The Impact of ESG Scores on Bond Yields and Bond Characteristics*

Julia de Xavier

Resham Sansi

and

N. K. Chidambaran

(Faculty Advisor)

Fordham University

113 W 60th St, New York NY 10023

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[1] de Xavier (jdexavier@fordham.edu) and Sansi (rsansi@fordham.edu) are undergraduate students at the Gabelli School of Business, Fordham University. Chidambaran (chidambaran@fordham.edu) is an Associate Professor of Finance at the Gabelli School of Business.

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ABSTRACT

Environmental, Social & Governance practices are increasingly important and firms face pressure from their constituents to improve their CSR profile. We examine whether issuer ESG ratings affect bond yields, bond ratings, and the covenants on bonds. We find that the offer yield and spread are lower if the KLD score, our metric of a firm's ESG rating, is high. We also find that firms with higher KLD scores have a better credit rating. Somewhat surprisingly, we find that the bonds sold by firms with higher KLD scores have a larger number of covenants. Our findings suggest that firms with better KLD profiles benefit by lowering their cost of capital, an effect that is explained by good CSR profiles leading to better credit ratings. Issuers with high CSR scores also benefit with having more covenants on the bond issue. We conclude that adding specific CSR targets within risk profiles could incentivize investors to consider these factors in their investment decisions and reward positive ESG metrics for a firm in terms of obtaining debt.

We propose to extend our base study by examining the impact of alternate CSR scores, such as the Asset4 scores and ratings from The Corporate Registry. We also propose to investigate further the relationship between an issuer's CSR scores and the level of bond covenants on the bond issue.

1. INTRODUCTION

Corporate social responsibility (CSR) is defined by The World Bank Council for Sustainable Development as "the continuing commitment by business to behave ethsically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large." The notions of both corporate social responsibility (CSR) and environmental, social, and governance (ESG) activities relate to how firms incorporate social and environmental concerns in their operations. These dimensions have been growing considerably in importance in both operational and investment criteria throughout all industries (Okinonmou et al., 2014). A study done in 2010 by Lacy et al. found that "93% of 766 global chief executive officers (CEOs) believe that issues related to CSR are critical to the future success of their businesses." Socially responsible investing strategies have grown to more than $30 trillion in 2018,and are estimated to reach $50 trillion over the next two decades (Stevens, 2019), while close to US $103.4 trillion in assets are managed by Principles for Responsible Investment (PRI) signatories, which is a UN partnered institution that encourages incorporating ESG issues into investment practice ("About the PRI"). This clearly demonstrates that more investors are committing to the idea of using ESG metrics in their process of analysis when judging investment decisions, thus emphasizing the importance of a firm's CSR action. Still, there is a large debate on whether improving CSR performance according to ESG criteria is compatible with financial performance and the true nature of the effect of ESG on overall firm risk in regards to debt financing remains an ongoing question.

Many studies investigating the link between ESG and the fixed income market often look at value creation or destruction. Spending on ESG could be seen as detracting from the main operations of the business or conversely as worthwhile spending that adds value to a firm

depending on the lens in which it is viewed. The reputations effect, the belief that a positive corporate perception will result from ESG performance and thus yield economic benefit, is one of the more popular theories supporting the latter interpretation (Verschoor 2005) whilst shareholder theory which we discuss in detail below is often aligned with the former. ESG as a lens also offers benefits in the aspect of risk management from the investor's perspective. A large portion of public companies are often financed by debt, and managing leverage becomes crucial to a companies financial success. A major source of funding for US corporations is through bond financing, with the total value of corporate bond issuance being $1.13 trillion in 2019 alone, while the total equity issuance for the same year was only about $228 billion (Celik et al., 2020). With such value held in the bond market, it is essential to understand how ESG reporting and performance can impact various aspects of this space, including its relationship to risk and the cost of capital.

We believe that understanding the relationship between ESG performance and the fixed income market may be quite impactful even relative to the equity market, as institutional investors who participate in large corporate debt financing are "generally believed to be better informed than private investors" (Okinonmou et al.2014). With ESG reporting on the rise, the availability of ESG performance related data could contribute to this body of information and subsequently the decision making process. Thus understanding the implications of ESG metrics for fixed income issues could hold tremendous value for investors. Furthermore, debt investors, especially institutions, have a stronger hold in terms of being able to "discipline" a firm on their performance, as having "high institutional participation decreases free float bonds", and therefore an institution can increase the cost of debt for the firm by simply selling or shorting corporate bonds for transgressing firms when needed (Okinonmou et al.2014). With this in mind

understanding the relationship between ESG performance and fixed income could provide greater impetus for investors to encourage better ESG adherence.

