Audit Regulation and Debt Financing: Evidence from PCAOB International Inspections

Abstract

We examine how audit regulation affects a non-US listed firm's debt financing by exploiting the staggered introduction of the Public Company Accounting Oversight Board's (PCAOB) auditor regulatory oversight of foreign audit firms from 2005 to 2017. We find that clients of auditors who are subject to PCAOB international inspections increase their propensity to issue public debt (i.e., bonds) rather than private debt (i.e., bank loans) after controlling for other determinants of the choice of public versus private debt. We also find a differential impact of PCAOB inspection access on the cost of debt, with a more significant decrease in the cost of public debt than private debt for countries that allow PCAOB inspections. Cross-sectional tests reveal that the effects of PCAOB auditor regulatory oversight depend on the importance of a borrower's home country bond market and the institutional mechanisms that mitigate the agency costs of debt. Additional analyses using a sample of PCAOB inspection reports show that *ex ante* threat to auditors dominates the *ex post* effect for clients of the inspected auditors, and PCAOB inspection access affects loan contracts by encouraging fewer and loosened covenants. Collectively, these results suggest a spillover of audit regulation to non-U.S. listed firms that affects the firm's choice of debt instruments, cost of debt financing, and the private debt contract design.

1. Introduction

This paper studies the impact of Public Companies Accounting Oversight Board's (PCAOB) international inspections on a non-U.S. listed firm's choice of issuing debt and the cost of debt in public versus private markets. Since the establishment of the PCAOB in 2003, the PCAOB has served as the auditor of audit firms and has regulated the audit market by conducting inspections of audit firms. The PCAOB inspection program applies to all audit firms that provide audit assurance to companies listed on the U.S. stock exchange, including both U.S. and non-U.S. audit firms. However, the PCAOB has experienced challenges in inspecting registered foreign audit firms that audit companies listed on the U.S. exchanges because certain foreign governments deny the PCAOB access to conduct inspections. To date, studies document that PCAOB international inspection access improves the financial reporting quality of non-U.S. firms crosslisted in the U.S. (Lamoreaux, 2016; Krishnan et al., 2017; Gipper et al., 2020) and also show that PCAOB international inspections improve audit quality and financial reporting of non-U.S. firms in countries where the PCAOB has conducted inspections (Fung et al., 2017), suggesting that the benefit can spill over to other clients of the inspected auditor's home country. Studies extend the scope of the spillover effect of PCAOB inspections in the international setting by providing evidence that the PCAOB inspections resolve financing frictions and information asymmetry in financing and investment decisions (Kim et al., 2020; Shroff, 2020). Our study adds to this stream of literature by examining the impact of PCAOB regulatory oversight on a non-US listed firm's debt financing in public versus private debt markets.

Auditing serves as a monitoring mechanism to produce credible and reliable accounting information about a firm's current and future cash flows and business risk. Audit regulation motivates auditors to exert effort and enhances the reliability of financial information, which resolves financing frictions between lenders and borrowers. Prior literature shows that assurance by high-quality auditors (e.g., Big 4 auditors) mitigates financing frictions and reduces the pricing of debt (Blackwell et al., 1998; Mansi et al., 2004; Pittman and Fortin, 2004; Minnis, 2011; Francis et al., 2017). Nonetheless, the evidence on the impact of audit regulation on the debt markets is not well studied, in part due to the challenges of data availability and econometrics issues to isolate other effects. These difficulties include (1) in the U.S., the PCAOB was established along with the Sarbanes-Oxley Act (SOX Act), which makes the audit regulation assessment nearly impossible without introducing other confounding factors of the SOX Act, and (2) using a one-country sample to assess the efficacy of audit regulation does not provide any variation after introducing such regulation; yet there barely exists one regulation that applies to all countries using cross-country samples. We exploit the staggered introduction of PCAOB regulatory oversight by foreign governments to examine the impact of audit regulation on a firm's debt financing, which avoids the issues

aforementioned. We can better isolate the effect of audit quality and a firm's innate financial reporting system in our research setting because PCAOB inspections are exogenous to non-U.S.-listed clients of the non-U.S. auditors (Kim et al., 2020).

Specifically, we examine the debt financing consequences of audit regulation by exploiting the variation in the timing of foreign governments' staggered adoption of PCAOB international inspections. Our first hypothesis examines whether PCAOB regulatory oversight affects a firm's debt placement decisions when its auditor becomes subject to PCAOB inspections. Finance theory indicates that arm's length financing through bonds is more sensitive to information asymmetry than through bank loans, as banks have superior ability to access a borrower's private information (Fama, 1985; James and Smith, 2000). Bharath et al. (2008) show that borrowers with poor accounting quality prefer private debt since banks have superior private information access and re-contracting flexibility. If audit regulation enhances accounting quality by ameliorating financing frictions between debt holders and managers, we expect that firms switch away from less information-sensitive financing instruments (bank loans) and toward more public information-sensitive financing instruments (bonds). In other words, we predict that a firm's propensity to issue bonds rather than borrow through bank loans increases after its auditor becomes subject to PCAOB inspections if audit regulation reduces information risk stemming from the agency problem that prefer bank loans over public bonds (Denis and Mihov, 2003).

Our second hypothesis explores the differential impacts of PCAOB audit regulation on the cost of public and private debts at the time of debt origination. Prior literature indicates that banks can be more efficient monitors *ex post* to alleviate moral hazard issues since initial loan arrangements can be renegotiated with lower costs and greater flexibility (Diamond, 1984; Diamond, 1991; Houston and James, 1996). Therefore, the cost of bank debt may be less sensitive than the cost of public debt to changes in audit quality and financial reporting quality at the time of debt origination. We thus expect that audit regulation decreases borrowing costs for public debt to a greater extent, as initial debt contracts may be less important for public debt creditors than for private debt creditors.

Using a difference-in-differences design for a sample of non-U.S. listed clients of foreign auditors who may or may not be subject to PCAOB international inspections, the results confirm our predictions. We find that PCAOB inspection access increases a firm's propensity to issue public debt (i.e., bonds) than private debt (i.e., bank loans) after controlling for other determinants of the choice of public versus private debt. We also find a differential impact of PCAOB inspection access on the cost of debt in the two markets. Specifically, we find borrowers enjoy a significant decrease in the cost of bonds, but not the cost of loans, in countries that allow PCAOB international inspections. These results support our conjecture that audit

regulation reduces information risk stemming from the agency problem that prefer bank loans over public bonds and, in turn, affects a firm's debt financing.

We next conduct several additional analyses to investigate the channels through which these effects take place. First, we examine whether the effects are associated with the importance of the bond market using the constructed index in Ball et al. (2018). We find that firms resort to issuing public debt in countries with the relatively more important bond market. Moreover, the PCAOB international inspection access decreases the cost of public (private) debt for borrowers domiciled in countries with greater (less) reliance on the public debt market. Further analyses using five institutional factors related to the agency cost of debt, namely the rule of law, property rights, creditor rights, the efficiency of bankruptcy, and auditor litigation, reveal that PCAOB regulatory oversight serves as a substitute for weak institutions in countries with higher importance of bond markets.

We conduct several additional analyses to enhance our understanding of the role of PCAOB inspections in the debt markets. First, the sensitivity analysis shows that our results hold after considering the parallel trends assumption, supporting that the effect on debt financing did not occur before a country allows PCAOB international inspections. Second, we investigate whether the *ex post* PCAOB inspection reports have an incremental impact on a firm's debt financing. The results show that *ex ante* threat to auditors (i.e., the PCAOB inspection access) dominates the *ex post* effect for borrowers of PCAOB-inspected auditors. Finally, we examine the effect of PCAOB international inspections on loan contracts design. The results show that PCAOB international inspection access decreases the intensity of collateral covenants, the intensity of total covenants, and the tightness of debt covenants, implying that banks consider PCAOB auditor regulatory oversight as an effective monitoring mechanism and therefore respond by reducing restrictions to constrain borrowers' opportunistic behaviors in private debt contracting.[1]

Our paper makes the following contributions to the literature. First, we provide evidence on the spillover effect of PCAOB international inspections on non-U.S. firm's debt financing choice. Thus far, the literature documents the effect of PCAOB international inspections on audit quality, cost of equity, investment and financing decisions, and private debt contracts (Lamoreaux, 2016; Fung et al., 2017; Gipper et al., 2020; Kim et al., 2020; Lamoreaux et al., 2020; Shroff, 2020; Huang and Li, 2021). We extend

[1] We also find that the number of financial covenants increases following the borrower's auditor is subject to the PCAOB inspections, consistent with the results reported in Shroff (2020) using PCAOB inspection reports as his sample.

the literature and show the debt financing consequences of U.S. auditor regulation in the international markets.

Second, we document that auditor regulatory oversight plays a crucial role in determining a firm's debt financing choice, which adds to the literature on the determinants of debt financing. Our evidence suggests that enhanced accounting quality, stemming from another layer of auditor regulation, mitigates information asymmetry between borrowers and creditors; therefore, a firm is more likely to access public debt markets (more information frictions) than private debt markets (fewer information frictions). Our evidence on the changes in the cost of debt corroborates the argument that the cost of public debt decreases to a greater extent than the cost of private debt after the borrower's auditor becomes subject to PCAOB regulatory oversight. Bharath et al. (2008) show that accounting quality, proxied by accruals, significantly impacts a firm's debt financing choice. By introducing staggered adoptions of PCAOB international inspections that overcomes the endogenous issues stemming from credit risk associated with a borrower's accounting and audit quality, our evidence furthers our understanding of audit regulations' role in improving accounting quality.

