007*		-0.007***
		(0.003)		(0.002)
Collateral		0.527***		0.432***
		(0.087)		(0.036)
Covenant General		0.056		-0.128**
		(0.095)		(0.047)
Covenant Financial		-0.207*		0.007
		(0.101)		(0.048)
Intercept	10.495***	11.240***	8.287***	8.861***
	(1.608)	(1.693)	(0.525)	(0.559)
Observations	260	255	1541	1516
Adjusted R-squared	0.311	0.446	0.192	0.326

This table represents the coefficients from firm fixed effect regression of the price loan term that is loan interest spread. Observations are firm-years. We include but do not report the coefficients of year effect dummy, industry effect dummy, loan type dummy and loan purpose dummy. All the loans are originated between 1991 and 2006 for all 1026 non-financial firms. Panel A indicate the result for the "Low Score" firms and Panel B reports the result of the "High Score" firms. Robust-clustered standard errors are in parentheses. Significance at the 5%, 1%, and 0.1% levels is indicated by *,** and *** respectively.

Table 4
Fixed Effect regression for the effect of Environment Score on Loan Terms

	Panel A						Panel B					
Dependent Variables	*Log Deal Size*	*Log Maturity*	*Lenders*	*Collateral*	*Covenant General*	*Covenant Financial*	*Log Deal Size*	*Log Maturity*	*Lenders*	*Collateral*	*Covenant General*	*Covenant Financial*
	1	2	3	4	5	6	7	8	9	10	11	12
Environment Score	0.071	0.014**	0.496	0.013	-0.020	0.002	0.184**	0.054*	-0.923	0.016***	-0.021**	0.006*
	(0.056)	(0.055)	(0.562)	(0.020)	(0.019)	(0.018)	(0.048)	(0.045)	(0.546)	(0.023)	(0.018)	(0.017)
Firm Characteristics												
Log (Total Assets)	-0.119	-0.109	5.683**	-0.120	-0.140*	0.027	0.512***	-0.239***	0.845	-0.039*	-0.025	0.006
	(0.188)	(0.184)	(1.863)	(0.067)	(0.064)	(0.060)	(0.068)	(0.064)	(0.778)	(0.032)	(0.025)	(0.025)
Leverage $_{(t-1)}$	-0.921	0.218	9.782	0.143	-0.249	-0.043	0.224*	-0.268	0.902	0.179*	0.033	-0.011
	(0.552)	(0.540)	(5.508)	(0.198)	(0.188)	(0.177)	(0.179)	(0.167)	(2.029)	(0.084)	(0.065)	(0.064)
EBIT	0.728	1.548	-21.874	-0.211	-0.496	0.509	0.010	0.0220*	1.221	-0.520**	0.120	0.076
	(1.249)	(1.217)	(12.436)	(0.447)	(0.425)	(0.399)	(0.416)	(0.387)	(4.704)	(0.194)	(0.152)	(0.149)
Q	-0.136	-0.076	2.679**	0.015	-0.021	-0.018	-0.030**	-0.020	-0.065**	0.019*	-0.002	-0.000
	(0.087)	(0.085)	(0.859)	(0.031)	(0.030)	(0.028)	(0.019)	(0.018)	(0.219)	(0.009)	(0.007)	(0.007)
Tangibility	-0.511	0.370	-1.509	-0.198	-0.044	-0.035	0.474**	-0.220	-4.567*	-0.010	-0.035	0.077
	(0.375)	(0.366)	(3.750)	(0.134)	(0.128)	(0.120)	(0.182)	(0.169)	(2.056)	(0.085)	(0.066)	(0.065)
Z Score	-0.812***	0.024	5.161**	-0.052	-0.023	0.008	-0.221***	0.096	0.179	-0.012	-0.010**	-0.021
	(0.182)	(0.180)	(1.833)	(0.066)	(0.063)	(0.059)	(0.065)	(0.060)	(0.732)	(0.030)	(0.024)	(0.023)
Loan Characteristics												
Log (Spread)	0.256***	-0.060	-1.246*	0.120***	0.012	-0.038*	-0.183***	0.077**	-1.475***	0.151***	-0.027**	0.001
	(0.057)	(0.056)	(0.573)	(0.020)	(0.020)	(0.018)	(0.027)	(0.026)	(0.311)	(0.012)	(0.010)	(0.010)
Log (Deal Size)		-0.022	3.882***	0.010	0.015	0.004		0.112***	3.099***	0.010	0.040***	0.001
		(0.042)	(0.397)	(0.015)	(0.015)	(0.014)		(0.020)	(0.237)	(0.010)	(0.008)	(0.008)
Log (Maturity)	-0.023		0.131	0.040*	0.020	-0.012	0.129***		0.087	0.030**	0.010	0.004
	(0.044)		(0.442)	(0.016)	(0.015)	(0.014)	(0.023)		(0.265)	(0.011)	(0.009)	(0.008)
Lenders	0.039***	0.001		-0.001	0.003*	0.003*	0.024***	0.001		0.002*	0.002**	0.002***
	(0.004)	(0.004)		(0.002)	(0.001)	(0.001)	(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
Collateral	0.082	0.294*	-1.088		0.129**	0.154***	0.044	0.120**	1.103*		0.052**	0.137***
	(0.121)	(0.117)	(1.204)		(0.041)	(0.038)	(0.047)	(0.043)	(0.528)		(0.017)	(0.017)
Covenant General	0.129	0.164	2.516*	0.142**		0.684***	0.300***	0.067	2.038**	0.084**		0.742***
	(0.127)	(0.123)	(1.260)	(0.045)		(0.028)	(0.059)	(0.056)	(0.675)	(0.028)		(0.014)
Covenant Financial	0.043	-0.108	2.918*	0.193***	0.776***		0.007	0.027	2.377***	0.232***	0.766***	
	(0.135)	(0.132)	(1.341)	(0.048)	(0.032)		(0.061)	(0.057)	(0.686)	(0.028)	(0.015)	
Intercept	2.232***	4.468	2.892***	0.527	1.076	0.073	5.443***	2.835***	8.927***	0.123	0.577*	0.132
	(2.147)	(2.287)	(22.660)	(0.842)	(0.801)	(0.753)	(0.668)	(0.693)	(8.395)	(0.349)	(0.273)	(0.269)
Observations	255	255	255	255	255	255	1516	1516	1516	1516	1516	1516
Adjusted R-squared	0.385	0.205	0.371	0.388	0.691	0.708	0.335	0.196	0.227	0.278	0.700	0.703