From a bond issuer perspective, understanding how investors interpret and utilize ESG data in their investment process may help determine the firm's level of CSR adherence. This is due to investors' ability to impact a firm's cost of capital. As aforementioned, there may be various interpretations of a firm's CSR spending which could affect investor sentiment which in term helps to determine the cost of capital. Understanding the exact nature of this relationship between ESG scores and the cost of capital for a debt issuing firm could thus be extremely valuable in helping to determine a firm's CSR strategy and more generally its strategy for optimizing its capital cost given the importance of debt financing. Two aspects that are fundamentally linked to the cost of capital as measured by the yield on a bond issue is the bond's credit rating and covenants. Credit ratings help to determine what the ultimate debt cost of capital will be for a bond issue while covenants help to control for the risk of a bond. Thus we feel it is important to analyze these three dimensions given that each has significant bearing upon a firm's debt cost of capital while also having the ability to be influenced by a firm's CSR performance and by extension their ESG scores.

Our study contributes to existing knowledge, as we expand the research of previous literature along several dimensions. Our proposal closely resembles the studies of Okinonmou et al.(2014) and Ge and Lui (2012), with some material differences. Okinonmou et al.(2014) conduct their analysis on a data set from 1991 and 2008, while Ge and Lui (2012) have a dataset between the years 1992 - 2009, which cover overlapping time periods, creating a less diverse data perspective. Our study examines the relationship between KLD data and bond yields, credit ratings, and covenants from the time period of 1997 - 2018. This brings the existing literature

forward into a more recent context, which we believe is an important contribution, as ESG investing and impact in the fixed income market has grown tremendously over the recent years. In the last two years alone, there has been a 34% increase in sustainable investing assets in major markets globally (KPMG, 2019). This demonstrates the importance of reevaluating the data in a newer time frame and analyzing the very practical impact that can be made of the new movement of ESG in fixed income markets.

We use bond data from the Mergent FISD database and KLD scoring data from RiskMetrics KLD database. When conducting our first analysis, our findings were consistent with previous literature in that firms with higher strength and lower concern scores were more likely to have lower bond yields. Secondly, we extend the literature in showing how credit ratings were affected by KLD scores. As per our expectations, we were able to find a positive correlation between higher strength scores firms and positive credit ratings, and higher concern scoring firms to have poorer credit quality. Our results in regards to bond covenants were puzzling in that our findings showed that firms with higher strength scores tended to have a larger number of covenants which was not expected. Further, those firms with higher concern scores were found to have a lower amount of covenants The data regarding covenants is something we believe merits further study, and is a direction in which we would like to extend our research and further investigate with a more detailed look at the nature of these covenants.

2.   LITERATURE REVIEW

In this section we highlight literature relevant to our study. We first discuss the debate between stakeholder and shareholder theories. We then discuss the bearing of agency theory on this discussion. Finally we detail the existing literature in regards to the intersection of fixed income and ESg before detailing our own hypotheses.

2.1   Stakeholder and Shareholder Theory

Trends in ESG activities have also attracted academic attention and incited theories of the rationale behind implementing ESG initiatives. Past literature has described two main lenses through which to interpret firm's actions in regard to ESG as mentioned above. The idea of shareholder theory defines the main goal of a corporation is to maximize shareholder value and run with maximum profitability in mind. It states that environmental aspects such as reducing pollution should not exceed what is compulsory according to regulations (Freidman, 1962). In his book "Capitalism and Freedom", Friedman explains that maximizing shareholder value is the way of being socially responsible in a free economy (1962). This has been the theory and strategy of most companies seen in the past. On the other hand, as a newer school of thought, stakeholder theory argues value maximization in regard to corporate responsibility and that firms have the responsibility to meet the interest of the society as a whole and not only the shareholders (Freeman, 2010). This theory divides a firm's stakeholders into two categories, primary and secondary stakeholders as seen below. It argues that both groups are essential and, while secondary stakeholders are less important in terms of a firm's survival, they still play a very important role in firm's decisions. The true value of a company is created through cooperation between both sets of stakeholders (Freeman, 2010).

These two theories are oppositional in the context of ESG given that spending on ESG performance related initiatives can be viewed either as a drag on firm value or a necessary expenditure to incorporate the interests of all relevant parties. In the view of shareholder theory, the possible reduction in profits from spending on ESG performance could be a detriment to shareholder's interest and also harm a firm's debt-paying ability thus increasing financial risk and cost of capital. On the other hand, the lens of stakeholder theory offers an alternative view.

Stocks of firms engaged in activities deemed contrary to social responsibility such as tobacco, alcohol, and gaming have been shown to experience a higher cost of capital due to the actions of institutional investors (Hong and Kacperczyk 2009). A similar effect has been observed in polluting firms by Heinkel et al. (2001) who showed that polluter firms tend to experience a greater cost of capital with increasing amounts of ethical investing. More generally, firms have been shown to be able to experience positive impacts on various aspects of their cost of capital on the basis of the ESG performance as measured by metrics such as the KLD strength and concern scores. The cost of equity of firms has been shown to be negatively associated with ESG sustainability performance across numerous studies (Dhaliwal et al. 2011, Ng and Rezaee 2015 and Ghoul et al. 2011). Goss and Roberts (2011) noted a similar effect in the cost of bank debt, where firms with higher concern scores, indicating a lower sustainability performance, experienced a premium in their cost of bank financing versus more responsible firms.

