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European Financial Management

16. Nov. 2023

ORIGINAL ARTICLE

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Abstract

Using a novel sample covering 3783 US public firms from 2007 to 2020, we examine how negative media coverage of firm-level environmental, social, and governance (ESG) practices affects a firm's debt choice. We find that firms with higher ESG reputation risk rely more on public bond than bank loan. The social and governance components, in particular, matter. Moreover, firms that receive more negative news coverage display a higher propensity to issue new bonds as opposed to securing new bank debt. Overall, our study presents empirical evidence on the relation between firm ESG reputation risk and debt financing.

KEYWORDS
capital structure, debt choices, debt structure, ESG reputation risk, information asymmetry

JEL CLASSIFICATION
G20, G21, G30, G32

1 | INTRODUCTION

In recent years, the importance of a company's environmental, social, and corporate governance (ESG) reputation has significantly increased. Previous research has demonstrated that the adoption of ESG practices can enhance a firm's shareholder value and competitive advantage (Donaldson & Preston, 1995; Godfrey et al., 2009; Hillman & Keim, 2001; Hoepner et al., 2016). A strong ESG reputation not only earns the goodwill of stakeholders but also reduces credit risk by mitigating the impact of stakeholder sanctions (Eisenkopf et al., 2023; Godfrey, 2005; Godfrey et al., 2009; Koh et al., 2014), legal risk (Hong et al., 2019), and downside risk (Hoepner et al., 2018). Additionally, it helps corporations in obtaining financing (Cheng et al., 2014) and lowering the cost of debt (Amiraslani et al., 2022; Chava, 2014; Degryse et al., 2023; Hauptmann, 2017; Seltzer et al., 2021).

While prior studies have extensively discussed the influence of ESG reputation, the understanding of how a firm's ESG reputation shapes its choice of debt remains unclear. Given that ESG practices are primarily internal operations of firms, the task of assessing a firm's ESG performance or reputation by external entities becomes complex unless the firm voluntarily discloses pertinent information. The voluntary nature of disclosures can lead to inconsistencies in ESG ratings, potentially deepening the information gap between insiders and outsiders. This disparity is especially pronounced when firms intentionally withhold or manipulate information. Media, conversely, can serve as a powerful tool to bridge this gap (Deephouse, 2000). They provide a consolidated view of the company's ESG practices to external stakeholders, effectively reducing apprehensions and minimizing information asymmetry. Consequently, media coverage functions as a mechanism to mitigate outsiders' uncertainty about a firm's internal operations, acting as a reputation signal, as proposed by Weigelt and Camerer (1988) and Fombrun and Shanley (1990). Building upon this backdrop, we aim to accomplish this by directly gauging the firm's ESG reputation through its media coverage. This approach allows us to capture a more realistic and comprehensive view of the firm's ESG reputation risk, ultimately enabling us to assess how this reputation intertwines with the firm's financing decisions.

Our conceptual framework is built on the theoretical literature, which posits that bank loan financing offers substantial advantages over public debt in terms of monitoring efficiency, access to private information, and the ability to establish long-term lending relationships (Berlin & Loeys, 1988; Boyd & Prescott, 1986; Diamond,1984; Fama, 1985). Conversely, diffused public debt ownership and the associated free-rider problem reduce bondholders' incentives to engage in costly information production and monitoring. Since banks are able to efficiently monitor borrowers and detect firms' misbehaviors easily through strict monitoring compared with public debtholders (Ben-Nasr, 2019), firms with high ESG risk, have strong incentives to hide their misbehaviors by avoiding the reliance on bank loans.

Moreover, the level of information asymmetry varies across different ESG components. 'S' is considered the most complex ESG factor to analyze. One of the biggest challenges is that it lacks a reliable, quantitative measurement standard. 'G' has a similar problem in terms of information disclosure (Neilan et al., 2020; O'Hare, 2022). Therefore, in comparison with 'E', 'S' and 'G' practices are less transparent and have a higher degree of information asymmetry for outsiders. As a result, we can expect a more pronounced reduction in asymmetric information among 'S' and 'G' practises even as negative news coverage increases (remember, 'any news is good news' here in terms of reducing information asymmetry). If the information asymmetry theory holds for our settings, it is plausible to hypothesize that firms are more sensitive to changes in information opaqueness surrounding 'S' and 'G' issues.

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Organizational reputation is a holistic assessment of an organization's performance, encompassing aspects such as esteem, regard for the firm, and its attractiveness (Barnett et al., 2006; Lange et al., 2011). Studies have demonstrated that a positive reputation for banks correlates with improved profitability (Deephouse, 2000) and a boost in deposit inflows (Homanen, 2018). Conversely, a negative organizational reputation for banks may lead to depositor base volatility (Houston et al., 2021) and a reduction in loan supply (Lin & Paravisini, 2011). If bank reputation is a potential channel behind ESG reputation risk and debt choice, we can anticipate that firms experiencing ESG news shocks may be more inclined to issue new bonds rather than seek loans. This is because banks, in an effort to safeguard their reputation, may reduce their loan supply to firms implicated in negative ESG news. By doing so, they distance themselves from any potential reputational harm that could result from association with such firms.

In our study, we employ the RepRisk Index (RRI) to measure the extent of firms' exposure to negative news associated with ESG-related issues (see Section 3.1 for the rationale) and provide strong evidence that a higher RRI is positively associated with less reliance on bank loans and greater dependence on public bonds.[1] We conduct our empirical analysis on a sample of 71,341 firm-year-quarter observations covering 3783 US public firms from 2007 to 2020 and find strong evidence that a higher RRI is positively associated with less reliance on bank loans and greater dependence on public bonds. Specifically, a one-standard-deviation increase in the ESG reputation risk reduces the ratio of bank debt to total debt by 2.97 pp while increasing the ratio of public debt to total debt by 1.63 pp. Further, we break down the RRI into components based on the number of incidents with the respective 'E', 'S' or 'G' issues following Houston and Shan (2019). We show that the S and G components have a greater influence on firms' debt choices than the E components.

Upon examining specific debt instruments, we find that firms with higher ESG reputation risk tend to rely on revolvers over term loans. This preference is attributed to the fact that term loans, often used for financing long-term projects, carry greater information asymmetry and credit risk. Additionally, they are usually associated with stricter financial covenants and enhanced monitoring requirements (Angbazo et al., 1998; Harjoto et al., 2006; Newton et al., 2020). Thus, to avoid intense scrutiny, firms with high ESG reputation risk lessen their dependence on term loans. Furthermore, these high-risk firms tend to depend more heavily on senior bonds rather than subordinated bonds due to the higher level of market discipline the latter entails.