Third, by investigating the channels of these effects, we find that audit regulation complements the monitoring of borrowers domiciled in weak home country institutions when the bond market constitutes a higher weight in the debt markets. Prior cross-country studies show that the strength of domestic legal institutions drives the variation in financial reporting quality and financial contracts in bank loans (e.g., Leuz et al., 2003; Qian and Strahan, 2007; Bae and Goyal, 2009), and these studies find that strong home institutions play a dominant role in protecting investors and creditors for non-U.S. listed firms. Our evidence suggests that audit regulation helps mitigate information asymmetry in debt markets, especially for borrowers domiciled in countries with weak home country institutions when the bond markets are relatively more important. PCAOB auditor regulatory oversight serves as a substitute to reduce the agency cost of debt in countries with weak home country institutions, consistent with Kim et al. (2020) and Huang and Li (2021).

We organize the rest of this paper as follows. Section 2 discusses the institutional backbround and Section 3 summarizes the relevant literature and develops our hypotheses. Section 4 entails our data, research design and sample selection. Section 5 presents the empirical results. We conclude our study in Section 6.

2. Institutional Background: PCAOB international inspections

The Sarbanes-Oxley Act of 2002 established the PCAOB to restore investors' confidence in audit quality and financial reporting quality, specifically to "protect the interests of investors and further the public interest in the preparation of informative, fair, and independent audit reports (PCAOB, 2020)." With the establishment of the PCAOB, mandatory audit firm inspections replaced voluntary peer reviews conducted under the American Institute of Certified Public Accountants (AICPA). The PCAOB uses a risked-based approach and inspects the audit work performed periodically by non-randomly selected audit firms, including assessing the firm's compliance with PCAOB standards and rules, regulatory and professional requirements that are applicable to the firm's system of quality control and to the portions of audits selected for review.[2] The inspection findings are released to the public once the PCAOB has completed the inspections: the Part I findings in these reports, available to the public without information that identifies the audit client, summarize any deficiencies or violations identified in the review of work papers at the audit engagement level. The Part II findings document concerns over the quality control system of the inspected audit firm and are initially provided to the inspected audit firms only. If the inspected audit firm fails to remediate the quality control deficiencies satisfactorily within one year of issuing the report, the report will be released to the public.

The PCAOB inspections apply to both U.S. and non-U.S. audit firms that provide audit reports to U.S.-listed clients. Nonetheless, certain countries prevent the PCAOB from inspecting their local audit firms due to sovereignty issues and conflicts in law. The PCAOB initiated the international inspection program in 2005. In countries that allowed inspections, the initial inspections were staggered over a few years. Thus far, the PCAOB has conducted inspections of one or more registered firms located in over 50 non-U.S. jurisdictions on a cumulative basis. The PCAOB has worked closely with its international counterparts and oftentimes signed formal cooperative agreements with foreign audit regulators in these countries.[3] These inspections are carried out by one of the following ways: (1) the PCAOB conducts its own inspections in coordination with the home country regulator, or (2) the PCAOB conducts the inspections jointly with the home country regulator, and the PCAOB may rely on inspection work performed by the home country regulator.

However, the PCAOB has continuously experienced obstacles and denied access to conduct inspections in certain non-U.S. jurisdictions, such as China. To make the information transparent to the

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[2] Please see the details on the PCAOB website: https://pcaobus.org/oversight/inspections/inspection-procedures.

[3] Please see the following PCAOB website for the countries that signed into the formal agreement with the PCAOB: https://pcaobus.org/oversight/international/regulatorycooperation.

investor community, the PCAOB regularly discloses updates about the status of inspection access in foreign jurisdictions and the list of PCAOB-registered firms that the PCAOB intended to inspect but was denied to conduct inspections (PCAOB, 2009).[4]

3. Literature Review and Hypothesis Development

Studies on PCAOB inspections using the U.S. samples provide mixed evidence their benefits: some studies support that the PCAOB inspections enhance perceived audit quality and audit quality in substance (Carcello et al., 2011; Offermanns and Peek, 2011; Gunny and Zhang, 2013; Gipper et al. 2020), while other studies find limited evidence that PCAOB inspection reports create values for investors. For example, DeFond and Lennox (2011) indicate that half of all small audit firms exit the market due to the cost of mandatory inspections. Lennox and Pittman (2010) show that investors discount the information provided by the PCAOB inspection reports, and in particular, clients do not perceive PCAOB inspection reports as informative when these reports indicate weakness of audit firm quality control.[5]

The evidence raises concern about the efficacy of the PCAOB's audit inspections, especially when the costs are perceived to outweigh the benefits, and calls for further studies to assess the effectiveness of PCOAB regulatory oversight in improving audit quality.. To address this concern, recent research exploits foreign governments' staggered introduction of PCAOB international inspections (i.e., PCAOB international inspection access) using foreign firms cross-listed on the U.S. market as the sample group. This setting allows for the variation of PCAOB international inspection access to compare the impact with and without PCAOB auditor regulatory oversight. Thus far, findings support the positive value of PCAOB audit regulations. For example, Lamoreaux (2016) finds that audit quality, proxied by going concern options, reported internal control weakness, and the signed value of abnormal accruals, is higher for

[4] See https://pcaobus.org/International/Inspections/Pages/IssuerClientsWithoutAccess.aspx.

[5] Along with these findings, existing studies also document mixed evidence while examining a specific deficiency identified in a PCAOB Part II report. For example, DeFond and Lennox (2017) find that auditors increase the issuance of adverse internal control opinions when the inspection report identifies higher rates of deficiencies. Using Deloitte's 2007 PCAOB Part II report that identifies audit deficiencies in the income tax accounts, Drake et al. (2016) report that Deloitte's clients alter their financial reporting by increasing the valuation allowance on deferred tax assets and the reserve for uncertain tax benefits. Aobdia et al. (2021) show that originated-to-distribute (OTD) lending decreases when the PCAOB inspection report identifies OTD-related audit deficiencies. Stuber and Hogan (2021) show that the allowance for loan loss (ALL) estimates become less accurate and more conservative as the PCAOB identifies a greater proportion of ALL-related audit deficiencies.

auditors subject to PCAOB international inspection access, compared with audit quality for auditors that are not subject to PCAOB international inspection access. Lamoreaux (2020) documents a significantly lower cost of equity capital after the company's auditor becomes subject to PCAOB inspection access. He et al. (2021) show that U.S. institutional investors increase their equity stakes in U.S.-listed foreign companies after their auditors become subject to PCAOB inspection access, especially in countries without a strict local auditor oversight system, implying that the PCAOB inspections mitigate U.S. institutional investors' home bias in their portfolio.[6]

Subsequent studies expand the scope to international firms and examine the spillover effect of PCAOB inspection reports. These studies, in general, support the positive effect of PCAOB international inspections that spills over to non-U.S. clients of PCAOB-inspected auditors. Fung et al. (2017) examine the inspection reports for non-U.S.-listed foreign PCAOB-inspected auditors from 55 countries and show that initial PCAOB inspections improve audit quality, proxied by abnormal accruals, accrual quality, probability of just meeting or beating earnings benchmarks, and the auditor's propensity to issue a modified audit opinion. Shroff (2020) shows that non-U.S. clients of non-U.S. auditors receiving deficiency-free inspection reports increase their external capital investment and financing, suggesting that PCAOB international inspections resolve financing frictions in corporate investment and financing decisions. Kim et al. (2020) find that non-U.S. clients of PCAOB-inspected non-U.S. auditors are more likely to become acquisition targets after the inspection reports are made public, implying that PCAOB inspection reports mitigate information asymmetry in mergers and acquisition deals. In line with Shroff (2020) and Kim et al. (2020) investigating the role of PCAOB inspection reports in resolving financing frictions in the international setting, our study extends this literature by examining the debt financing consequences of PCAOB international inspection access around the globe. However, we focus on the PCAOB international inspection access, as *ex ante* threat to auditors offers broader implications beyond the impact for a sample of borrowers whose auditor receives a PCAOB inspection report *ex post*. To examine the debt financing

[6] Aside from investigating the impact of PCAOB regulatory oversight (inspection access), some studies examine the effect of *ex post* PCAOB inspection reports for U.S.-listed foreign firms. Krishnan et al. (2017) find that U.S. cross-listed clients of auditors who receive first-time inspection reports have lower abnormal accruals and greater value relevance of accounting numbers compared with local cross-listed clients of non-inspected auditors or other local counterparts (non-cross-listed) in the inspected countries. Ege et al. (2021) show that the accounting comparability increases between non-US-listed foreign companies and their U.S. and non-U.S. industry peers after their auditors undergo an initial inspection, suggesting the PCAOB inspections improve cross-country capital allocations.

consequences of the PCAOB oversight, we investigate a non-U.S., non-crosslisted firm's access to the debt markets and the cost of debt.