2.2   Agency Theory

The agency cost theory is prevalent within previous literature, as it explains the agent-principal relationship, in which a firm the agents can therefore be seen as senior executives while the principals are the stakeholders. There is a significant agency problem that affects both the shareholders and creditors of a firm, in that managers either in self-interest or incompetence "can take decisions against the objective of firm value maximization" (Okinonmou et al., 2014). In this case, it is argued that managers will engage in showing ESG practices in the firm for their own personal interests, without providing real results, because monitoring such behavior is not easy for shareholders (Westling & Mahzari, 2019; Li et al., 2017, Okinonmou et al., 2014). As we can see, these theories play an important role in emphasizing the need for research on this topic as the previous studies have determined that while companies focus on utilizing the

stakeholder theory, it is often symbolic in nature, and this provides additional reasons why integrating CSR research could have an effect on a firm's credit ratings and cost of debt. In other words, firms might adopt ESG-based policies to neutralize growing criticisms of their activities in the eye of the stakeholders, without forcing the powerful executives to achieve actual emission reduction targets, therefore aligning itself with an agency cost, rather than a true benefit to the firm and its stakeholders (Haque, 2017; Westling & Mahzari, 2019). Truly integrating CSR into a firm's operations is a highly complex issue that needs both competence and trustworthiness, thus "limiting the potential hazards arising from agency risks and lowering the firm's costs of debt and equity" (Okinonmou et al., 2014).

Then the question becomes since it has been established that most companies do this for symbolic process-oriented appeal rather than having tangible outcomes, how can we incentivize companies to make progress on their ESG goals and actual emissions. In order to align to shareholder theory and personal interests, it becomes important to determine the financial benefit in engaging in ESG activities for executives, shareholders and investors who want to focus on profitability.

2.3   Fixed Income Literature

Previous studies have begun to examine this effect of ESG integration on the cost of public debt for a company. However there have been ambiguous or inconclusive results. Menz (2010) analyzed the relationship between risk premia in the corporate bond market in Europe and CSR performance and concluded that CSR had not at the time been incorporated into the pricing of corporate bonds in an economically significant way. Another study that was of great interest was Li et al. (2020), which applied their hypothesis to the Chinese capital market, covering the overall financial status of the issuer to multiple aspects of ESG governance. Li et al. (2020)

found that corporations with worse Environmental, Social, and Governance performance separately all had higher financial leverage, poorer financial profitability, smaller or even negative growth (were within shrinking industries) and were "more prone to financial distress that may lead to bankruptcy or default". This study reflects a similar hypothesis to this very paper, as we aim to look at multiple factors within ESG scores that can help identify a firm's overall risk in the fixed income markets. However, the US capital markets, firms, corporate governance, and regulations all vary largely from the Chinese or European capital markets, and therefore can provide a different lens into these findings.

In studies done of American companies, the impact of CSR on corporate public debt seems promising. Okinonmou et al. (2014) finds that support for communities where a firm operates, avoidance of human resource conflicts, and higher levels of product quality and safety reduce the cost of corporate debt by reducing the risk premium that such firms face. Similarly, Ge and Lui (2012) finds that "firms with better CSR performance are able to issue bonds at lower cost and that both CSR strengths and concerns are considered by bondholders", however within the same study also identified that CSR performance could not significantly be associated with bond maturity. So while their results suggested that disclosure of social performance is associated with lower bond spreads, between firms with good and poor disclosure, there was no significant difference between their bond spreads. Friede et al. (2015) were also unable to find a statistically significant relationship between ESG and financial performance patterns over time. Even though the researchers theorized that increasing ESG awareness would create a stronger bond between the two, however "patterns over time present a fuzzy picture" (Friede et al., 2015).

Our paper attempts to move the literature forward by filling some gaps left by the previous research mentioned above. Our model resembles the studies of Okinonmou et al. (2014)

and Ge and Lui (2012), with material differences. We, like Ge and Lui (2012, focus on the primary bond market, whilst Okinonmou et al. (2014) include the impact of CSR on both the primary and secondary markets for corporate bonds. While we validate the findings of these studies in terms of offering yields, differing from these, we shift the focus to credit ratings and bond covenants in an effort to analyze a separate and material factor that can influence bond yields. In this sense, we change the focus of our study to represent this different angle and examine how credit ratings and covenants are impacted by ESG scores and how this might in turn impact offering yield itself.

2.4   Expected Contribution and Hypothesis Development

The importance of having this research is exaggerated as credit markets are "a major, if not the primary, driver of a company's cost of capital" (Mirchandani and Rossetti, 2020). Prices are set by two main factors - the default probability and the amount of loss in the event of a default. Although there have been multiple studies, results have varied and contradictory and inconclusive relations have been found with ESG and corporate financial performance. Since this link could potentially help measure credit risk, it is necessary to research this area further. We hope to provide a clear correlation between ESG performance and the company's financial benefits in the means of gaining cheaper debt by obtaining better bond yields or higher credit ratings.

Finding a correlation between ESG and previous bond factors in reliance to credit risk can help provide a clearer picture to a firm's credit risk in the presence and absence of how they incorporate ESG into the firm. It is important to understand how these two drivers respond in different scenarios in relation to ESG, which is what this paper will attempt to do.