To address the potential issue of endogeneity between company ESG reputation risk and debt structure, we use 'High Religious' and 'Canada Border' as two instrumental variables for the ESG reputation risk. 'High Religious' is a dummy variable that equals one when the proportion of religious adherents in the state, where a firm's headquarters resides, is higher than 50%. Stronger social morality and corporate social responsibility (CSR) are positively correlated with higher levels of religious adherence (Angelidis & Ibrahim, 2004; Callen & Fang, 2015; Deng et al., 2013; Hilary & Hui, 2009). We anticipate that local religious adherence is negatively correlated with a firm's ESG reputation risk but unlikely to correlate with a firm's financing outcomes. The second instrument, 'Canada Border', is a dummy variable that equals one if a firms' headquarters is in a state that borders Canada, and a value of zero otherwise. Putnam (2001) demonstrates that the extent of slavery in the 19th century is directly connected

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[1]We discuss RepRisk data in more detail in Section 3.1.

to the level of local social capital. The closer to the Canadian border a state is, the sooner it becomes a free state, and consequently, it will have greater social capital. We anticipate that firms situated in states bordering Canada have less exposure to ESG reputation risk and higher ESG performance. Since the proximity to the Canadian border is unlikely to correspond to the financing outcomes of businesses, the result with instrumental variables further confirms that firms with higher ESG reputation risk rely less on bank loans.

Our research significantly contributes to existing literature in various ways. While previous studies in corporate finance and accounting extensively explore the relationship between ESG issues and loan or bond contracting (Amiraslani et al., 2022; Chava, 2014; Goss & Roberts, 2011), ours stands as one of the first to view ESG reputation risk as a comprehensive concept and scrutinizes its effect on firms' debt choices. We find that firms with a higher ESG reputation risk noticeably reduce their dependence on bank debt, particularly term loans with strict monitoring conditions, while they increase their reliance on public bond debt.

Additionally, our study broadens the discourse on bank monitoring (e.g., Bolton & Freixas, 2000; Diamond, 1984; Park, 2000; Rajan & Rajan, 1992), lending relationships (e.g., Chernenko et al., 2019; Houston et al., 2021; Prilmeier, 2017), and debt choice (e.g., Boubaker et al., 2018; Li et al., 2019; Lin et al., 2013). We highlight how firms avoid bank surveillance by shifting their financing preference towards the public bond market. Firms facing higher ESG-related risks have incentives to withhold negative news to maintain a favourable image, thus avoiding bank loans that could expose potential misconduct (Ben-Nasr, 2019). Moreover, Houston and Shan (2019) demonstrate that borrowers change their lenders post-ESG reputation shocks to avoid potential lending relationship disruption. Our results indicate that the surge in ESG news coverage might potentially prompt banks to prioritize their reputation, thereby limiting loans to firms confronted with high ESG reputation risk. This leads us to foresee that borrowers, who have suffered extensive negative news coverage in the previous quarter, are less likely to secure new loans. However, this evidence serves only as indirect proof, since without access to banks' loan portfolios, we are unable to provide direct evidence demonstrating that banks curtail lending to borrowers following negative shocks to safeguard their reputation.

Finally, our findings contribute to the ongoing debate on how ESG reputation risk influences firms' debt contracts and how financing decisions can facilitate firms' transition towards sustainable growth (Degryse et al., 2023; Delis et al., 2021; Houston et al., 2021). In a recent paper closest to ours, Beyene et al. (2021) examine the potentially different roles of market- versus bank-based credit in the allocation of resources to fossil fuel. Contrary to our findings, they demonstrate that bank financing, on average, has not decreased in response to stricter climate legislation. Additionally, the risk of stranded assets has increasingly concentrated in a few significant exposures on the balance sheets of several large banks. While most banks seem to be increasingly avoiding ESG reputation risk, extremely large banks appear to hide behind their too-big-to-strand status and/or might aim to delay the stranding of fossil fuel reserves by 'working the political system'.

The significance of various debt types in shaping firms' sustainable transformation, and the extent to which debt finance can be used to address sustainable development concerns, remains unknown. In our study, we strive to clarify whether high ESG reputation risk enhances or diminishes firms' reliance on bank debt and the mechanisms driving this decision. We believe this paper enhances our understanding of the role of ESG reputation risk in different debt markets and contributes to the establishment of a sustainable financial system.

The remainder of the paper proceeds as follows. Section 2 presents the hypothesis development. We discuss the sample construction process and variable definitions in Section 3. Section 4 presents the empirical results on ESG reputation risk and debt choices. Section 5 provides different robust checks. We conclude the paper in Section 5.

2 | HYPOTHESIS DEVELOPMENT

Banks can acquire a constant flow of information from their borrowers, as financial intermediaries. The comparative cost advantages in information production enable them to undertake superior debt-related monitoring (Diamond, 1984, 1991). Conversely, diffused public debt ownership and the associated free-rider problem reduce bondholders' incentives to engage in costly information production and monitoring. Media coverage both conducts original investigation as well as distributes information broadly, significantly reduce the cost of information production (Bushee et al., 2010; Drake et al., 2014; Rogers et al., 2016). As the public's awareness of ESG issues has grown in recent years, media has played a vital role in disseminating information and conducting original investigations, serving as a crucial channel for spreading information about ESG concerns. Through its reporting, media has exposed numerous ESG scandals, which has greatly reduced information asymmetry regarding firms' ESG issues. Several studies have demonstrated the role of media in resolving information asymmetry (Bushee et al., 2010; Drake et al., 2014; Kim & Verrecchia, 1994; Rogers et al., 2016; Tetlock, 2010). According to Kölbel et al. (2017), media coverage often play a crucial role in unveiling ESG scandals, thereby significantly reducing the information asymmetry related to a company's ESG issues. Hence, we could hypothesize that companies with heightened ESG reputation risk and a higher number of negative ESG incidents substantially mitigate this information asymmetry, which further influences their debt structure and financing decisions.

Firms' debt choices are also related to the supply side. The availability of bank loans directly impacts a firm's capital structure. The contraction in the supply of bank loans increases firms' reliance on the public bond market (Leary, 2009). Lending to borrowers who have received adverse media coverage is likewise a negative shock to banks. Banks are necessarily concerned that lending to borrowers with poor ESG reputations may harm their own reputations, resulting in depositor base volatility (Houston et al., 2021) and outflow of deposits (Homanen, 2018). Therefore, bankers exposed to such reputation shocks may be hesitant to finance borrowers with poor ESG reputations. We should expect that the increased number of negative news coverage about firms' ESG practices affects the persistence of existing lending relationships and the creation of new lending relationships. In contrast, diffuse ownership, arm's length monitoring, and collective action problems associated with public debt can lead to low credit standards and less stringent ESG reputation risk screening.

Lin and Paravisini (2011) demonstrates that reputation shock has a substantial effect on the supply of loans from banks linked to fraudulent borrowers, with an example where the supply of loans dropped by over 25% during the 2 years following such a shock. Banks, especially those linked to borrowers with negative ESG incidents, have an incentive to cut credits with poor ESG performance borrowers to avoid scandals and protect their reputations and social capital. Houston and Shan (2019) demonstrated that lenders have a tendency to disrupt the lending relationship when borrowers encounter ESG reputation shocks. This action is taken in an effort to mitigate potential damage to their own reputation. Accordingly, we can formulate the following hypothesis:

Hypothesis 1. Firms with higher ESG reputation risk index rely less on bank debt in the debt structure.