This table represents the coefficients from firm fixed effect regressions of the non-price loan terms. Notes to Table 3 also applicable here.

Table 5
Robustness Tests of the Environment Score on the Loan Contract Terms

	Price term	Non-price terms					
Dependent Variables	*Log Spread*	*Log Deal Size*	*Log Maturity*	*Lenders*	*Collateral*	*Covenant General*	*Covenant Financial*
Environment Score	-0.028***	0.075**	0.015***	-0.371	0.016**	-0.007*	0.023**
	(0.020)	(0.026)	(0.023)	(0.287)	(0.011)	(0.009)	(0.009)
Firm Characteristics							
Log (Total Assets)	-0.259***	0.389***	-0.148**	1.731**	-0.083***	-0.026	0.003
	(0.041)	(0.054)	(0.050)	(0.611)	(0.024)	(0.019)	(0.019)
Leverage $_{(t-1)}$	-0.024	0.005	-0.019	0.109	0.001	0.001	-0.005
	(0.036)	(0.046)	(0.042)	(0.522)	(0.021)	(0.016)	(0.016)
EBIT	-0.971***	-0.356**	0.338	-1.980	-0.429**	0.151**	0.035*
	(0.249)	(0.325)	(0.297)	(3.658)	(0.144)	(0.114)	(0.112)
Tobin's q	-0.042**	-0.028**	-0.017*	0.090	0.014**	-0.005	-0.000
	(0.013)	(0.017)	(0.016)	(0.195)	(0.008)	(0.006)	(0.006)
Tangibility	-0.364***	0.167	0.034	-3.576*	-0.027	-0.015	0.023*
	(0.107)	(0.139)	(0.127)	(1.567)	(0.062)	(0.049)	(0.048)
Z score	-0.241***	-0.218***	0.043*	0.404	-0.044	-0.017**	0.010
	(0.039)	(0.051)	(0.047)	(0.576)	(0.023)	(0.018)	(0.018)
Loan Characteristics							
Log (Spread)		-0.209***	0.049*	-1.624***	0.162***	-0.025**	-0.001
		(0.023)	(0.021)	(0.255)	(0.010)	(0.008)	(0.008)
Log (Deal Size)	-0.123***		0.077***	3.224***	0.015*	0.026***	0.010
	(0.013)		(0.016)	(0.188)	(0.008)	(0.006)	(0.006)
Log (Maturity)	0.034*	0.092***		0.169	0.029***	0.011	0.001
	(0.015)	(0.019)		(0.215)	(0.008)	(0.007)	(0.007)
Lenders	-0.008***	0.026***	0.001		0.001	0.002***	0.002**
	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Collateral	0.481***	0.078*	0.122***	0.834		0.077***	0.123***
	(0.029)	(0.039)	(0.036)	(0.442)		(0.014)	(0.013)
Covenant General	-0.121**	0.210***	0.074	2.116***	0.124***		0.747***
	(0.038)	(0.050)	(0.045)	(0.558)	(0.022)		(0.011)
Covenant Financial	-0.007	0.088	0.004	1.771**	0.206***	0.781***	
	(0.039)	(0.051)	(0.046)	(0.571)	(0.022)	(0.012)	
Intercept	9.460***	17.022***	3.287***	-55.083***	-0.073	-0.293*	-0.267*
	(0.412)	(0.505)	(0.533)	(6.519)	(0.260)	(0.206)	(0.201)
Observations	2961	2961	2961	2961	2961	2961	2961
Adjusted R-squared	0.107	0.090	-0.077	-0.035	0.050	0.609	0.617