This could potentially provide a way to reward firms for having positive ESG practices and a way to incentivize these methods, while also providing investors another measure to analyze a firm's credit risk. While there has been an increasing interest in ESG criteria in the investment process, it is still rarely figured into the "creditworthiness evaluation of credit lending practices employed by banks" (Devalle et al., 2017).

3. DATA and METHODOLOGY

In this section, we describe the data and data sources that we use in our study and our research methodology.

3.1 Data Sample

We retrieve data on bond issues from Mergent's FISD database. The FISD database gives detailed data on bond issues in the United States and we retrieve details of bond characteristics and from the database. We merge the data with data from RiskMetrics KLD database that provides data on the ESG scores for corporations along several dimensions. We retrieve data on both the strength and concern scores for the bond issuer. We next merge the data on bond issues and KLD data with data on company characteristics that we obtain from Compustat.

We have complete data on 3,478 bond issues over the period from 1997 to 2018. Figure 1 and Table 1 shows the data on the distribution of bond issues by year. As shown in the table, the number of bond issues increase from 135 to 394 over our data period. The total amount of funds raised has increased from 342 billion to 3 trillion over the period. The mean (median) size of the issue has also increased. The average issue raised 253 million in 1997 but 761 million in 2013. The median issue size has increased from 200 million to 500 million.

2.2 Dependent Variables

Table 2 describes summary statistics on the bonds in our sample and the characteristics of the issuing firms. The first two dependent variables in our analysis are the offering yield and offering yield spread. These variables represent the cost of capital for firms and directly impact the profitability of the issue firm. As shown in the table, the mean (median) offering yield of the bonds in our sample is 5.89% (5.94%). The mean (median) offering spread, defined as the offering

yield – the ten year risk-free interest rate in the month of issue of the bonds in our sample is 2.27% (1.93%).

The next two dependent variables are the credit rating on the bond issue and the number of covenants on the bond issue. We find that the mean (median) credit rating is 9.25 and 9, which translates to a BBB rating on the bonds.

2.2   CSR Variables

The main independent variables of interest are the CSR Scores. We measure the CSR score for each bond issuer using the RiskMetrics KLD ratings.

Our first measure is the STRENGTH score. The STRENGTH score is the sum of the individual KLD strength score in each of the seven qualitative business areas assigned by RiskMetrics. When a firm is not rated or a rating is missing, we set the rating to be equal to zero. For each bond issuer year, STRENGTH is calculated as:

$$STRENGTH = \sum_{i=1}^{n} ENVStr\ SubScore_i + \sum_{i=1}^{n} EMPStr\ SubScore_i +$$

$$\sum_{i=1}^{n} DIVStrSubScore_i + \sum_{i=1}^{n} CGOVStr\ SubScore_i + \sum_{i=1}^{n} COM\ Str\ SubScore_i +$$

$$\sum_{i=1}^{n} PRO\ StrSubScore_i + \sum_{i=1}^{n} HUMStr\ SubScore_i +$$

Our second measure is CONCERN. The CONCERN score is the sum of the individual KLD concern score in each of the seven qualitative business areas assigned by RiskMetrics. When a firm is not rated or a rating is missing, we set the rating to be equal to zero. For each bond issuer year, CONCERN is calculated as:

$$CONCERN = \sum_{i=1}^{n} ENVCon\ SubScore_i + \sum_{i=1}^{n} EMPCon\ SubScore_i$$

$$+ \sum_{i=1}^{n} DIVCon\ SubScore_i + \sum_{i=1}^{n} CGOVConSubScore_i$$

$$+ \sum_{i=1}^{n} COM\ Con\ SubScore_i + \sum_{i=1}^{n} HUMCon\ SubScore_i$$

$$+ \sum_{i=1}^{n} PRO\ Con\ SubScore_i +$$

Our third measure is PERFORMANCE which is the difference of STRENGTH and CONCERN for each bond issuer-year.

PERFORMANCE = STRENGTH - CONCERN

2.3   Firm and Bond Characteristics

We use the following lagged firm characteristics to be used as controls in our regressions. ASSETS represents the lagged value of the log of the firm's total assets. This was included in order to control for size. TOBINQ: This is the lagged Tobin Q value of the firm calculated as the ratio of the firm's market value to the firm's book value. TOBINQ is a measure of the issuers firm value. ROA is the lagged return on assets for the firm and is a measure of firm profitability.

INTRATE is the constant maturity yield on 10-year treasury in the month closest to the month of the bond issue. INTRATE controls for the level of the risk free rate in the economy. In addition to using INTRATE as a control variable, we also separately run regressions on the spread over treasuries for each bond, calculated as the difference between the yield on the bond and the 10-year treasury rate.