Hypothesis 2. Firms that experience a higher number of ESG risk incidents are expected to have a lower probability of obtaining new bank loans.

3 | DATA

3.1 | Sample construction

To investigate the impact of a firm's ESG reputation risk on its choice between bank loan and public debt, we construct a data set on ESG reputation risk, controls, and debt structures for US public firms over the period 2007–2020. We obtain debt structure data from S&P Capital IQ, which provides data on corporate debt structure for public debt and private debt from 2002 onwards (Choi et al., 2018; Colla et al., 2013). Our paper follows recent literature (e.g., Boubakri & Saffar, 2019; Li et al., 2019) in using debt structure from Capital IQ instead of investigating debt choice by acquiring loan deals and public bond deals from Dealscan and SDC databases.[2] This is because the Dealscan database only provides syndicated loan data, which do not cover all of a firm's loan transactions. Also, due to the missing observations, the SDC database is unable to provide the most comprehensive public bond data.

We extract ESG reputation risk data from RepRisk. The RepRisk database provides a monthly unbroken time-series ESG rating and coverage on ESG news incidents, which spans the start of 2007 to the end of 2020. Houston and Shan (2019) compares different ESG databases and find that the ESG data from RepRisk database provide unparalleled granularity. It employs a monthly, continuous ESG rating ranging from 0 to 100, while the KLD and Eikon database both provide annual ESG ratings with many missing observations. Second, RepRisk provides event-based data that evaluate the outcomes of ESG activities. Compared with self-reported ESG databases (Bloomberg, Refinitiv Eikon, and MSCI), RepRisk is less susceptible to greenwashing biases and the manipulation of self-disclosure. Third, monthly ESG data provided by RepRisk database can be aggregated to quarterly ESG data, which is more suited for matching with the quarterly level debt structure provided by S&P Capital IQ to better evaluate the impact of ESG reputation risk changes on firms' debt structures. Last but not least, to the best of our knowledge, RepRisk is the only database that systematically identifies and assesses material ESG risks by analyzing information from external sources. Different from other ESG data providers, RepRisk aims to provide firm-level ESG reputation risk assessments based on exposure to ESG news, instead of ESG performance rating. Our paper uses the RRI to measure firms' reputation risk related to ESG issues.[3] The RRI calculation is based on the reach of information

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[2]Prior literature (e.g., Denis & Mihov, 2003; Morellec, et al., 2015) investigates the choice of financing by acquiring bond issuance data from Fixed Income Securities Database (FISD) or SDC database and acquiring loan issuance from DealScan database. More recently, an increasing number of studies have started to investigate the debt choice directly with the availability of debt structure data.

[3]RepRisk relies on AI and machine learning technologies to search and screen 28 ESG issues related to risk incidents, on a daily basis, from over 100,000 public sources and stakeholders in 23 languages. These sources range from international to the regional, national, and local levels. More detailed information on the 28 ESG issues and the calculation process of either RRI or RRR are available at https://www.reprisk.com/news-research/resources/methodology.

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sources, the frequency, the timing of ESG risk incidents, and the content of risk incidents. It ranges from 0 (lowest) to 100 (highest). The higher the RRI, the higher the ESG reputation risk. The RRI increases in proportion to the severity, reach, and novelty of the incident, and it decays if there is no new risk incident that happened for a given day. In addition, we use the RepRisk Rating (RRR) to measure firms' ESG performance, which is calculated based on the RRI and the country-sector ESG risk. It ranges from AAA (highest) to D (lowest); the higher the RRR denotes better ESG performance and lower ESG reputation risk.

We obtain firms' financial information from Compustat for the most recent fiscal quarter that ended before the period end date of the debt structure. We exclude all financial firms (SIC Code 6000-6999) and observations with missing firms' financial statement information at the end of the quarter before the current period end date of the debt structure. The final sample contains 71,341 firm-year-quarter observations and 3783 US public firms from 2007 to 2020.

In addition to the firm-year-quarter level debt structure sample, we construct the new debt issuance sample of loans and bonds with corresponding deal characteristics as well as firm characteristics and ESG reputation risk data. Our sample of bank loans is obtained from the Refinitiv Eikon and WRDS-Thomson Reuters DealScan LPC for 2007–2019. The bank loan coverage at Refinitiv Eikon is provided by Refinitiv Loan Pricing Corporation (LPC), which consists of detailed information on bank loans made to public firms. We obtain detailed information on public bonds issued by US public companies from Refinitiv Eikon and collect the reference firms' financial characteristics from Compustat for the most recent fiscal quarter ending before the loan start date (bond start date). We match the borrower and/or borrower's parent name to Compustat, following Chava and Roberts (2008). The current DealScan-Compustat only includes matches at the end of 2017. Following Newton et al. (2020), we extend the present version of the link table until the end of 2019. Again, we exclude all financial firms (SIC Code 6000-6999) and all observations with missing firms' financial statement information at the end of the quarter before the current loan (current bond). In the final sample, we have 14,383 loan facilities and 5569 public bonds. To merge the ESG reputation risk data from the RepRisk database (this database only provides the private ID of RepRisk and ISIN), we construct a link table of ISIN and GVKEY through Capital IQ and manually check the link table.

3.2 | Overview of sample

Table 1 presents summary statistics for the main variables of the full sample. To reduce the effects of outliers, we winsorize all of our continuous variables at 1% and 99% levels. Panel A presents the summary statistics for the firm-quarter-level sample. The mean value for the percentage of *Bank Debt* financing is 39%, and the mean value for the percentage of *Public Debt* financing is 49% in our full sample.[4] The mean value for bank debt financing in the subsample of high RRI businesses is 30%, which is lower than the mean value for bank debt financing (48%) in the subsample of low RRI firms. Firms with a high RRI are more likely to use public debt financing than firms with a low RRI, with an average of 58% versus 40% for low RRI firms. These preliminary findings are consistent with our primary hypothesis that higher ESG

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[4]Please note that since many firms possess other forms of debt, like capital leasing and accounts payable, the sum of Bank Debt(%) and Public Debt(%) does not consistently equal 1. This observation aligns with the findings of prior literature such as Lin et al. (2013) and Ben-Nasr (2019).

TABLE 1 Summary statistics.

This table reports summary statistics for our sample firms over the 2007–2020 period. We split our sample into two subsamples based on the median value of RRI. In Panel A, Bank Debt is the percentage of bank debt scaled by the total amount of debt. Public Debt is the percentage of public bond debt scaled by the total amount of debt. RRI is the firm's quarterly reputational exposure to ESG risk. RRR is the firm's quarterly level ESG rating. Other variable definitions are listed in Appendix OA1. Panels B and C present the summary statistics for our bond-level sample and our loan facility-level sample, respectively. All variables are winsorized at the 1% and 99% levels.