This table represents the robustness test for the Environment score on the loan contract terms. Firm fixed effect regression is applied on the full sample of 1026 non financial firms. The dataset for the regression includes annual data from 1991-2006 from a sample of US firms included in KLD data. We include but do not report the coefficients of year effect dummy, industry effect dummy, loan type dummy and loan purpose dummy. Significance at the 5%, 1%, and 0.1% levels is indicated by *,** and *** respectively. Robust-clustered standard errors are in parentheses.

Table 6a
Robustness Tests of the Environment Score on the Loan Contract Terms

Dependent variables	*Log Spread*	*Log Deal Size*	*Log Maturity*	*Lenders*	*Collateral*
Environment Score	-0.358*	0.685***	0.060*	0.927	0.281**
	(0.262)	(0.201)	(0.122)	(1.579)	(0.150)
Firm Characteristics					
Log (Total Assets)	-0.241***	0.573***	-0.038***	0.527***	-0.041***
	(0.015)	(0.009)	(0.007)	(0.091)	(0.009)
Leverage $_{(t-1)}$	0.148**	0.022	-0.015	0.171	0.004
	(0.053)	(0.041)	(0.025)	(0.322)	(0.031)
EBIT	-0.973***	1.399***	0.074	-0.779	-0.445***
	(0.184)	(0.141)	(0.086)	(1.097)	(0.106)
Tobin's q	-0.112***	-0.041***	-0.009*	0.048	0.021***
	(0.010)	(0.008)	(0.005)	(0.055)	(0.006)
Tangibility	-0.089*	0.002	-0.006	-0.214	-0.005
	(0.038)	(0.029)	(0.018)	(0.232)	(0.022)
Z Score	-0.131***	-0.059***	0.026***	-0.032	-0.027***
	(0.014)	(0.011)	(0.007)	(0.085)	(0.008)
Intercept	7.428***	13.756***	1.772***	-42.630***	-1.953***
	(0.324)	(0.201)	(0.165)	(2.083)	(0.205)
Observations	2961	2961	2961	2961	2961

Observations are firm-years. Two-stage quantile regression is applied on the full sample. The dataset for the regression includes annual data from 1991-2006 of 1026 US non-financial firms. We include but do not report the coefficients of loan characteristics, year effect dummy, industry effect dummy, loan type dummy and loan purpose dummy. Significance at the 5%, 1%, and 0.1% levels is indicated by *,** and *** respectively. Boot-strapped standard errors are in parentheses.

Table 6b
Monte Carlo Simulation Results

Dependent Variables			*Log Spread*	*Log Deal Size*	*Log Maturity*	*Lenders*	*Collateral*
T=100	$\widehat{\gamma_0}$	Mean	-0.029	0.032	0.027	-0.315	-0.001
		Std dev.	0.641	0.423	0.525	1.672	2.011
	$\widehat{\alpha_1}$	Mean	-0.023	0.036	0.027	-0.320	0.002
		Std dev.	0.051	0.189	0.751	4.912	6.532
	$\widehat{\delta_1}$	Mean	-0.358	0.685	0.059	-0.927	0.281
		Std dev.	2.643	2.212	0.625	0.317	1.541
T=400	$\widehat{\gamma_0}$	Mean	-0.001	0.000	-0.102	-0.127	-0.031
		Std dev.	0.142	0.410	0.241	0.591	0.259
	$\widehat{\alpha_1}$	Mean	-0.011	0.012	0.017	-0.214	0.000
		Std dev.	0.021	0.091	0.310	0.812	1.092
	$\widehat{\delta_1}$	Mean	-0.014	0.279	0.001	-0.152	0.019
		Std dev.	1.799	0.921	0.029	0.201	0.042

This table represents the results of simulation for the convergence of coefficient estimates and size of the test. Number of replications is 1000. T is the sample size. The main dependent variables are shown.