RULE144 is a dummy variable that indicates whether the bond is a privately placed bond under US SEC 144a. Similarly RULE415 is a dummy variable to indicates if the bond is a shelf registered bond under SEC Rule 415. Firms take advantage of having a shelf-registered bond to reduce the time to market involved in a bond issue so that they can take advantage of favorable market conditions. We control separately for these characteristics as the yield on the bond and the bond terms could be privately negotiated between the issuer and the bond investor or systematically reflects the ability of the firm's manager to choose the timing of a bond issue and obtain favorable terms.

2.3   Methodology

We run ordinary least squares regression to examine the relationship between the bond yield and bond characteristics. We examine the significance of the coefficients on the CSR scores to check whether our hypotheses hold and that a firm's CSR scores affect its cost of capital and terms of the bond issue. We present our results in the next section.

4.   EMPIRICAL RESULTS

We present the results of our empirical analysis in this section. Our analysis explores the impact of CSR scores, bond characteristics and firm characteristics on four different outcome variables: OFF_YIELD, OFF_SPREAD, RATING, SUMCOV.

4.1   Offering-Yield and Spread

Table 3 presents the results of our regressions. As expected, the variable YieldSpread is negatively correlated (with the total CSR performance score (STRENGTH) and strength score (STR) and positively correlated with the CSR concern score (CONCERN). In terms of the other control variables, consistent with our predictions, YieldSpread correlates negatively with ROA,

Big4, Z-score, and lnMaturity and positively with Leverage. Consistent with what we would expect, YieldSpread correlates positively with Rating, Covenant, and IssuerSize.

Table 4 summarizes the results of testing the effects of CSR on offer spread. In Model 1 we find that there is a statistically significant negative correlation (-0.280) between the firm's strength score and its offer spread and a positive and significant relationship (0.178) between its concern score and its offer spread when strength and concerns scores are the only explanatory variable. The relationship becomes less significant in Model 2 with the inclusion of control variables in the case of the correlation with total strength score. Models 3 and 4 in the Table demonstrate that consistent with prior research, a firm's total performance has a statistically significant negative correlation with its offer spread both with and without the inclusion of firm and bond level control variables.

4.2   Credit Rating and Bond Covenants

Table 5 summarizes the relationship between CSR scores and credit ratings. Surprisingly there is a statistically significant negative correlation between both the total strength score and the credit rating (-0.434) and the total concern score and the credit rating (-0.182) indicating that lower ratings in either area would result in a higher credit rating, indicative of higher risk. However when including all control variables in Model 2 we see that the relationship to the total concern score becomes statistically significant and positive (0.0156), which is more in line with expectations. The firm performance score was negatively correlated with the credit rating and statistically significant as well in both Model 3 and Model 4, which would imply that better ESG performance will lead to a lower credit rating, demonstrating lower firm risk.

Table 6 summarizes the relationship between the amount of covenants on a bond and its CSR scores. Model 1 shows that there is a statistically significant positive relationship between the total strength score and the number of covenants (0.107) and a negative relationship between the total concern score and number of covenants (-0.193). While this is surprising, one possible interpretation lies in the fact that green bonds may have covenants dealing with their ESG practices included in their covenant count. These relationships hold true in Model 2 with the inclusion of firm and bond level control variables. In Model 3 and 4 it is shown that there is a statistically significant negative relationship between a firm's overall CSR performance and its covenants, with and without the inclusion of other explanatory variables, which seems more in line with expectations.

6. CONCLUSIONS

As the importance of sustainability and ESG performance within investment decisions continues to grow and impact financial performance, it is important to research further the impact of ESG scores and ratings on fixed income securities. In this paper we attempt to fill a gap in literature by analyzing the relationship between ESG performance and the firm's cost of capital, the bonds credit worthiness, and the use of covenants on bond issues.

In line with previous research we are able to show a negative correlation with the CSR Strength scores and positive correlation with CSR Concern scores. The net impact of the Strength and Concern scores is negative, suggesting that the negative impact of the strength score dominates.

We investigate the channel through which CSR scores affect bond yields by analyzing the impact of CSR scores on bond ratings and the number of covenants on a bond issue. We find

that higher CSR scores reduces the bonds credit rating (improves credit quality). We also find that bonds issued by firms with higher CSR scores have a larger number of covenants on the bond. Our results indicate that the bond issuer CSR rating affects investor perspective on the bonds credit quality. We conclude that firm's with better ESG performance have higher credit worthiness that result in lower bond yields. Somewhat surprisingly, we find that bonds issued by firms with higher csr scores have a larger number of covenants on the bond. Our findings wrt to covenants show that the relationship between CSR ratings and bond features may not be as straightforward as it appears and merits further study.

Our study makes the case for credit worthiness having a positive correlation with ESG performance in a firm and therefore ESG factors. Firms can benefit from having good ESG performance by accessing capital at lower costs. We plan to expand this research by using other metrics to measure a firm's CSR scores such as Asset4 and the corporate registry scores. We also plan to examine further the relationship between covenants and CSR scores.