Sample variable	All observations			High RRI observations			Low RRI observations		
	Observations	Mean	SD	Observations	Mean	SD	Observations	Mean	SD
Panel A: Firm-level data									
Bank Debt (%)	71,341	0.390	0.387	35,818	0.305	0.350	35,523	0.476	0.404
Public Debt (%)	71,341	0.494	0.399	35,818	0.583	0.376	35,523	0.403	0.402
Other (%)	71,341	0.116	0.248	35,818	0.111	0.230	35,523	0.121	0.265
RRI	71,341	10.446	12.911	35,818	20.770	10.855	35,523	0.036	0.212
RRR	71,341	8.106	1.560	35,818	7.276	1.667	35,523	8.943	0.833
Firm Size	71,341	7.711	2.182	35,818	8.691	1.881	35,523	6.720	2.011
Firm Leverage	71,341	0.345	0.460	35,818	0.339	0.352	35,523	0.351	0.548
Tobin's Q	71,341	1.803	3.069	35,818	1.603	1.871	35,523	2.007	3.912
PPE ratio	71,341	0.320	0.261	35,818	0.335	0.253	35,523	0.304	0.267
Debt rating indicator	71,341	0.503	0.500	35,818	0.653	0.476	35,523	0.352	0.478
Firm profit	71,341	0.019	0.093	35,818	0.027	0.055	35,523	0.011	0.119
Cash ratio	71,341	0.107	0.125	35,818	0.094	0.100	35,523	0.120	0.145
Panel B: Loan level data									
Loan spreads (bps)	11,970	227.773	145.218	5516	210.515	150.327	6454	245.613	150.852
Loan maturity	14,383	3.838	0.629	7181	3.761	0.706	7202	3.916	0.529
Panel C: Bond level data									
Bond spreads (bps)	5260	236.691	185.595	2918	186.039	158.799	2342	299.801	204.049
Bond maturity	5569	4.684	0.714	3138	4.700	0.800	2431	4.664	0.564

reputation risk reduces firms' reliance on bank debt. In addition, in the whole sample, the average firm size is 7.71, the mean value of firm leverage ratio is 0.345, the mean value of Tobin's Q is 1.803, and about 50% of firms have debt rating. The statistics of those control variables are consistent with previous literature (e.g., Boubaker et al., 2017, 2018; Chen et al., 2020; Choi et al., 2018; Li et al., 2019; Lin et al., 2013). Panel B reports the summary statistics of the loan facility level sample. The average All-in-Spread Drawn (AISD) of the bank loans in our full sample is 227.773 basis points, and the average AISD of the bank loans for firms with high RRI is 210.515 basis points, which is lower than bank loan spreads for low RRI (245.613 basis points). Panel B shows that the average spread of public bonds for firms with high RRI is lower than the average spread for firms with low RRI (186.039 basis points vs. 299.81 basis points).

Table 2 presents the correlation matrix of the main variables in our empirical analysis and all of the correlation coefficients are statistically significant at the 1% level. It shows that *RRI* is negatively linked to *Bank Debt*, and positively related to *Public Debt*, which provides univariate evidence that firms with higher ESG reputation risk index tend to use less bank debt over public debt in their debt structure. We also find that *RRR* is positively related to *Bank debt* and negatively related to *Public Debt*, which provides univariate evidence that firms with higher ESG ratings rely more on bank debt than public debt.

4 | EMPIRICAL RESULTS

4.1 | ESG reputation risk and debt structure

While Table 2 demonstrates a negative association between firms' ESG reputation risk and reliance on bank debt, we are unable to alleviate the concern that company debt structure is connected with other firm characteristics relevant to firms' ESG reputation risk. In this section, we conduct a multivariate analysis to better gauge the effect of a firm's ESG reputation risk on its debt choices. We primarily estimate the following models:

$$Debt\ Choice_{i,t} = \alpha_1 RRI_{i,t-1} + \beta_t X_{i,t-1} + \upsilon_t + \eta_i + \epsilon_{i,t}, \tag{1}$$

where the dependent variable is the debt choice measures, capturing firm i's reliance on bank debt or bond debt. It is proxied by either *Bank Debt*$_{i,t}$ or *Public Debt*$_{i,t}$. *Bank Debt*$_{i,t}$ measures the proportion of bank debt in a firm's total debt and *Bond Debt*$_{i,t}$ measures the proportion of public debt in a firm's total debt. Our main interest is the size, sign and statistical significance of the coefficients *RRI*$_{i,t-1}$, which captures the firm's ESG reputation risk at the end of the quarter before the period end date of debt structure. X_{it-1} is a set of control variables that may influence the choice of debt. All of the independent variables are lagged by one quarter. In addition, we include year-quarter, industry-fixed effects in our model to account for potential changes in the reliance on a particular type of debt through time and among industries.

Table 3 reports the baseline regression results of Equation (1). Standard errors are clustered at the industry level and are heteroskedasticity-robust. Column (1) of Table 3 shows a negative and statistically significant relationship between a firm's ESG reputation risk and the proportion of bank debt in a firm's debt structure. Column (2) of Table 3 indicates a positive and statistically significant relationship between a firm's ESG reputation risk and a firm's reliance on public debt. The results are consistent and robust when we include year-quarter

TABLE 2 Correlation matrix.

This table reports the correlation matrix for the main variables in our sample. Bank Debt is the percentage of bank debt scaled by the total amount of debt. Public Debt is the percentage of public bond debt scaled by the total amount of debt. RRI is the firm's quarterly reputational exposure to ESG risks. RRR is the firm's quarterly ESG rating. Other variable definitions are listed in Table A1 in Appendix A. We can see that RRI is negatively associated with bank debt and positively associated with public debt. All variables are winsorized at the 1% and 99% levels. *Statistical significance at the 5% level.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(11)	(12)	(13)
(1) Bank Debt	1										
(2) Public Debt	−0.801*	1									
(3) RRI	−0.249*	0.236*	1								
(4) RRR	0.154*	−0.133*	−0.708*	1							
(5) Firm Size	−0.295*	0.328*	0.538*	−0.449*	1						
(6) Tobin's Q	−0.030*	0.009	−0.061*	0.059*	−0.286*	1					
(8) Firm Leverage	−0.024*	0.094*	−0.035*	0.048*	−0.164*	0.268*	1				
(9) PPE Ratio	−0.012*	0.026*	0.048*	−0.074*	0.066*	−0.126*	0.047*	1			
(11) Debt Rating Indicator	−0.368*	0.457*	0.329*	−0.200*	0.557*	−0.135*	0.050*	0.049*	1		
(12) Firm Profit	−0.002	0.013*	0.089*	−0.074*	0.350*	−0.291*	−0.204*	0.058*	0.153*	1	
(13) Cash Ratio	−0.060*	−0.047*	−0.100*	0.063*	−0.300*	0.232*	−0.007	−0.293*	−0.213*	−0.200*	1

TABLE 3 Debt structure and ESG reputation risk.