In debt contracting, theoretical models suggest that creditors in public debt markets experience a more severe moral hazard problem than creditors in the private debt market. Well-dispersed bondholders face a substantial free-rider problem, while banks are less subject to the problem because of their superior information-gathering advantage to access borrower's private information for monitoring (Diamond, 1991; Besanko and Kanatas, 1993). Accordingly, firms with more significant information risk stemming from the agency problem prefer bank loans over public bonds (Denis and Mihov, 2003). Consistent with this argument, prior literature shows that borrowers with poor accounting quality or lower disclosure quality prefer private debt instead of publicly offered debt (Bharath et al., 2008; Dhaliwal et al., 2011). If the PCAOB regulatory oversight improves audit quality and financial reporting credibility, we expect that public debt creditors will experience a larger reduction in information risk than private debt creditors when a borrower's auditor becomes subject to PCAOB international inspections. Therefore, we postulate that firms are more likely to issue public debt than private debt after their auditor becomes subject to PCAOB international inspections. We formalize this hypothesis in the following alternative form:

H1: Firms prefer issuing public debt instead of private debt after their auditor becomes subject to PCAOB international inspection access.

We also expect to observe distinctive debt financing consequences resulting from PCAOB oversight at the time of debt origination between the two debt markets. Unlike bondholders, private lenders are less sensitive in debt pricing because they have superior access to the borrowers' private information and thus can tailor and customize other non-price terms reflecting the borrowers' credit risks in the loan contracts. These loan financing arrangements lead to lower re-negotiation costs to borrowers when they finance through banks (Rajan, 1992). Instead, bondholders do not have such flexibility in contract re-negotiation after bond issuance, and therefore they are more sensitive to bond pricing.

Consistent with this argument, Bharath et al. (2008) find that bondholders are more sensitive than banks in pricing borrower risks into interest spreads, and accordingly, accounting quality affects debt pricing greater for public debt than for private debt. Flouri and Kosi (2015) show that mandatory International Financial Reporting Standards (IFRS) adopters pay lower bond yield spreads, but not lower loan spreads, after adopting IFRS. If auditors increase audit effort and audit quality after they become subject to PCAOB international inspections, the reliance on accounting information would be associated

the debt pricing more in the public debt market than in the private market due to banks' monitoring and re-negotiation ability. Therefore, we predict that any reduction in the cost of debt is more significant in the public debt market after a borrower's auditor becomes subject to PCAOB international inspections. We express this hypothesis in the following alternative form:

H2: The reduction in the cost of public debt is greater than that in the cost of private debt for borrowers domiciled in countries that allow PCAOB international inspections.

4. Sample and Research Design

4.1 Sample Selection

Table 1 summarized our sample selection. Our sample starts with all non-U.S. listed companies between 2006 and 2017 from multiple sources that provide public and private debt information. We retrieve the global bond offering from Mergent FISD, Capital IQ, and Datastream databases and match each bond issuance with its borrower based on multiple identifiers (i.e. ISIN, CUSIP, and TICKER in Mergent FISD and Capital IQ; ISIN, SEDOL, Ticker symbol, Datastream Code, Reuters Instrument Code (RIC), and Organisation Level Permanent Identifier (PERMID) in Datastream) and use company names as necessary. We exclude bonds with convertible or callable features as in prior studies (Bharath et al., 2008; Florou and Kosi, 2015; Ball et al., 2018). We obtain facility-level bank loan data from Dealscan database and include all senior loans but limit the sample to term loans, revolvers, and 364-day facilities as in the literature (Bharath et al., 2008; Florou and Kosi, 2015). We then combine the issue-level datasets for both public and private debt and merge them with Compustat Global database where we obtain all borrowers' financial information in the year prior to debt originations (for years 2005-2016). For private debt issues, we rely on Dealscan-Compustat Linking file provided by Roberts and Sufi (2009) to identify the borrower of each bank loan to be merged with Compustat database. After we obtain the merged dataset, we remove debts borrowed by the foreign firms cross-listed in the U.S. markets as they are subject to U.S. regulations (and therefore PCAOB regulatory oversight) even if their country of domicile does not allow PCAOB inspection access. We then delete observations from financial industry (SIC 6000-6999) and the missing values to construct control variables. This yields 13,380 issue-year observations corresponding to 3,392 unique firms from 45 countries in the pooled sample.

We next construct our two samples separately to examine the effect of PCAOB international inspections on a borrower's debt financing choice (hypothesis 1) and the cost of debt (hypothesis 2). To examine the debt financing choice (H1), we use the pooled sample and delete the same type of debt issues

from the same firm within one year, consistent with prior literature (Denis and Mihov, 2003; Bharath et al., 2008; Dhaliway et al., 2011; Florou and Kosi, 2015). To examine the cost of debt (H2), we start with the pooled sample 13,380 issue-year observations and delete missing values for bond-related variables (i.e., the terms of debt contracts). The final sample for H1, consists of 9,352 issue-level observations corresponding to 3,392 unique firms and 7,243 firm-year observations from 45 countries in 2005-2017, of which 2,746 observations (1,305 unique firms) are from the public debt markets, and 6,606 observations (2,087 unique firms) are from the private debt markets. The final sample for H2 consists of 12,287 issue-year observations (3,116 unique firms) across 45 countries in 2005-2017.

[Insert Table 1 about here]

4.2 Research Design

In our first hypothesis, we examine whether firms switch to bonds (more information-sensitive debt instrument) from bank loans (less information-sensitive debt instrument) after their auditors become subject to PCAOB international inspections. We estimate the following difference-in-differences regression model:

$$Pr(Public_{it+1}=1) \text{ or } Public_ratio_{it+1}$$

$$= \alpha_0+\alpha_1 Access_{it} + \alpha_2 Local_regulator_{it} + \alpha_3 BIG4_{it} + \alpha_{4it} IFRS + \alpha_5 Lev_{it} + \alpha_6 Size_{it} + \alpha_7 TANG_{it}$$

$$+ \alpha_8 MTB_{it} + \alpha_9 ROA_{it} + \alpha_{10} Ret_{it} + \alpha_{11} Ret_SD_{it} + \alpha_{12} O\text{-}Score_{it} + \alpha_{13} Invest_grade_{it} + \alpha_{14} Rated_{it}$$

$$+ \alpha_{15} Cap_access_{it} + \alpha_{16} GDPG_{it+1} + \alpha_{17} Country_rate_{it+1} + Country\ Fixed\ Effects + Year\ Fixed\ Effects$$

$$+ Industry\ Fixed\ Effects + \varepsilon_{it.} \quad (1)$$

We use either a binary variable or a ratio as the dependent variable to represent the debt placement choice of a borrower. For the probit model, the binary variable $Public_{it+1}$ equal to one if a firm borrows from the public debt markets (by issuing bonds) in year *t+1*, and zero otherwise, and in the OLS model, the ratio $Public_ratio_{it+1}$ is defined as the total amount of public debt to the total amount of public and private debt issued in year *t+1*. In addition to country-year-firm-level analyses, we estimate the probit model at the country-year-issue level. Our primary variable of interest, *Access*, is a country-level time-variant indicator, which equals one if a country allows PCAOB international inspection in year *t*, and zero otherwise. Following Huang and Li (2021), we code *Access* as 1 if the year of debt issuance is after the year in which the PCAOB signs a formal cooperative agreement with the local foreign government or if

the year of debt issuance is after the year in which the first inspection report is identified for a country,[7] whichever is earlier. We include country and year fixed effects to capture shocks to local demand for public and private debts. In other words, we compare the propensity of issuing public debts within the same country-year across firms when their auditors are subject to the PCAOB international inspections or not. This model resembles the difference-in-differences regression model adopted in the literature for the staggered adoption of new regulations (e.g., Bertrand and Mullainathan, 2003; Armstrong et al., 2012; Lamoreaux et al., 2020). We include industry fixed effects to control time-invariant attributes of each industry. We cluster the standard errors at the country-auditor level to allow for residual correlations in dependent variables over time (Gow et al., 2010; Kim et al., 2020).

Our first hypothesis predicts a significantly positive coefficient on *Access*, α_1, indicating that firms are more likely to issue bonds than borrow through loans (or have more public debts in their total debts) after their auditor becomes subject to the PCAOB international inspections. For the control variables, we include an indicator variable when the country has a local audit regulator in year *t* (*Local_regulator*), because the PCAOB access may not provide incremental values in the presence of a local auditor oversight body (Lamoreaux, 2016; Lamoreaux et al., 2020).[8] We also consider a broad spectrum of variables that affect the choice of debt financing in the literature. We use a Big4 indicator (*BIG4*) to control for the heterogeneity impact among auditors and an IFRS indicator (*IFRS*) to control for the IFRS adoptions on the debt access (Florou and Kosi, 2015). Following prior literature (Bharath et al., 2008; Florou and Kosi, 2015), we control for several firm characteristics that affect debt financing and the agency cost of debt: financial

[7] *Access* is not static over time because access may be granted and denied at different points in time. Following Huang and Li (2021), we use the first inspection report year or cooperative agreement year, whichever is earlier, to identify the year in which access was first identified because while some countries block inspection access until formal cooperative agreements are signed (e.g., Denmark), the PCAOB is able to inspect local auditors before formal cooperative agreements are signed in some countries (e.g., Japan). Our *Access* variable identifies the change in the status of inspection access such as in the U.K., the PCAOB conducted inspections of auditors from 2005 to 2008 but was blocked in 2008. In 2011, the PCAOB entered into a cooperative agreement with the Professional Oversight Board in the U.K. and has been allowed to inspect U.K. auditors since then. For U.K borrowers, we code *Access* as 1 for debts issued before 2007 and 2012-2017, and 0 for debts issued in 2008-2011. The untabulated results show that the effect of *Access* is qualitatively similar but less significant if we use either the year of first inspection reports (e.g., Fung et al., 2017) or the signing year of formal agreements alone to identify *Access*.