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APPENDIX: Description of Variables

VARIABLE NAME	DESCRIPTION
STRENGTH	Sum of KLD *str* scores in each subcategory of EMP, ENV. CGOV, DIV. COM, PRO and HUM criteria. Missing values for individual component score set to zero if missing.
CONCERN	Sum of KLD *con* scores in each subcategory of EMP, ENV. CGOV, DIV. COM, PRO and HUM criteria. Missing values for individual component score set to zero if missing.
PERFORMANCE	Defined as STRENGTH - CONCERN
SIZE	Total dollar value of the bond issue
MATURITY	Bond Maturity
INTRATE	The ten year interest rate in the month nearest to the calendar month of the bond issue
OFF_YIELD	The yield-to-maturity of the bond issue.
OFF_SPREAD	The difference between OFF_YIELD and INTRATE
RATING	Numerical score derived from the rating on the bond in steps according to the S&P and Moody's ratings scale. RATING=1 for AAA securities and RATING=21 for securities in default.
SUMCOV	The total number of covenants on the bond
ASSETS	The lagged fiscal year value of bond issuer's total assets
TOBINQ	The lagged fiscal year market-to-book ratio for the issuer
LEV	The lagged value of issuer leverage
ROA	Issuer's return on assets in the lagged fiscal quarter
TAXRATE	Issuer's marginal tax rate in lagged fiscal year (Data obtained from John Graham)

Figure 1: Bond Issues by Year

This figure shows data on bond issues in our sample for each year over the 22 year period from 1997 to 2018. Panel A shows the number of bond issues in each year. Panel B shows the mean and median issues size in each year.
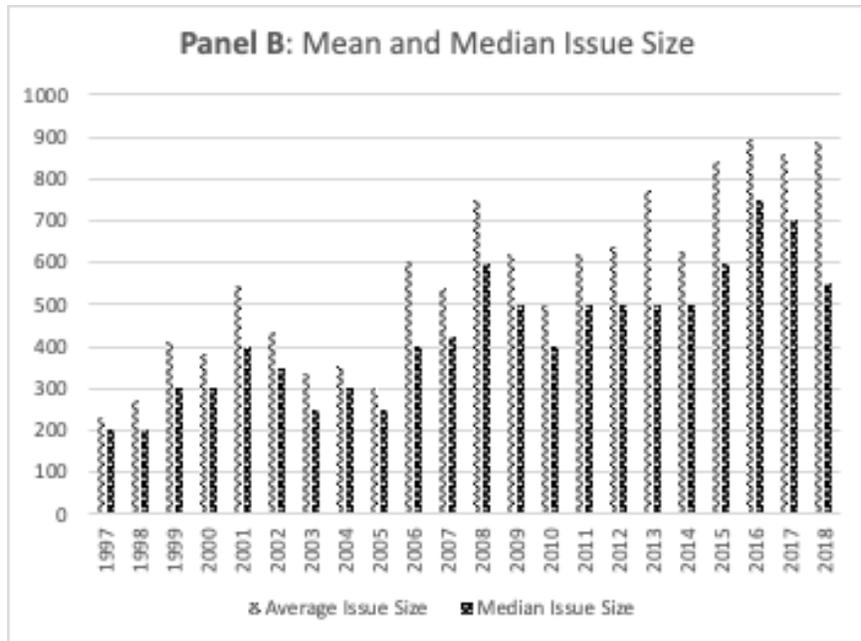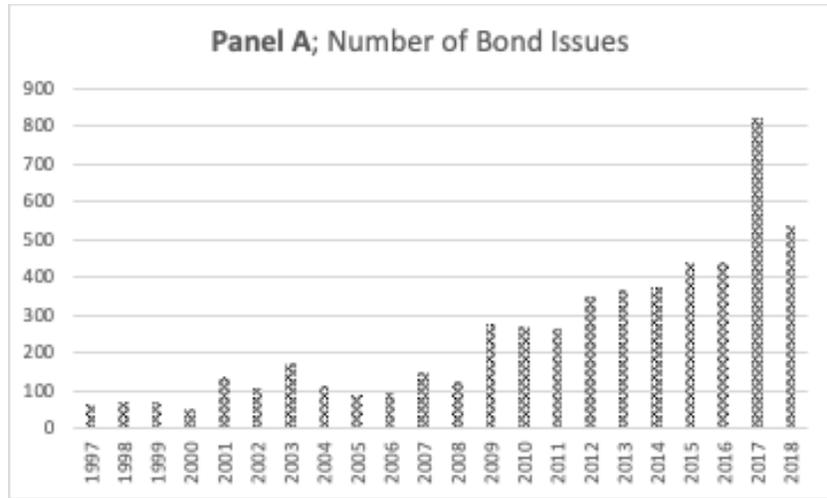
Table 1: Bond Issues by Year

This table shows the distribution of bonds in our sample by year for the 22-year period from 1997 to 2018. Column 1 shows the year of issue, Column 2 shows the total number of bonds issued, Column 3 shows the average issue size, Column 4 shows the median issue size, Column 5 shows the standard deviation of the offering size and Columns 6 and 7 show the minimum and maximum issue size respectively.