This table reports our baseline results regarding the impact of ESG risk on debt structure. The dependent variable, Bank Debt, is the percentage of bank debt scaled by the total amount of debt. Public Debt is the percentage of public bond debt scaled by the total amount of debt. Columns (1) to (3) report regression results of Bank Debt, Public Debt and Total Debt on ESG reputation risk (RRI), respectively. Columns (4)–(6) also report regression results of Bank Debt and Public Debt on RRI, respectively. We include year-quarter fixed effects and industry fixed effects from Columns (4) to (6). The independent variables lagged one period. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and clustered at the firm level and are reported in parentheses.

Dependent Variable:	Bank Debt (%)	Public Debt (%)	Total Debt	Bank Debt (%)	Public Debt (%)	Total Debt
	(1)	(2)	(3)	(4)	(5)	(6)
RRI	−0.231*** (0.04)	0.117*** (0.04)	0.020 (0.21)	−0.242*** (0.04)	0.127*** (0.05)	0.234 (0.20)
Firm Size	−0.033*** (0.00)	0.032*** (0.00)	1.072*** (0.03)	−0.031*** (0.00)	0.035*** (0.00)	1.040*** (0.03)
Tobin's Q	−1.074*** (0.21)	0.907*** (0.20)	−0.083 (1.03)	−1.058*** (0.20)	0.895*** (0.20)	0.007 (0.95)
Firm Leverage	−0.002 (0.02)	0.058** (0.03)	1.348*** (0.25)	−0.004 (0.02)	0.071** (0.03)	1.296*** (0.22)
PPE Ratio	−0.074*** (0.02)	0.046* (0.02)	0.342*** (0.08)	−0.025 (0.03)	−0.021 (0.03)	0.607*** (0.14)
Debt Rating Indicator	−0.224*** (0.01)	0.298*** (0.02)	0.309*** (0.07)	−0.222*** (0.02)	0.276*** (0.02)	0.319*** (0.07)
Firm Profit	0.243*** (0.07)	−0.263*** (0.06)	−0.827*** (0.25)	0.212*** (0.06)	−0.233*** (0.06)	−0.758*** (0.24)
Cash Ratio	−0.514*** (0.05)	0.237*** (0.05)	−0.995*** (0.23)	−0.473*** (0.05)	0.198*** (0.05)	−0.903*** (0.24)
Year-Quarter FE	No	No	No	Yes	Yes	Yes
Industry FE	No	No	No	Yes	Yes	Yes
Obs.	62,586	62,586	62,586	62,586	62,586	62,586
Adj. R^2	0.194	0.241	0.779	0.220	0.278	0.792

fixed effects and industry fixed effects in Columns (4)–(6). Based on the estimates from Columns (4) and (5) of Table 3, a one-standard-deviation increase in the ESG reputation risk reduces the ratio of bank debt to total debt by 2.97 pp and increases the ratio of public debt to total debt by 1.63 pp. In addition, although the increase of ESG reputation risk reduces the reliance on bank debt, we cannot pin down whether the total debt goes down followed by reducing bank debt. Therefore, we further investigate the impact of ESG reputation risk on firms′ total debt. We demonstrate that ESG reputation risk has no effect on overall debt. With an increase in ESG reputation risk, the drop in bank debt is compensated for by an increase in public debt. We include control variables on firm-specific characteristics to isolate other potential effects on the firm's debt choice. In line with previous literature (e.g., Boubaker et al., 2017, 2018; Denis & Mihov, 2003; Houston & James, 1996; Lin et al., 2013), we show that larger firms, those with a greater Tobin's Q, a higher leverage ratio and higher cash ratio depend less on bank loans and more on public debt. Additionally, firms′ profitability is positively correlated with a higher dependence on bank debt and less reliance on public debt. Overall, these results indicate that the relationship between ESG reputation risk and debt choice is consistent with the first hypothesis that firms with higher ESG reputation risk choose public bonds due to the beneficial impact of media coverage on the reduction of information asymmetries.

While our results from Table 3 show that ESG reputation risk is negatively associated with the reliance on bank debt and positively associated with the dependence on public debt, we still lack information on which component of ESG reputation risk is driving a firm's less reliance on bank debt. Therefore, following Houston and Shan (2019), we break down RRI into three components (E, S, and G), which represent environmental reputation risk, social reputation risk, and governance reputation risk, respectively. We first estimate the impact of each component of ESG reputation risk on debt structure separately, then we put 'E', 'S' and 'G' into the same specification to alleviate the potential impact of the interplay among each component and increase the reliability of our estimations. Our findings suggest that firms′ less reliance on bank debt is mainly driven by 'S' and 'G' rather than 'E'.[5] The results are robust even when we include the three components into one specification (Columns (4) and (8) in Table 4). This is due to the varying levels of information asymmetry among the different ESG components. In comparison to environmental issues, social and governance issues exhibit reduced transparency and greater information asymmetry (Neilan et al., 2020; O'Hare, 2022). Debt holders, as external financiers, are unable to detect firms′ misconduct and irresponsible behaviours stemming from social and governance risks efficiently. Therefore, media coverage on social and governance issues significantly narrow the information gap between company insiders and external investors regarding these issues, consequently impacting firms′ financing choices. These results are consistent with the previous literature. For example, Ben-Nasr (2019) shows that firms with higher unemployment risk tend to rely on public bonds to avoid banks′ monitoring of misconduct. Also, Lin et al. (2013) demonstrate that large shareholders with excess control rights have incentives to extract the private benefits of control, and they choose public bonds as a way of avoiding bank monitoring. Taken together, the results of Table 4 further support our findings that ESG reputation risk, particularly 'S' and 'G' reputation risk,

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[5]Although the coefficient of the 'E' component is significant in Model (1) of Table 4, it becomes insignificant when we control the other two components at the same time, implying that the impact of the 'E' component is probably correlated with 'S' and 'G'.

TABLE 4 The impact of each component of ESG reputation risk on debt choice.

This table reports the impact of each component of ESG reputation risk on debt choice. The dependent variable, Bank Debt is the percentage of bank debt scaled by the total amount of debt. Public Debt is the percentage of public bond debt scaled by the total amount of debt. We split ESG reputation risk into three components: 'E', 'S', and 'G'. Our results show that firms' debt choice is driven by Social, Governance factors rather than the Environmental factor. The independent variables are lagged one period. Columns (4) and (8) report the estimation results of specification including 'E', 'S' and 'G'. The coefficient of 'E' is significant in the specification (1), but it becomes insignificant in the specification (4). 'S' and 'G' remain significant in all specifications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and clustered at the firm level and are reported in parentheses.