[8] We identify whether a foreign country has a local auditor regulatory oversight body by searching for the international federation of accountants (IFAC) member profiles.

leverage (*Lev*), firm size (Size), tangibility ratio (*TANG*), market-to-book ratio (*MTB*), return on assets (*ROA*), past returns (*RET*), and the indicator of prior public debt issuance (*Cap_access*). We include proxies for a borrower's credit risk such as Ohlson's O-Score (*O-Score*) or the firm-level distance to default measure (*DTD*), the indicator of credit ratings (BBB- or above) by Standard & Poor's (*Invest_grade*), the indicator of rating history (*Rated*), and return variability (Ret_SD). Finally, we control for country-level factors, including the growth of gross domestic product (*GDPG*) and the sovereign credit ratings from Standard & Poor (*Country_rate*).

In our second hypothesis, we use the cost of public or private debt as the dependent variables and perform an similar difference-in-differences regression model that considers the staggered adoption of PCAOB international inspections as the shock. Specifically, we estimate the following regression:

$$
\begin{aligned}
&Cost\ of\ Public\ Debt_{it+1}\ (Cost\ of\ Private\ Debt_{it+1}\ ) \\
&= \beta_0 + \beta_1 Access_{it} + \beta_2 Local_regulator_{it} + \beta_3\ BIG4_{it} + \beta_{4it}\ IFRS + \beta_5 Lev_{it} + \beta_6 Size_{it} + \beta_7 TANG_{it} \\
&+ \beta_8 Current_ratio_{it} + \beta_9 MTB_{it} + \beta_{10} ROA_{it} + \beta_{11} Ret_{it} + \beta_{12} Ret_SD_{it} + \beta_{13} O\text{-}Score_{it} + \beta_{14} Invest_grade_{it} \\
&+ \beta_{15} Rated_{it} + \beta_{16} Amount_{it+1} + \beta_{17} Maturity_{it+1} + \beta_{18} Secured_{it+1} + \beta_{19} Term_spread_{it+1} \\
&+ Country\ Fixed\ Effects\ + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \gamma_{it} \qquad (2)
\end{aligned}
$$

We construct the cost of debt measures for public and private debt, respectively: for bonds issued by a firm in a specific country-year, the cost of public debt is defined as the basis point spread over a benchmark bond issued in the same country in which the benchmark bond is the government bond with comparable terms of maturity and the same currency; for bank loans, the cost of private debt, i.e., all-in drawn spreads, is measured as the amount the borrower pays in basis points over London Interbank Offered Rate (LIBOR) or LIBOR equivalent for each loan dollar drawn including the related annual fees. Our primary variable of interest, *Access*, is defined above in model (1). Our second hypothesis predicts that the coefficient on Access, β_1, will be significantly negative for both the cost of public and private debt.

Following prior research (Bharath et al., 2008; Florou and Kosi, 2015), we control for factors that affect the agency cost of debt. Specifically, firms that are highly leveraged, smaller, firms with a lower level of tangible assets, and higher growth firms tend to have higher agency costs of debt. Accordingly, we include leverage ratio (*LEV*), firm size (*SIZE*), tangibility ratio (*TANG*), current ratio (*Current_ratio*), market-to-book ratio (*MTB*) as control variables. We include profitability (*ROA*) and returns (*Ret*) to control for firm performance and firm risk. We use several proxies for credit risk and default risk such as

Ohlson's O-Score (*O-Score*) or the firm-level distance to default measure (*DTD*), the indicator of credit ratings (BBB- or above) by Standard & Poor's (*Invest_grade*), the indicator of rating history (*Rated*), and return variability (*Ret_SD*). At last, we control for issue-level factors such as the bond or loan amounts in U.S. dollars (*Amount*), maturity in months (*Maturity*), the indicator of collateral terms (*Secured*), and the term spread defined as the difference in rates between two- and ten-year government bonds in their respective country-month (*Term_spread*).

In addition to estimating model (2) for the pricing of public and private debt separately (hereafter referred to as "Single Equation Analysis"), we follow the literature (Bharath et al., 2008; Florou and Kosi, 2015) and employ the endogenous switching model to compare the differential impact of PCAOB inspection access on the cost of public vs. private debt. The endogenous switching model first considers a switching equation that sorts firms over two different states with one regime being observed for any given firm (i.e., the selection equation with the choice of public or private debt market), followed by two equations for the two regimes (one for bond and the other for loan). As in Bharath et al. (2008) and Florou and Kosi (2015), we estimate equation (1) as the selection model where *Cap_access*, *GDPG*, and *Country_rating* are treated as the exogenous variables that are unique to the selection stage. In the second stage, we perform the two regression models as specified in equation (2) that include the characteristics of debt contracts unique to the second stage. These exogenous variables ensure that our models are well identified. To remove the effect of outliers, we winsorize each continuous variable at its respective 1% and 99% distributions. The details of variable definitions and data sources are listed in the Appendix.

4.3 Descriptive Statistics

Table 2 reports the sample distributions by country and by year. Panel A of Table 2 presents the country distributions by *Access* for the two samples. In both H1 and H2 samples, most debt issues are in Taiwan, Canada, Japan, and the United Kingdom (U.K.) when *Access* = 1, and debt issues are mainly in Taiwan, France, China, and the U.K. when *Access* = 0. Panel B of Table 2 shows the sample distributions by year. As the PCAOB has built cooperative relationships with international counterparts, the proportion of observations with *Access* = 1 in our sample has increased over time.

[Insert Table 2 about here]

Table 3 shows the descriptive statistics of the variables used in the regressions. Panel A of Table 3 reports the issue-level descriptive statistics for our H1 sample. The mean values of *Public* and *Public*

ratio are significantly higher when *Access* = 1 than those when *Access* = 0, indicating that borrowers domiciled in countries with PCAOB international inspection access have more access to the public debt market. We also find that countries with *Access* = 1 are more likely to adopt IFRS and have a local auditor regulatory oversight body. Borrowers domiciled in countries that allow PCAOB international inspections tend to be larger, have more tangible assets, more leverage, lower O-Score, and are more likely to have access to public debt markets in the prior year. These differences are statistically significant between *Access* =1 and *Access* = 0, indicating that the two samples demonstrate systematic disparities in firm characteristics.

Panel B of Table 3 report the descriptive statistics of all variables in our H2 sample. We find that the mean value of the cost of bonds is significantly lower at the 1% significant level when *Access* = 1 than that when *Access* = 0, while the mean value of the cost of bank loans is significantly at the 1% significant level higher when *Access* =1 than that when *Access* = 0. Since these statistics represent univariate analyses that do not consider other variables that also affect the cost of public and private debt, we further conduct multivariate analyses and report the results in Table 4 and Table 5.

[Insert Table 3 about here]

5. Results

5.1 Main Results

Our first hypothesis predicts that a firm's access to the public debt market increases after its auditor became subject to PCAOB international inspections. We employ a difference-in-differences approach using a staggered adoption model that controls for country, year, and industry fixed effects. The results are reported in Table 4. Columns (1) and (2) of Table 4 report the results using a probit estimation when the dependent variable is a dummy variable *Public* at the issue level and the firm level. We find that the estimated coefficients on *Access* are significantly positive in Columns (1) and (2) at less than 5% significant level, suggesting that the likelihood of issuing bonds increases when the auditor of the borrowers becomes subject to PCAOB inspections. The marginal effect calculated for the mean values of all variables indicates a 3.4% (4.2%) increase in the likelihood of issuing bonds at the issue-level (at the firm level) for borrowers whose auditor is subject to PCAOB international inspections. In comparison, Bharath (2008) shows that moving from the lowest accounting quality quintile to the highest accounting quintile increases the probability of accessing the public bond market by around 6%. Florou and Kosi (2015) find an 8.4 % increase in the likelihood of issuing bonds for mandatory IFRS adopters. Using a continuous

variable *Public ratio* as the dependent variable for a firm-level analysis, we find collaborating result in Column (3) of Table 4 that PCAOB international inspections increase a firm's proportion of public to total debt issued by six percentage, significantly at the 1% level (t-statistics = 3.56).

We now turn to discuss the control variables. The results show that the propensity to issue public debt increases controlling for a local audit regulator, which suggests that the effect of PCAOB auditor regulatory oversight is not attenuated in the presence of a local audit regulator. We find some evidence on the effect of a local auditor regulator on a firm's propensity to issue public debt. The estimated coefficient on local audit regulators is significant when using *Public ratio* as the dependent variable at less than 5% significant level (Column (3)). As for the effect of IFRS, we find that the propensity to issue public debt increases in two of the three specifications, implying that firms in our sample tend to issue public debt when they are domiciled in countries adopting IFRS. We also find that firms are more likely to issue public debt when the firms have lower leverage, more tangible assets, higher market-to-book values, higher return volatility, and more access to the public debt market, consistent with prior literature (Bharath, 2008; Dhaliwal et al., 2011; Flourou and Kosi, 2015).