Year	N	Mean	Median	Std Dev	Min	Max
1997	62	232	200	165	15	800
1998	69	272	200	223	75	1627
1999	69	415	300	296	125	2000
2000	52	384	300	233	20	1200
2001	136	547	400	490	40	3000
2002	106	438	350	321	50	2000
2003	171	338	250	281	30	1750
2004	114	351	300	237	25	1500
2005	89	301	250	187	15	1000
2006	93	602	400	626	125	3000
2007	151	540	425	424	35	3000
2008	123	748	600	536	90	3100
2009	277	620	500	537	75	3500
2010	273	501	400	336	15	2250
2011	261	622	500	390	4	2000
2012	351	639	500	476	50	4250
2013	367	773	500	1161	0	15000
2014	375	629	500	433	25	3000
2015	442	844	600	691	100	5000
2016	438	893	750	652	150	4500
2017	821	857	700	648	100	5000
2018	535	889	550	1016	200	9000
Total	5375	691	500	675	0	15000

Table 2: Issue and Issuer Characteristics

This table shows summary statistics for the dependent and independent variables used in our analysis for the 22-tyear period from 1997 to 2018. Column 1 shows the variable name, Column 2 shows the total number of observations, Column 3 shows the mean, Column 5 shows the median, Column 6 shows the standard deviation and Columns 6 and 7 show the minimum and maximum values respectively.

Year	N	Mean	Median	Std Dev	Min	Max
ISSUE_SIZE	5375	691	500	675	0	15000
OFF_YIELD	5375	4.83	4.54	2.22	0.00	60.99
OFF_SPREAD	5375	1.88	1.57	1.89	-4.99	56.39
RATING	5375	8.82	8.67	3.23	1.00	19.50
SUMCOV	5375	5.78	6.00	3.92	0.00	20.00
MATURITY	5375	11.79	10.00	9.87	1.50	100.08
ASSETS	5375	48083	18482	94221	260	1913902
TOBINQ	5329	1.89	1.61	0.95	0.68	7.92
LEV	5375	0.31	0.30	0.15	0.01	1.66
ROA	5329	0.14	0.13	0.08	-1.34	0.53
TAXRATE	5375	0.18	0.21	0.15	0.00	0.39
TENYR	5375	2.95	2.60	1.11	1.50	6.89

STRENGTH	5375	4.18	3.00	3.81	0.00	22.00
CONCERN	5375	2.43	2.00	2.57	0.00	16.00
PERFORMANCE	5375	1.75	1.00	3.75	-9.00	19.00

Table 3: Impact of CSR Score on Offering Yield

This table shows the results of ordinary least squares for the determinants of bond characteristics. The dependent variable in the regression is the offering yield to maturity of the bond. Model1 shows the results when we use only KLD STRENGTH and the KLD CONCERN as explanatory variables. Model2 shows the results when we augment the regression in Model1 with control variables for firm and bond characteristics. Model3 shows the results when we use only KLD PERFORMANCE as the explanatory variable. Model4 shows the results when we augment the regression in Model3 with control variables for firm and bond characteristics. The superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. *P*-values are given in parenthesis.

	Model 1	**Model 2**	**Model 3**	**Model4**
STRENGTH	-0.187***	-0.00303		
	(0)	(0.644)		
CONCERN	0.0425***	0.0950***		
	(2.10e-05)	(0)		
PERFORMANCE			-0.155***	-0.0331***
			(0)	(5.14e-09)
SIZE		0.000219***		0.000253***
		(0)		(0)
SUMCOV		-0.0256***		-0.0331***
		(3.58e-05)		(8.21e-08)
RATING		0.331***		0.317***
		(0)		(0)

	Model 1	Model 2	Model 3	Model 4
MATURITY		0.0462***		0.0457***
		(0)		(0)
RULE144A		0.509***		0.596***
		(0)		(0)
RULE415		0.143***		0.283***
		(0.00369)		(1.84e-09)
ASSETS		-0.151***		-0.0793***
		(0)		(1.87e-05)
TOBINQ		-0.00335***		-0.00209*
		(0.00575)		(0.0843)
ROA		-2.637***		-1.744*
		(0.00578)		(0.0684)
LEVERAGE		-0.158		-0.164
		(0.244)		(0.231)
TAXRATE		-0.284**		-0.264**
		(0.0324)		(0.0483)
CONSTANT	2.559***	-0.321	2.151***	-0.698***
	(0)	(0.193)	(0)	(0.00436)
Observations	5,375	5,375	5,375	5,375
R-squared	0.131	0.474	0.096	0.466

Table 4: Impact of CSR Score on Offering Spread

This table shows the results of ordinary least squares for the determinants of bond characteristics. The dependent variable in the regression is the offering spread of the bond. Model1 shows the results when we use only KLD STRENGTH and the KLD CONCERN as explanatory variables. Model2 shows the results when we augment the regression in Model1 with control variables for firm and bond characteristics. Model3 shows the results when we use only KLD PERFORMANCE as the explanatory variable. Model4 shows the results when we augment the regression in Model3 with control variables for firm and bond characteristics. The superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. *P*-values are given in parenthesis.