Dependent variable	Bank Debt (%)				Public Debt (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RRI_E	−0.265*** (0.10)			−0.153 (0.10)	0.068 (0.11)			0.003 (0.11)
RRI_S		−0.334*** (0.06)		−0.300*** (0.06)		0.178** (0.07)		0.174*** (0.07)
RRI_G			−0.237*** (0.06)	−0.233*** (0.06)			0.156** (0.07)	0.152** (0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	62,586	62,586	62,586	62,586	62,586	62,586	62,586	62,586
Adj.R2	0.217	0.218	0.217	0.220	0.277	0.278	0.277	0.278

motivates corporations to borrow less from banks to escape scrutiny and avoid bank supervision.

To further explore what issues of ESG reputation risk drive firms' financing choices, we follow Houston and Shan (2019) and construct a proxy of borrowers' risk exposure to the specific issues:[6]

$$RRI_{i,j,t-1} = RRI_{i,t-1} \times (\text{\# of news associated with issue } j \text{ at } t-1)/(\text{Total \# of news associated with all issues at } t-1), \quad (2)$$

where $RRI_{i,j,t-1}$ is the firm i's RRIs attributable to issue j at the quarter $t-1$. Table 5 reports the estimation results. We find that firms more exposed to 'S' and 'G' issues significantly reduce their reliance on bank loans. These results are consistent with the findings in Table 4. Specifically, we find (1) animal mistreatment; (2) human rights abuse; (3) social discrimination; (4) forced labour; (5) child labour; (6) freedom of association; (7) discrimination in employment; (8) poor employment conditions; (9) executive compensation; (10) misleading communication; (11) tax evasion; (12) tax optimization; (13) anticompetitive; (14) controversial products; (15) health and environmental; (16) national legislation; (17) supply chain are main issues driving firms' less reliance on bank loans. Overall, compared with environmental issues, social issues and governance issues are the main factors driving firms to rely more on public bonds in their debt structure.

News-related ESG factors has a substantial impact on reducing information asymmetry concerning ESG-related issues. As a result, companies with greater exposure to ESG risks tend to depend more heavily on public debt financing. S&P Capital IQ classifies total debt into seven mutually exclusive debt types, enabling us to investigate the impact of ESG reputation risk on the composition of debt structure. Colla et al. (2013) use the classification of debt from the S&P Capital IQ database and find that about two-thirds of enterprises rely on senior bonds and notes, one-fifth on subordinated bonds and notes, and about 5% on commercial paper. Term loans are often employed for financing long-term projects, which tend to have extended maturities and exhibit greater information asymmetry. This is primarily due to the fact that these projects usually involve higher levels of uncertainty, complexity, and risk, making it difficult for lenders to fully assess and predict their outcomes. Consequently, term loans are typically accompanied by more stringent financial covenants and elevated monitoring requirements. In comparison, revolving credit facilities, or revolvers, are more flexible financing options that allow borrowers to draw, repay, and redraw funds as needed within a predetermined credit limit. Revolvers are typically used to finance short-term working capital needs or to cover temporary cash flow shortfalls. Given the short-term nature and lower

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[6]RepRisk database provides company negative news related to 28 different issues spanning across E, S and G. Twenty-eight issues include climate change; local pollution; impacts on landscapes, ecosystems, and biodiversity; overuse and wasting; waste issues; animal mistreatment; human rights abuses; impacts on communities; local participation; social discrimination; forced labour; child labour; freedom of association; discrimination in employment; occupational health and safety; poor employment conditions; corruption; executive compensation; misleading communication; fraud; tax evasion; tax optimization; anticompetitive practices; controversial products; health and environmental concerns; violation of international standards; violation of national legislation; supply chain issues. These 28 Issues drive the entire RepRisk data collection process, and every risk incident in RepRisk's ESG Risk Platform is linked to at least one of these Issues.

TABLE 5 The impact of borrower's reputation risk related to 28 issues on debt structure.

This table reports the OLS regression of the impact of borrower's RRI related to 28 issues on debt structure. The abbreviation of the specific issues are: rri_cc: Climate change, rri_lp: Local pollution, rri_iol: Impacts on landscapes, ecosystems, and biodiversity, rri_oaw: Overuse and wasting, rri_wi: Waste Issues, rri_am: Animal mistreatment, rri_hra: Human rights abuses, rri_ioc: Impacts on communities, rri_lpi: Local participation, rri_sd: Social discrimination, rri_fl: Forced labour, rri_cl: Child labour, rri_foa: Freedom of association, rri_die: Discrimination in employment, rri_oh: Occupational health and safety, rri_pec: Poor employment conditions, rri_cbe: Corruption, rri_ec: Executive compensation, rri_mc: Misleading communication, rri_fd: Fraud, rri_te: Tax evasion, rri_to: Tax optimization, rri_ap: Anticompetitive, rri_cp: Controversial products, rri_phe: Health and Environmental, rri_voi: Violation of international standards, rri_von: National legislation, and rri_sci: Supply chain. The 28 issues related RRI are lagged one period. The dependent variable is Bank debt (%). Year-quarter and Industry FE are included. The industry classification is based on Fama–French 48 industry classification. Standard errors are clustered at the firm level. standard errors are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Environmental issues	(1) rri_cc	(2) rri_lp	(3) rri_iol	(4) rri_oaw	(5) rri_wi	(6) rri_am	
Bank Debt (%)	−0.005 (0.00)	−0.000 (0.00)	0.001 (0.00)	−0.006 (0.01)	0.008 (0.01)	−0.033*** (0.01)	
Panel B: Community issues	(1) rri_hra	(2) rri_ioc	(3) rri_lpi	(4) rri_sd			
Bank Debt (%)	−0.009*** (0.00)	0.001 (0.00)	0.008 (0.01)	−0.027** (0.01)			
Panel C: Employee issues	(1) rri_fl	(2) rri_cl	(3) rri_foa	(4) rri_die	(5) rri_oh	(6) rri_pec	
Bank Debt (%)	−0.021*** (0.01)	−0.023*** (0.01)	−0.017*** (0.00)	−0.029*** (0.01)	−0.005 (0.00)	−0.010*** (0.00)	
Panel D: Governance issues	(1) rri_cbe	(2) rri_ec	(3) rri_mc	(4) rri_fd	(5) rri_te	(6) rri_to	(7) rri_ap
Bank Debt (%)	−0.001 (0.00)	−0.060*** (0.01)	−0.022*** (0.01)	−0.003 (0.00)	−0.028*** (0.01)	−0.035*** (0.01)	−0.008** (0.00)
Panel E: Cross-cutting issues	(1) rri_cp	(2) rri_phe	(3) rri_voi	(4) rri_von	(5) rri_sci		
Bank Debt (%)	−0.014*** (0.00)	−0.005** (0.00)	−0.011 (0.01)	−0.003* (0.00)	−0.012*** (0.00)		

TABLE 6 ESG reputation risk, bank monitoring, debt instruments.