In Columns (4) – (6) of Table 4, we report the results using an alternative control variable, *DTD*, to proxy for default risk. The results are quantitatively similar. Collectively, the results suggest that PCAOB international inspection access resolves information asymmetry between creditors and borrowers much more in the public debt market, where the information asymmetry is higher than in the private debt market. Consequently, a firm's access to the public debt market has increased when its auditor becomes subject to PCAOB international inspections, leading to the increased propensity to issue public debt for these firms.

[Insert Table 4 about here]

We next report results for the second hypothesis in Table 5, where we examine the impact of PCAOB international inspection access on the cost of public vs. private debt. We report a single equation analysis in Columns (1) and (2), and present the results of the endogenous switching model that compares the differential impact on the two debt markets in Columns (3a) and (3b). In Column (1), we find that the estimated coefficient on *Access* is significantly negative at less than the 5% level, indicating that borrowers enjoy a significantly lower cost of public debt when their auditors are subject to PCAOB international inspections. The cost of bonds decreases, on average, by 19.80 basis points when auditors of the borrowers are subject to PCAOB inspections. This reduction corresponds to approximately $240,000 annual cost savings based on an average bond amount of $122 million (see Panel B of Table 3).

On the other hand, we find an insignificant coefficient on *Access* in Column (2), suggesting that PCAOB international inspections do not significantly impact the cost of loans. In Columns (3a) and (3b), we find similar results using the endogenous switching model: the estimated coefficient on *Access* is significantly negative for the cost of public debt (at the 1% level). In contrast, the estimated coefficient on *Access* is insignificant for the cost of private debt. The cost of bonds decreases, on average, by 16.59 basis points when auditors of the borrowers are subject to PCAOB inspections. The test of difference in coefficients is significant at 1% level (X^2-statistics = 20.77), indicating that the differential impact is significant across the two types of debt.

Bharath (2008) shows that better accounting quality decreases the cost of public debt and private debt, with a more considerable reduction on the cost of bonds. If PCAOB inspections improve accounting quality, we expect to observe a lower cost of public debt and private debt. Nonetheless, our evidence implies that PCAOB auditor regulatory oversight ameliorates information problems and financing frictions between borrowers and creditors only for the public debt market. The effect of PCAOB inspection access does not reduce the cost of loans significantly, which may be attributable to banks' superior access to borrowers' private information and re-negotiation ability.[9]

We next discuss an important control variable: a local auditor regulator. We find that the cost of loans is significantly lower in countries with a local audit regulator, suggesting that a local auditor regulatory oversight body has a more significant impact in the private debt market. Specifically, based on the mean value of loans of approximately $208 million (Panel B of Table 3), the reduction in the cost of loans is around $0.37 million using Single Equation Analysis. On the contrary, we do not find significant coefficients on *Local_regulator* when the dependent variable is the cost of bonds, suggesting that a local audit regulator has more influence in the private debt market. Interestingly, the significant effect of a local auditor regulator on the cost of loans, along with the insignificant effect of Access on the cost of loans, suggests that banks do not incrementally incorporate PCAOB inspections access into debt pricing decisions in the presence of a local audit regulator.[10] Nevertheless, in public debt markets, when creditors typically

[9] This insignificant result on the cost of loans is consistent with the insignificant result in Shroff (2020, Table 8) using *ex post* PCAOB inspection reports for a sample of international firms, and the insignificant result in Huang and Li (2021) using a sample of foreign cross-listing firms. To further investigate the potential impact of PCAOB international inspections in the private debt market, we examine banks' usage of covenants in monitoring. The results will be discussed and reported in Table 10.

[10] In untabulated results, we include an interaction term *Access* × *Local_regulator* in the endogenous switching model to examine whether the impact of *Local_regulator* subsume*s the effect of Access.* We find that the

do not have private information like bank creditors, public debt holders value PCAOB auditor regulatory oversight incrementally to a local audit regulator, and they incorporate *Access* into debt pricing decisions.

We now briefly discuss the results of other control variables. In Columns (3a) and (3b), we find that *BIG4*, *Size*, *MTB*, *ROA*, and *Invest grade* decrease both cost of bonds and loans significantly, and *O-score, Rated*, *Maturity, Secured, and Term_Spread* increases both cost of bonds and loans significantly, consistent with prior literature (Mansi et al., 2004; Bharath et al., 2008; Florou and Kosi, 2015; Francis et al., 2017). *Amount* increases cost of bonds but decreases the cost of loans in the endogenous switching model, consistent with Florou and Kosi (2015). We find the coefficients on IFRS are insignificant in all regression with the dependent variable is the cost of public debt and in two of the four regressions when the dependent variable is cost of private debt. Since we do not differentiate voluntary or mandatory adoption, the increase may reflect mixed evidence documented in the literature (see the discussion in De George et al., 2016).

Analogous to the analysis Table 4, we repeat our analysis by including an alternative firm-level default risk measure *DTD* and report the results in Columns (4), (5), (6a) and (6b). The results are quantitatively similar, reinforcing our confidence in interpreting our results.

[Insert Table 5 about here]

5.2 The channels through home country debt markets and institutions

A firm's debt financing choice and the cost of debt are largely influenced by its home country institutions. In this section, we conduct several analyses to explore the cross-sectional variations of the effect of auditor regulatory oversight across different institutional factors. First, we examine the importance of bond markets. Following Ball et al. (2018, Table 6), we measure the importance of bond markets in a country (*MP*) as the aggregate market capitalization of public bonds in percent of GDP (source: World Bank), and higher values indicate countries with relatively more important bond markets. We partition our sample at the sample mean of these values, i.e., countries with higher (lower) values than the sample mean assigned to the subsample *MP* = 1 (*MP* = 0). Panel A of Table 6 shows that the estimated

estimated coefficients on Access are still significant when the dependent variable is either the cost of bonds or loans, while the interaction term is only significant when the dependent variable is the cost of bonds. The significant estimated coefficient on *Access* when the dependent variable is the cost of loans, along with the insignificant estimated coefficient on the interaction term, implying that *Access* still has a significant impact on the loan pricing in countries without a local audit regulator.

coefficients on *Access* are only significant when the bond market is more important (*MP* = 1) in all three columns. We find that the estimated coefficients on *Access* are all significantly positive at less than 5% level in the three specifications when *MP* = 1 but none of the coefficients are significant when *MP* = 0, implying that our H1 only exists when the bond market is more important in the country. We present the cost of debt results in Panel B of Table 6. In countries with the more important bond market (*MP* = 1), we find that the estimated coefficients on *Access* are significantly negative at the 5% level for the cost of public debt in both specifications (Single Equation Analysis or Endogenous Switching Model). However, the estimated coefficients on *Access* are insignificant for the cost of private debt, suggesting that the impact of *Access* is concentrated in the public debt market. In the endogenous switching model, the test of difference in coefficients is significant at the 1% level when *MP* = 1, indicating the significant differential impacts across the two debt markets. In countries with the relatively less important bond market (*MP* = 0), we do not find any significant impact of *Access* on either cost of public or private debt. The differential impact across the two debt markets is also insignificant, demonstrated by the insignificant *F-statistics* in the test of difference in coefficients. Collectively, the results show that PCAOB international inspection access affects debt pricing decisions only in countries with more important bond markets.

[Insert Table 6 about here]

In addition to the reliance on bond markets in a country, a firm's financing choices may be also influenced by its home country institutional factors since the economic institutions of a country or region can determine its firms' accounting properties (Ball et al., 2000; Leuz et al., 2003; DeFond et al., 2007). These institutional factors can also affect the agency cost of debt. We thus further examine the impact of PCAOB international inspection access across various home country institutions when the bond market is more important in the country. We use the following institutional factors: (1) rule of law, (2) property rights, (3) creditor rights, (4) efficiency of bankruptcy, and (5) auditor litigation.[11] In this analysis, we replace the *Access* variable with two variables, *Access_H* and *Access_L*, based on the mean values of these indexes. *Access_H* equals one if a country's institutional factor is higher than the sample mean and zero otherwise, and *Access_L* equals one if a country's institutional factor is lower than the sample means and zero otherwise. Therefore, the estimated coefficient on *Access_H* (*Access_L*) represents the effect of

[11] Following previous literature, we obtain the rule of law data from Kaufmann et al. (2010), the property rights and the efficiency of bankruptcy from Djonkov et al. (2008), creditor rights data from Djankov et al. (2007), and the auditor legal liability index from Wingate (1997).

PCAOB inspection access in countries with strong (weak) home institutions. We can thus differentiate whether the effect is more pronounced in countries with institutional factors with higher or lower monitoring effects that mitigate the agency cost of debt.