	Model 1	Model 2	Model 3	Model4
STRENGTH	-0.280***	-0.0113*		
	(0)	(0.0875)		
CONCERN	0.178***	0.110***		
	(0)	(0)		

PERFORMANCE			-0.258***	-0.0425***
			(0)	(0)
SIZE		0.000204***		0.000242***
		(1.87e-10)		(0)
SUMCOV		-0.0342***		-0.0414***
		(4.58e-08)		(0)
RATING		0.323***		0.309***
		(0)		(0)
matur		0.0473***		0.0467***
		(0)		(0)
RULE144A		0.537***		0.626***
		(0)		(0)
RULE415		0.258***		0.395***
		(4.77e-07)		(0)
ASSETS		-0.181***		-0.103***
		(0)		(4.77e-08)
TOBINQ		-0.00388***		-0.00250**
		(0.00131)		(0.0390)
ROA		-2.933***		-1.954**
		(0.00205)		(0.0404)
LEVERAGE		-0.150		-0.156
		(0.268)		(0.251)
TAXRATE		-0.102		-0.0996
		(0.444)		(0.461)
INTRATE		0.843***		0.859***
		(0)		(0)
CONSTANT	5.568***	0.475*	5.280***	-0.00583
	(0)	(0.0744)	(0)	(0.982)
Observations	5,375	5,375	5,375	5,375
R-squared	0.201	0.626	0.189	0.620

Table 5: Impact of CSR Score on Credit Rating

This table shows the results of ordinary least squares for the determinants of bond characteristics. The dependent variable in the regression is the credit rating on the bond. Model1 shows the results when we use only KLD STRENGTH and the KLD CONCERN as explanatory variables. Model2 shows the results when we augment the regression in Model1 with control variables for firm and bond characteristics. Model3 shows the results when we use only KLD PERFORMANCE as the

explanatory variable. Model4 shows the results when we augment the regression in Model3 with control variables for firm and bond characteristics. The superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. *P*-values are given in parenthesis.

	Model 1	Model 2	Model 3	Model4
STRENGTH	-0.434***	-0.158***		
	(0)	(0)		
CONCERN	-0.182***	0.0156		
	(0)	(0.204)		
PERFORMANCE			-0.298***	-0.115***
			(0)	(0)
SIZE		0.000132***		7.87e-05*
		(0.00230)		(0.0694)
SUMCOV		0.123***		0.136***
		(0)		(0)
MATURITY		-0.0130***		-0.0122***
		(6.03e-07)		(3.06e-06)
RULE144A		2.863***		2.789***
		(0)		(0)
RULE415		-0.0237		-0.227***
		(0.732)		(0.000693)
ASSETS		-0.724***		-0.855***
		(0)		(0)
TOBINQ		-0.00640***		-0.00858***
		(8.68e-05)		(1.48e-07)
ROA		-33.68***		-35.81***
		(0)		(0)
LEVERAGE		5.003***		5.114***
		(0)		(0)
TAXRATE		-1.102***		-1.128***
		(1.08e-09)		(6.28e-10)
INTRATE		-0.209***		-0.237***
		(0)		(0)
CONSTANT	11.07***	15.94***	9.338***	16.97***
	(0)	(0)	(0)	(0)
Observations	5,375	5,375	5,375	5,375

R-squared	0.336	0.676	0.120	0.670

Table 6: Impact of CSR Score on Number of Covenants

This table shows the results of ordinary least squares for the determinants of bond characteristics. The dependent variable in the regression is the total number of covenants on the bond. Model1 shows the results when we use only KLD STRENGTH and the KLD CONCERN as explanatory variables. Model2 shows the results when we augment the regression in Model1 with control variables for firm and bond characteristics. Model3 shows the results when we use only KLD PERFORMANCE as the explanatory variable. Model4 shows the results when we augment the regression in Model3 with control variables for firm and bond characteristics. The superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. *P*-values are given in parenthesis.

	Model 1	**Model 2**	**Model 3**	**Model4**
STRENGTH	0.107***	0.00724		
	(0)	(0.616)		
CONCERN	-0.193***	-0.204***		
	(0)	(0)		
PERFORMANCE			0.126***	0.0705***
			(0)	(2.44e-08)
SIZE		8.95e-05		1.46e-05
		(0.200)		(0.834)
RATING		0.322***		0.354***
		(0)		(0)
MATURITY		-0.00345		-0.00215
		(0.411)		(0.610)
RULE144A		-5.174***		-5.430***
		(0)		(0)
RULE415		2.689***		2.450***
		(0)		(0)
ASSETS		-0.0648		-0.225***
		(0.144)		(3.48e-08)
TOBINQ		0.000924		-0.00187
		(0.726)		(0.477)
ROA		15.72***		13.97***
		(0)		(0)
LEVERAGE		-0.546*		-0.540*
		(0.0642)		(0.0691)
TAXRATE		-1.016***		-1.036***

		(0.000514)		(0.000434)
INTRATE		-0.591***		-0.632***
		(0)		(0)
CONSTANT	5.803***	5.336***	5.560***	6.388***
	(0)	(0)	(0)	(0)
Observations	5,375	5,375	5,375	5,375
R-squared	0.017	0.427	0.015	0.418