This table reports the OLS regression results for the impact of ESG reputation risk on different types of debt and which types of debt are more sensitive to the ESG reputation risk. Specifically, we split bank debt into term loans and revolvers and split bond debt into three components (senior bonds and notes, subordinated bonds and notes, and commercial paper) by following Colla et al. (2013). All of the independent variables are lagged one period. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and clustered at the firm level and are reported in parentheses.

Dependent variable	Bank Debt (%)		Bond Debt (%)		
	Term Loan (%)	Revolvers (%)	Senior bonds and notes (%)	Subordinated bonds and notes (%)	Commercial paper (%)
	(1)	(2)	(3)	(4)	(5)
RRI	−0.187*** (0.03)	−0.055** (0.02)	0.104** (0.05)	−0.011 (0.01)	0.034*** (0.01)
Controls	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	62,586	62,586	62,586	62,586	62,586
Adj. R^2	0.093	0.179	0.262	0.054	0.083

associated risks, revolving credit facilities generally have less restrictive covenants and more lenient monitoring requirements (Angbazo et al., 1998; Harjoto et al., 2006, Newton et al., 2020). In Table 6, we report the regression results of the impact of the exposure to ESG risk news on different components of the debt structure. The results in Columns (1) and (2) of Table 6 indicate that as RRI increases, bank loans reduce mostly owing to a decline in the proportion of term loans. The decline in term loans is more pronounced than the decline in revolvers. Sironi (2003) and Pop (2009) find that subordinated debt spreads are sensitive to the financial conditions and risk profiles of bank issuers, as reflected in traditional credit ratings. The senior bond is secured by assets and other collateral of the firm and senior bond investors can acquire priority in terms of repayment when the firm faces bankruptcy and liquidation. Therefore, as a relatively safe investment, bond investors would prefer to hold safer senior bonds rather than subordinated bonds issued by firms with high ESG reputation risk, and we can expect that the growth in public debt with increased RRI would rely more on senior bonds and notes. We report the impact of RRI on the instruments of bond debt in Columns (3), (4) and (5). There is a statistically substantial correlation between ESG reputation risk and the reliance on senior debt, with no statistically significant change in subordinated bonds and notes. Overall, the results confirm our hypothesis that firms with significant ESG reputation risk rely more on senior bonds and notes for longer timelines, as well as commercial paper for short timelines, rather than term loans to minimize elevated monitoring costs.

4.2 | ESG news coverage and new debt issuance

In the earlier discussion, we argued that companies facing higher levels of ESG reputation risk are inclined to reduce their dependence on bank loans and instead rely more on public debt. In an extended analysis, we retrieve the number of exogenous ESG-related incidents for a firm in each quarter and examine the impact of exogenous negative ESG news on firms' new debt issuance. Using the exogenous ESG-related incidents can alleviate concerns of omitted variable bias since the media reporting timing relative to the firms' debt expiration date is arguably quasi-exogenous and unlikely to be related to the corporate insider factors. RepRisk database collects and screens ESG-related risk incidents from over 100,000 public sources and shareholders. Each risk incident is analyzed according to the severity (harness) of the risk incident or criticism, the information source's reach, and the issues' novelty.

On the one hand, the impact of a reputation shock from borrowers not only makes it difficult for banks to expand their business in the future (Homanen, 2018) but also results in the outflow of deposits (Houston et al., 2021). Consequently, banks, particularly those exposed to reputation shocks, have a strong motivation to reduce their lending to companies with a higher number of ESG risk incidents and potentially disrupt their existing lending relationships (Houston & Shan, 2019). The shrinking of loan supply is reflected in borrowers' debt choice. If the reputation shock is one potential mechanism driving our results, the number of ESG-related incidents will significantly reduce the likelihood of borrowing new bank loans. To examine this hypothesis, we estimate the following model:

$$New\ Debt\ issuance_{i,t} = \alpha_1 Nr\_News_{i,t-1} + \beta_t X_{it-1} + \upsilon_t + \eta_i + \epsilon_{i,t}, \qquad (3)$$

where the dependent variable New Debt issuance$_{i,t}$ is a dummy variable that equals one if the change in outstanding bank debt at quarter t and at quarter $t-1$ is positive, and zero

TABLE 7 Negative news and debt issuance.

This table reports the Logit regression of the number of the borrower's negative reputation news on the likelihood of initiating new loans and new bonds (Columns (1) and (2)). Ln_Nr_News is the number of negative ESG news coverage at quarter $t-1$. Detailed variable definitions are available in Table A1 of Appendix A. All regressions control for industry and year quarter fixed effects. The dependent variables and independent variables are lagged one period. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and clustered at the firm level, and t-statistics are reported in parentheses.

	Sample of firms that issues either bonds or loans, or both	
	New loan issuance	**New bond issuance**
Dependent variable	**(1)**	**(2)**
Ln_Nr_News	−8.475*** (2.01)	4.917*** (1.25)
Controls	Yes	Yes
Year-Quarter FE	Yes	Yes
Industry FE	Yes	Yes
Obs.	62,586	62,586
Pseudo R^2	0.037	0.040
	Sample of firms that issues either bonds or loans	
	New loan issuance	**New bond issuance**
Dependent variable	**(1)**	**(2)**
Ln_Nr_News	−8.863*** (2.28)	6.471*** (1.42)
Controls	Yes	Yes
Year-Quarter FE	Yes	Yes
Industry FE	Yes	Yes
Obs.	48,639	48,639
Pseudo R^2	0.044	0.052

otherwise; or *New Bond issuance*$_{i,t}$, a dummy variable that equals one if the change in outstanding public debt at quarter t and at quarter $t-1$ is positive, and zero otherwise. X_{it-1} is a vector of control variables specified under Equation (1). We also control the year-quarter fixed effects and industry fixed effects. All independent variables are lagged one period.[7]

We report our regression results in Table 7. Column (1) of Panel A shows negative and statistically significant relations between the likelihood of issuing new bank debt and the number of negative ESG news events. Furthermore, a positive association exists between the likelihood of issuing public bonds and the number of unfavourable ESG news events (Column (2) of Panel A). The results are robust and consistent in the sample of firms that issues either

[7]Considering the potential persistence of the number of negative ESG incidents per firm over time, we took the referee's suggestion and utilized the change in negative ESG incidents as the independent variable. Our findings demonstrate that the results remain robust and consistent. The results are available upon to request.

bonds and loans (Columns (1) and (2) of Panel B). Our findings suggest that the frequency of negative ESG-related news coverage serves as an exogenous reputation shock. This shock reduces the probability of firms borrowing bank debt.
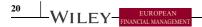
4.3 | Instrumented ESG reputation risk

Although we employ lagged dependent variables in all of our regressions to minimize concerns about reverse causality, this may not entirely eliminate the question of endogeneity between company ESG reputation risk and debt structure. To further address these endogeneity issues, we preform 2SLS regression analyses using *High Religious* and *Canada Border* as our instrumental variables for the ESG reputation risk. *High Religious* is a dummy variable that equals one if the ratio of religious adherents in the state where a firm's headquarters located is higher than 50%. A higher level of religious adherence is positively associated with stronger social morality (Callen & Fang, 2015; Hilary & Hui, 2009) and attitude towards CSR (Angelidis & Ibrahim, 2004, Deng et al., 2013). We could anticipate that local religious adherence is negatively correlated with a firm's ESG reputation risk but unlikely to correlate with a firm's financing outcomes.