Table 7, Panel A, shows the impact of PCAOB inspection access on a firm's propensity to issue public debt. For ease of elaboration, we only report the results when the dependent variable is *Public Ratio*. We find that the estimated coefficients on *Access_L* are consistently significant and positive across the five institutional factors, and only 3 out of 5 estimated coefficients on *Access_H* are significant and positive. All coefficients on *Access_L* are larger than the coefficients on *Access_H* in Columns (1) - (5), and the tests of difference in coefficients are all significant at the 1% level, indicating that PCAOB international inspection access plays a more predominant role in countries with weak institutions. The impact of PCAOB international inspection access is less pronounced for borrowers domiciled in countries with strong institutions.

We next examine the cost of debt across different institutional factors and report the results in Panel B of Table 7. When the dependent variable is the cost of bonds, we find that all estimated coefficients on *ACCESS_L* are significantly negative at the 1% level while only 2 out of 5 estimated coefficients on *ACCESS_H* are significant and negative at the 10%, which demonstrates that the effect of PCAOB inspections access on the cost of bonds is more pronounced in countries with weak institutions. We once again find that none of the estimated coefficients on either *ACCESS_L* or *ACCESS_H* are significant when the dependent variable is the cost of loans, consistent with Table 5, implying the limited role of PCAOB inspections in the pricing of private debt. The tests of difference in coefficients also indicate substantial variations between two debt markets. Collectively, the findings in Table 7 collaborates Kim et al.'s (2020) finding that PCAOB international inspection reports mitigate information asymmetry in M&A transactions greater in countries with weak institutions, and Huang and Li's (2021) finding that PCAOB auditor regulatory oversight serves as a substitute of monitoring mechanism in private debt market for countries with weak institutions.

[Insert Table 7 about here]

5.3 Additional Analyses

Dynamics of the Impact of PCAOB Inspection Access

The common endogeneity issue with a difference-in-differences design is twofold: First, the assignment of treatment and control groups are non-random (Gow et al., 2016), and second, the impact

on the treatment group occurs before the manipulation. Our sample does not suffer from the first issue, as a firm cannot choose to stay in countries that allow or disallow PCAOB inspections when the effect occurs. For the second issue, we further examine whether the effect happens before a country allows PCAOB inspections. Specifically, we follow Bertrand and Mullainathan (2003) and replace the *Access* variable with three indicator variables, $Access_{t-1}$, $Access_t$, and $Access_{t+n}$, for each country that captures the dynamics of the impact of PCAOB inspection access in three time periods, where *t-1*, *t*, and *t+n* indicate the time period before, at, and after the adoption of PCAOB international inspections. Table 8 shows the corresponding results. In Panel A of Table 8, Columns (1) – (3) report the results for H1, and Column (4) reports the result for H2. We find that none of the estimated coefficients on $Access_{t-1}$ are significantly different from zero, indicating that the propensity to issue public debt and cost of public and private debt did not change before the staggered adoption of PCAOB inspections. Therefore, the parallel trend assumption behind the difference-in-differences approach seems to hold in our sample.

On the contrary, we find that the coefficients on $Access_t$ are significantly positive in Columns (1) - (3) at the 1% level, suggesting that a firm's access to issue public debt increases immediately in the year when the country allows PCAOB to inspect their local auditors. Likewise, the coefficients on $Access_t$ are significantly positive in Columns (4a) and (4b) at the 5% level for both cost of public and private debt, implying that the decreases in the cost of public and private debt occurred immediately in the year when the country allows PCAOB inspections. In addition, the coefficients on $Access_{t+n}$ remain significantly positive in Columns (1) - (3) at conventional levels, implying that the effect of PCAOB inspection access is not short-lived. Finally, in Columns (4a) and (4b), we find that the coefficients on $Access_{t+n}$ remain significantly negative for the cost of bonds but turns significantly negative for the cost of loans. As the relative importance of the two debt markets may affect our results, we further conduct analysis to explore whether this is driven by the importance of bond market.

Panel B of Table 8 presents the results considering the importance of the bond market in each country. The results show that in countries where the bond market is more important (*MP* = 1), the estimated coefficients on $Access_t$ and $Access_{t+n}$ are significantly negative at the conventional level for the cost of bonds regardless of using single equation analysis or endogenous switching model. In contrast, we do not find any significant estimated coefficients on $Access_t$ and $Access_{t+n}$ when the dependent variable is the cost of loans, suggesting that our result in Column (4b) of Panel A is driven by the importance of bond

market. Regardless, we find that the estimated coefficients on $Access_{t-1}$ are all insignificant in all Columns, implying that our results are not driven by the pre-treatment factors.[12]

[Insert Table 8 about here]

Results using PCAOB Inspection Reports

While our analyses document the *ex ante* effect of PCAOB inspection access on a firm's debt financing when a borrower's auditor becomes subject to PCAOB regulatory oversight, it is possible that a borrower's debt financing is also influenced by the *ex post* information content of PCAOB inspection reports when its auditor is selected by the PCAOB for an audit. The effect of PCAOB inspection access may merely document the impact of PCAOB inspection reports. In addition, if the public release of inspection reports contains information about the borrower's credit risk, the *ex post* PCAOB inspection reports may offer more valuable information to creditors than the *ex ante* threat of inspection access. We thus conduct additional analyses to address these concerns by incorporating the effect of *ex post* PCAOB inspection reports in our specifications. Following Lamoreaux et al. (2020), we conduct two sets of analyses: First, we construct an indicator variable, *Report*, that equals one when a borrower's auditor receives a PCAOB international inspection report in the given firm-year (including initial and subsequent reports). We re-estimate Equations (1) and (2) by including *Report* in the regression and evaluate whether *report* has an incremental effect beyond *access* on a borrower's debt financing. Second, we limit our samples to the countries that allow PCAOB inspection access to examine the effect of the information content of these inspection reports. We create an indicator variable *Def* that equals one if there is at least one deficiency identified in the inspection report, and zero otherwise. We then estimate the information content of inspection reports by including two main variables of interest in the regression, *Report* and the interaction term *Report × Def*, in addition to other control variables.

The results are reported in Table 9. Panel A of Table 9 shows the results controlling for the *Report* variable. Columns (1) - (3) indicate that the estimated coefficient on *Access* is still significantly positive at the 1% level after controlling for *Report* variable and the difference in coefficients tests (coefficients on *Access* and *Report*) are significantly different, supporting our H1. Moreover, two out of the three estimated coefficients on *Report* are significantly positive at the 5% level, implying the incremental value

[12] Another test to mitigate the concern is to use a placebo test. However, we can only obtain data from Datastream since 2006, and therefore our sample period is subject to limitation for conducting a placebo test that demands at least three years before PCAOB international inspections were in place.

of inspection reports. Columns (4a) and (4b) of Panel A shows that *Access* decreases the cost of public debt to a greater extent than *Report*, while *Report* decreases the cost of private debt significantly lower than *Access*. The difference in estimated coefficients is only significant between $Access_{public}$ and $Access_{private}$, supporting our hypothesis 2 that PCAOB regulatory oversight lowers debt pricing in the public debt market much more significant than in the private market.

In Panel B of Table 9, we report the results including the information content of the inspection reports. We find that the estimated coefficients are significantly positive in Columns (1) and (2), demonstrating that a firm's access to the public debt increases when its auditor receives a clean inspection report. We find some evidence that the total effect of deficient reports decreases a firm's access to the public debt market in Column (3). For the cost of debt, Column (4) of Panel B demonstrates that borrowers whose auditor receives a clean PCAOB inspection report enjoy a significantly lower cost of public debt but no changes in the cost of private debt. The total effect of deficiency reports is significantly positive when the dependent variable is the cost of public or private debt, indicating that the deficiency reports identify the borrower's credit risk, and thus creditors respond by increasing bond and loan pricing. While prior studies provide limited evidence on the value of deficiency reports (Krishnan et al., 2017; Kim et al., 2020; Shroff, 2020; Stuber and Hogan, 2021), we offer an additional piece of evidence on the information value of deficiency reports in the debt markets.[13]

[Insert Table 9 about here]

Results for Bank Loan Covenants

In earlier sections, we do not find a significant impact of PCAOB inspection access on the cost of loans. Nevertheless, even without significant changes in loan pricing, other non-pricing terms can be important in loan contracting. If banks perceive PCAOB inspection access as enhancing the value and credibility of accounting information, they may decrease demand for using covenants in monitoring. In this section, we examine the impact of PCAOB international inspection access on loan contract design. We create three dummy variables related to loan covenants: 1) whether the loan contract contains a collateral requirement, 2) whether the loan contract contains any covenants, and 3) whether the loan contract

[13] Prior literature provides mixed evidence in this area, as discussed in the literature section. In contrast to studies that find limited evidence, several studies show positive values of PCAOB inspection reports while examining a specific deficiency identified in a PCAOB Part II report (Drake et al., 2016; DeFond and Lennox, 2017; Aobdia et al., 2021).

contains at least one tight covenant.[14] Similar to equation (2), we employ a difference-in-differences test while using the three dummy variables as our dependent variables.

The results, reported in Table 10, show that the estimated coefficients are all significantly negative in all three specifications, suggesting that banks reduce covenants with collateral requirements, the total number of covenants, and covenant tightness when a borrower's auditor becomes subject to PCAOB international inspection access. This collaborates the results in Robin et al. (2017) that higher audit quality, proxied by auditor size and auditor industry expertise, decreases the bank's demand for monitoring by covenants. We also find some evidence that *local_regulator* reduces the number of total covenants usage. The significant and positive estimated coefficients on IFRS in two out of three specifications, in part, are consistent with Ball et al. (2015)'s findings that mandatory IFRS adoption reduces accounting contractibility.

[Insert Table 10 about here]

6. Conclusion

As evidence on the efficacy of PCAOB audit inspections is mixed, this paper examines the spillover effect of audit regulation in a foreign audit firms home country on non-U.S. listed firm's choice of, and cost of debt financing, in public and private markets. If PCAOB international inspections motivate auditors to exert effort and enhance the reliability of financial information for all their clients, financing frictions between lenders and borrowers can be reduced for their clients as information risk is lowered. Any reduction is expected to be greater in public debt markets where information asymmetries and moral hazard concerns are greater. We develop and test two hypotheses on the relationship between the PCAOB international inspections and the choice of, and cost of debt, in public and private markets.

Our first hypothesis is that firms prefer issuing public debt instead of private debt in countries that allow PCAOB international inspections. Our second hypothesis is that the reduction in the cost of public debt is greater than that in the cost of private debt for borrowers domiciled in countries that allow PCAOB international inspections. Our research design exploits the staggered introduction of PCAOB international inspections, and we use a sample of non-U.S. listed firms from 45 countries from 2006 to 2017.

We provide evidence consistent with both hypotheses implying a spillover effect of PCAOB international inspections in countries where they are allowed. Additional analyses suggests that the effect is stronger in countries with a higher importance of bond markets, and PCAOB regulatory oversight serves as a substitute for weak institutions in these countries. Further supporting that PCAOB international

[14] We follow Demiroglu and James (2010) to define a tight covenant by using the two covenants based on the debt-to-EBITDA ratio and the current ratio.

inspection reduce financing frictions between lenders and borrowers, we provide evidence banks decrease their demand for covenants usage in monitoring. Overall, our evidence that PCAOB regulatory oversight of foreign audit firms spills over to clients in the auditor's home country through resolving financing frictions in debt markets suggests that the audit regulation improves audit quality.

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Table 1 Sample selection.

Our sample period spans from 2005 to 2017. Public debt (bonds) data is from Mergent FISD, Capital IQ, and Datastream databases matched using company names and multiple identifiers, including ISIN, SEDOL, CUSIP, TICKER, Reuters Instrument Code (RIC), and Organisation Level Permanent Identifier (PERMID). Private debt (loans) data is from Dealscan database matched using on Dealscan-Compustat Linking file provided by Roberts and Sufi (2009).

	Public		Private		Pool	
	Observations	Firms	Observations	Firms	Observations	Firms
Total Sample	4,803	1,305	8,577	2,087	13,380	3,392
Multiple same-type issuances by the same firm within one year	2,057	0	1,971	0	4,028	0
Final Sample for the debt market choice	2,746	1,305	6,606	2,087	9,352	3,392
Total Sample	4,803	1,305	8,577	2,087	13,380	3,392
Missing data on bond variables	1,031	268	62	8	1,093	276
Final Sample for the cost of debt	3,772	1,037	8,515	2,079	12,287	3,116

Table 2 Sample distributions.

Panel A reports the sample distributions by country and PCAOB inspection access (*Access*) for our hypothesis one (the debt market choice) and hypothesis 2 (the cost of debt). Panel B reports the respective samples by year. The treatment group is when *Access* = 1 while the control group is when *Access* = 0. The PCAOB inspection access data is updated as of March 2021.

Panel A: Country Breakdown

Country	FIC	Year of Formal Agreement	Year of First Available Report	Sample for the debt market choice (H1)				Sample for the cost of debt (H2)			
				Access = 1		*Access* = 0		*Access* = 1		*Access* = 0	
				Issue	Firm	Issue	Firm	Issue	Firm	Issue	Firm
Argentina	ARG		2008	12	5	0	0	20	4	0	0
Australia	AUS	2007	2010	256	83	44	28	391	77	72	28
Austria	AUT	2018	2019	0	0	27	14	0	0	33	14
Bahamas	BHS		NA	0	0	7	2	0	0	8	2
Belgium	BEL		NA	0	0	62	26	0	0	77	22
Bermuda	BMU		2008	169	49	70	41	219	47	81	41
Brazil	BRA		2010	94	44	21	10	53	13	28	10
Canada	CAN	N.P.	2006	724	203	89	50	887	200	105	50
Cayman Islands	CYM		2010	190	91	65	36	223	87	73	36
Chile	CHL		2008	70	36	7	6	58	19	2	2
China	CHN		NA	0	0	320	215	0	0	283	162
Columbia	COL		2009	20	6	6	6	11	4	4	2
Czech Republic	CZE		NA	0	0	10	2	0	0	13	2
Denmark	DNK	2014	2015	6	2	38	9	10	2	45	9
Finland	FIN	2013	2014	30	16	24	16	34	14	25	16
France	FRA	2013	2014	226	63	327	116	312	57	441	114
Germany	DEU	2012	2013	133	35	204	69	189	34	252	66
Greece	GRC	2015	2011	4	4	16	6	3	3	15	5
Hong Kong	HKG		2009	46	11	97	39	58	10	123	39
Hungary	HUN	2015	2016	2	1	8	2	2	1	8	2
India	IND		2008	232	63	94	64	328	62	133	63
Indonesia	IDN		2011	25	13	15	8	34	12	22	8
Ireland	IRL	2017	2011	11	1	98	25	15	1	119	25
Israel	ISR	2011	2008	102	47	14	7	50	27	12	4
Italy	ITA	2016	2018	16	5	183	63	18	2	214	59
Japan	JPN	2011	2010	675	220	203	100	1229	222	255	95
Malaysia	MYS		2011	31	13	22	13	31	10	27	12
Mexico	MEX		2008	119	42	16	11	144	37	15	9
Netherland	NLD	2011	2013	120	26	100	42	182	27	123	40
New Zealand	NZL		2008	28	12	7	4	28	13	8	3
Norway	NOR	2011	2011	75	32	36	16	104	30	44	15
Panama	PAN		2008	4	2	0	0	4	2	0	0
Philippines	PHL		2011	34	14	24	14	25	9	28	13

Poland	POL		NA	0	0	27	16	0	0	36	16
Portugal	PRT		NA	0	0	33	14	0	0	31	11
Russia	RUS		2010	100	45	1	1	72	27	1	1
Singapore	SGP	2008	2011	80	32	49	31	96	29	57	31
Slovakia	SVK		NA	0	0	1	1	0	0	0	0
South Africa	ZAF		2010	28	9	5	3	34	8	6	3
South Korea	KOR	N.P.	2010	254	110	96	49	591	96	155	49
Spain	ESP	2012	2014	99	23	161	42	120	16	239	41
Sweden	SWE	2014	2015	47	15	77	31	55	15	86	29
Switzerland	CHE	2011	2014	106	32	81	28	130	31	96	28
Taiwan	TWN	2011	2008	1,155	218	362	186	1,574	211	478	186
Turkey	TUR		2014	11	7	15	8	20	6	26	8
United Kingdom	GBR	2011	2006	597	182	259	110	729	171	305	109
Observations	Total			5,931	1,812	3,421	1,580	8,083	1,636	4,204	1,480

Notes: N.P. in Canada and South Korea means the agreement is non-public.

Panel B: Year Breakdown

Year of Access	Sample for the debt market choice (H1)				Sample for the cost of debt (H2)			
	Access = 1		*Access* = 0		*Access* = 1		*Access* = 0	
	Issue	Firm	Issue	Firm	Issue	Firm	Issue	Firm
2005	0	0	724	455	0	0	907	450
2006	144	62	580	283	171	59	751	267
2007	195	86	481	193	230	83	624	188
2008	277	95	176	76	337	90	215	69
2009	374	114	363	138	486	109	459	136
2010	500	147	323	110	678	141	391	105
2011	581	147	167	46	788	140	225	42
2012	710	211	133	48	985	189	163	44
2013	853	247	115	37	1,158	222	122	30
2014	771	226	127	69	1,049	191	115	45
2015	799	233	132	67	1,122	202	142	56
2016	727	244	100	58	1,079	210	90	48
Total	5,931	1,812	3,421	1,580	8,083	1,636	4,204	1,480

Table 3 Descriptive statistics.

Panel A reports the descriptive statistics of variables in the choice of debt markets sample at the issue level. Panel B reports the distribution statistics of variables in the cost of debt sample at the issue level. All variables are defined in Appendix.