Canada Border is a dummy variable that equals one if the firm's headquarters is located in the state that borders Canada and zero otherwise. Putnam (2001) shows that local social capital is closely related to the depth of slavery in the nineteenth century. The slavery system destroys local social solidary and social norms. The states closer to the Canadian border are then considered to have more social capital. Using the distance to the Canadian border as the instrumental variable for CSR is used in several studies (e.g., Cornett et al., 2021; Gupta et al., 2018; Hasan et al., 2017). In this paper, we use the dummy variable *Canada Border* as our second instrumental variable for ESG reputation risk. We expect that firms located in the states bordering Canada have lower ESG reputation risk and better ESG performance. Importantly, the distance to the Canadian border is unlikely to be correlated with firms' financing outcomes.[8,9]

Column (1) of Table 8 presents results from the first-stage regression. The dependent variable is *RRI*, and the independent variables include the two instrumental variables and other control variables. Coefficients on instrumental variables are both negative and statistically significant, which is consistent with our expectation that the firm's ESG reputation risk is negatively associated with their headquarters' distances to Canadian border and local religions level. The F-statistic is highly significant, confirming the relevance of our instrumental variable. In the second stage, the coefficient on *RRI* is statistically significant and negatively related to the bank debt and positively associated with public debt. This result with instrumental variables further confirms that firms with higher exposure to ESG reputation risk rely less on bank loans.

[8]The estimation results of 2SLS are robust to using continuous variables. As a further robustness check we use the ratio of religious adherents in the state where the firm's headquarters is located (measured by the number of religious adherents divided by the state's population), and the distance to the Canadian border measured by the natural logarithm of the distance from the firm's headquarters to the Canadian border. The results are available upon to request.

[9]Additionally, in response to the referee's suggestions, we incorporated the state-level social capital index, as proposed by the US Congress Joint Economic Committee, and the industry-level RRI as instrumental variables. We find that even after implementing the 2SLS, the results remain robust and consistent. The results are available upon request.

TABLE 8 2SLS.

The table reports the results from 2SLS estimations using an instrumental variable approach. The dependent variable is RRI in the first stage. RRI is instrumented by the dummy variables Canada Border and High Religious in the second stage. Year-quarter and Industry FE are included. Industry classification is based on Fama-French 48 industry classification. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and clustered at the firm level, and t-statistics are reported in parentheses.

| | 1st stage | 2nd stage | |
| | RRI | Bank Debt (%) | Bond Debt (%) |
Dependent variable	(1)	(2)	(3)
Variables of interest			
RRI		−0.016*** (0.003)	0.036*** (0.004)
Instrumental variables			
Canada border	−0.542*** (0.15)		
High religious	−1.729*** (0.16)		
Cragg–Donald Wald *F*-stat (Stock–Yogo weak ID test critical value)	60.361 (19.93)		
Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Obs.	71,341	71,341	71,341

5 | CONCLUSION

The existing literature has extensively examined the benefits of bank-based financing in comparison to capital market-based financing with regard to the efficient allocation of funds. One of the primary reasons for the superiority of banks in this context is their ability to amass private information about borrowers through established lending relationships. In contrast, the free-rider problem resulting from the widespread ownership of public debt leads to a lack of motivation among bondholders to gather information. This study represents a significant development in the ongoing discussion on firms' selection of debt instruments. Our paper illuminates the potential role of organizational reputation as a crucial factor linking ESG reputation risk and a firm's debt preference. We provides indirect evidence that echoes Houston and Shan's (2019) findings suggesting that when confronted with negative ESG events involving borrowers, banks proactively safeguard their own reputations by reducing loan offerings to the affected firms. Consequently, the financing decisions of borrowers are affected, leading to a decreased inclination to seek new loans from banks after experiencing such negative incidents.

This research provides valuable insights into the decision-making process regarding firm debt choice. It also emphasizes the significance of organizational reputation and its potential influence on debt selection. Due to their comparative cost advantages in information production, banks are able to conduct improved debt-related monitoring. Conversely, diffused public debt ownership and the resulting free-rider problem limit bondholders' incentives to

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invest in time-consuming monitoring. Our results suggest that firms that receive more negative news coverage display a higher propensity to issue new bonds as opposed to securing new bank debt. In this context, our research has significant policy implications by demonstrating the critical role of financial intermediaries in attaining sustainable development goals.

DATA AVAILABILITY STATEMENT

Data is subject to third-party restrictions. The data that support the findings of this study are available from several databases of S&P Capital IQ, Refinitiv Eikon, WRDS Dealscan, and Reprisk. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the authors with the permission of Capital IQ, Refinitiv Eikon and Reprisk.

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APPENDIX A

See Table A1.

TABLE A1 Variable definition and data source.

This table reports the description of all the key variables in our sample, together with their data sources.

Variable	Definition	Source
Public Debt (%)	Ratio of public bonds to total debt. Public bonds represent the sum of senior bonds and notes, subordinated bonds and notes, and commercial paper. Total debt is the sum of term loans, revolving credit, senior bonds and notes, subordinated bonds and notes, commercial paper, capital leases, and other debt.	Capital IQ
Bank Debt (%)	Ratio of bank loans to total debt. Bank loans is the sum of revolving credit and term loans. Total debt is the sum of term loans, revolving credit, senior bonds and notes, subordinated bonds and notes, commercial paper, capital leases, and other debt.	Capital IQ
RRI	Company's quarterly ESG reputation risk.	RepRisk
RRR	Company's quarterly ESG rating	RepRisk
Ln_Nr_News	Natural logarithm of one plus the total number of negative ESG issues, as reported in the media.	RepRisk
Firm Size	The natural logarithm of the borrower's total assets	Compustat
Firm Leverage	The ratio of borrower's total book debt to total assets.	Compustat
Tobin's Q	The ratio of market value of total assets to book value of total assets.	Compustat
PPE Ratio	The amount of property, plant, and equipment scaled by total assets.	Compustat
Debt Rating Indicator	An indicator that equals one if the borrower is rated by S&P long-term credit rating, and zero otherwise	Compustat and Capital IQ
Firm Profit	Operating income before depreciation scaled by total assets	Compustat
Cash Ratio	Cash and equivalents divided by total assets	Compustat
New Loan Issuance	An indicator that equals one if the difference between the outstanding of bank debt at quarter t and at quarter t-1 is positive, and zero otherwise.	Capital IQ
New Bond Issuance	An indicator that equals one if the difference between the outstanding of public debt at quarter t and at quarter t-1 is positive, and zero otherwise.	Capital IQ