Panel A: The debt market choice at the issue-level (H1)

	Pool		*Access* = 1		*Access* = 0		p-value of Difference	
	N= 9,352		N= 5,931		N= 3,421			
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Public	0.294	0.000	0.356	0.000	0.186	0.000	<0.001	<0.001
Public ratio	0.291	0.000	0.354	0.000	0.181	0.000	<0.001	<0.001
BIG4	0.978	1.000	0.979	1.000	0.975	1.000	0.149	0.149
IFRS	0.554	1.000	0.584	1.000	0.501	1.000	<0.001	<0.001
Local_regulator	0.857	1.000	0.908	1.000	0.767	1.000	<0.001	<0.001
Lev	0.216	0.197	0.218	0.198	0.212	0.197	0.072	0.292
Size	9.994	9.669	10.122	9.676	9.773	9.652	<0.001	0.112
TANG	0.355	0.324	0.367	0.342	0.336	0.302	<0.001	<0.001
MTB	0.919	0.738	0.907	0.723	0.940	0.761	<0.001	<0.001
ROA	0.064	0.059	0.060	0.056	0.071	0.065	<0.001	<0.001
Ret	0.083	0.098	0.049	0.070	0.143	0.145	<0.001	<0.001
Ret SD	1.083	0.045	0.743	0.045	1.671	0.046	0.061	0.226
Rated	0.352	0.000	0.341	0.000	0.372	0.000	<0.001	<0.001
O-Score	-1.973	-1.959	-2.083	-2.094	-1.781	-1.752	<0.001	<0.001
Invest grade	0.256	0.000	0.240	0.000	0.284	0.000	<0.001	<0.001
Cap_access	0.202	0.000	0.253	0.000	0.113	0.000	<0.001	<0.001
GDPG	2.653	2.291	2.427	2.200	3.045	2.788	<0.001	<0.001
Country_rating	19.482	19.000	19.368	19.000	19.680	20.000	<0.001	<0.001

Panel B: The cost of public and private debt at the issue-level (H2)

	Pool		*Access* = 1		*Access* = 0		p-value of Difference	
	N= 12,287		N= 8,083		N= 4,204			
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Cost of Bonds[#]	122.029	65.350	117.314	52.500	145.187	134.900	0.021	<0.001
Cost of Loans[##]	193.347	150.000	208.345	165.000	172.532	135.000	<0.001	<0.001
BIG4	0.980	1.000	0.982	1.000	0.978	1.000	0.175	0.174
IFRS	0.546	1.000	0.566	1.000	0.508	1.000	<0.001	<0.001
Local_regulator	0.868	1.000	0.923	1.000	0.762	1.000	<0.001	<0.001
Lev	0.225	0.205	0.228	0.206	0.220	0.202	0.004	0.069
Size	10.493	10.024	10.784	10.179	9.932	9.800	<0.001	<0.001
TANG	0.368	0.337	0.383	0.356	0.338	0.303	<0.001	<0.001
Current ratio	1.383	1.234	1.400	1.251	1.351	1.200	<0.001	<0.001
MTB	0.908	0.734	0.892	0.719	0.940	0.760	<0.001	<0.001

ROA	0.063	0.057	0.058	0.053	0.071	0.065	<0.001	<0.001
Ret	0.083	0.089	0.052	0.068	0.141	0.141	<0.001	<0.001
Ret SD	1.086	0.046	0.901	0.046	1.442	0.047	0.195	0.199
Rated	0.392	0.000	0.393	0.000	0.390	0.000	0.791	0.396
O-Score	-2.114	-2.090	-2.276	-2.245	-1.804	-1.751	<0.001	<0.001
*DTD**	4.623	4.222	4.768	4.400	4.346	3.992	<0.001	<0.001
Invest_grade	0.298	0.000	0.297	0.000	0.300	0.000	0.726	0.726
GDPG	2.627	2.323	2.453	2.200	2.963	2.788	<0.001	<0.001
Country_rating	19.516	19.000	19.420	19.000	19.700	20.000	<0.001	<0.001
Amount	11.460	11.864	11.321	11.736	11.729	12.119	<0.001	<0.001
Maturity	4.183	4.094	4.227	4.094	4.097	4.094	<0.001	<0.001
Secured	0.567	1.000	0.637	1.000	0.434	0.000	<0.001	<0.001
Time spread	0.891	0.760	0.888	0.809	0.897	0.670	<0.001	<0.001

[#] For cost of bonds, the number of observations in the pool is 3,772, including 3,134 and 638 from the group of *Access* = 1 and *Access* = 0, respectively.

[##] For cost of loans, the number of observations in the pool is 8,515, including 4,949 and 3,566 from the group of *Access* = 1 and *Access* = 0, respectively.

* For the year-month distance to default measure (*DTD*), the sample is 11,868 observations in total including 7,793 observations for *Access* = 1 and 4,075 observations for *Access* = 0.

Table 4 The impact of PCAOB international inspection on the debt market choice.

Columns (1) and (2) report the results of estimating the effects of PCAOB international inspection access on the likelihood of issuing public versus private debts at the issue level and firm level, respectively. Marginal effects are reported. Column (3) reports the results of estimating the effects of PCAOB international inspection access on the proportion of public debt to total debt in a firm-year. Columns (4) - (6) present the results of the logistic and OLS models similar to those reported in Columns (1) - (3), respectively, with an alternative control variable of default risk, DTD. The robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Column	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Pr.(Public=1)	Pr.(Public=1)	Public ratio	Pr.(Public=1)	Pr.(Public=1)	Public ratio
	Issue-level	Firm-level	Firm-level	Issue-level	Firm-level	Firm-level
	Marginal Effects	Marginal Effects	Coefficients (t-stat.)	Marginal Effects	Marginal Effects	Coefficients (t-stat.)
Access	0.034**	0.042***	0.060***	0.034**	0.044***	0.062***
	(2.34)	(2.68)	(3.56)	(2.18)	(2.64)	(3.41)
Local_regulator	0.019	0.026	0.079**	0.023	0.033	0.070*
	(0.59)	(0.78)	(2.27)	(0.58)	(0.80)	(1.89)
BIG4	0.017	0.022	0.007	0.021	0.026	0.009
	(0.68)	(0.80)	(0.30)	(0.77)	(0.88)	(0.32)
IFRS	0.051***	0.052***	0.027	0.035**	0.034*	0.010
	(3.69)	(3.22)	(1.31)	(2.15)	(1.91)	(0.46)
Lev	-0.095*	-0.090*	-0.104**	-0.098**	-0.098**	-0.111**
	(-1.92)	(-1.73)	(-2.20)	(-2.21)	(-2.23)	(-2.40)
Size	0.007	0.008*	0.007	0.010**	0.010**	0.004
	(1.56)	(1.66)	(1.12)	(2.19)	(2.16)	(0.78)
TANG	0.057**	0.050*	0.049*	0.060**	0.053*	0.054*
	(2.41)	(1.91)	(1.82)	(2.38)	(1.92)	(1.89)
MTB	0.091***	0.098***	0.097***	0.014***	0.103***	0.101***
	(7.17)	(7.04)	(5.65)	(7.12)	(6.92)	(5.64)
ROA	0.004	-0.015	0.023	-0.035	-0.050	-0.023
	(0.04)	(-0.16)	(0.26)	(-0.37)	(-0.50)	(-0.24)
Ret	0.007	0.011	0.004	0.004	0.008	0.003
	(0.77)	(1.05)	(0.44)	(0.36)	(0.70)	(0.29)
Ret SD	0.003***	0.004***	0.006***	0.004***	0.004***	0.006***
	(3.16)	(2.97)	(4.74)	(3.23)	(2.94)	(5.13)
O-Score	-0.004	-0.005	-0.008			
	(-0.65)	(-0.77)	(-1.24)			
DTD				0.003	0.004	0.005*
				(1.26)	(1.53)	(1.65)
Invest_grade	0.022	0.021	0.025	0.013	0.009	0.014
	(1.41)	(1.23)	(1.24)	(0.67)	(0.47)	(0.63)
Rated	-0.008	-0.005	-0.018	-0.005	-0.003	-0.010
	(-0.48)	(-0.28)	(-0.86)	(-0.27)	(-0.00)	(-0.47)
Cap_access	0.078***	0.087***	0.208***	0.080***	0.088***	0.199***
	(6.13)	(6.57)	(8.74)	(6.13)	(6.64)	(8.23)

GDPG	-0.004	-0.001	-0.005	-0.002	-0.009	-0.005
	(-0.16)	(-0.41)	(-1.60)	(-0.07)	(-0.32)	(-1.60)
Country_rating	0.002	0.001	0.003	0.002	0.003	0.006
	(0.05)	(0.29)	(0.39)	(0.45)	(0.64)	(0.81)
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations.	9,352	7,243	7,243	8,217	6,455	6,455
Pseudo R^2/Adj. R^2	0.284	0.275	0.379	0.287	0.280	0.336

Table 5 The Impact of PCAOB international inspection access on the cost of debt.

Columns (1) and (2) report the respective single equation results of regressing the costs of public and private debt on PCAOB international inspection access. Columns (3a) and (3b) report the results using the endogenous switching model. Columns (4) and (5) present the results of the single equation analyses similar to Columns (1) and (2) for the costs of public and private debt, respectively, with an alternative control variable of default risk DTD. Columns (6a) and (6b) present the results with the endogenous switching model similar to Columns (3a) and (3b) with an alternative control variable of default risk DTD. The robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Single equation		Endogenous switching		Single equation		Endogenous switching	
Column	(1)	(2)	(3a)	(3b)	(4)	(5)	(6a)	(6b)
Cost of Debt	Public	Private	Public	Private	Public	Private	Public	Private
Access	-19.795**	-0.221	-16.586***	-6.303	-22.713**	-0.079	-18.891***	-5.600
	(-1.96)	(-0.03)	(-2.67)	(-1.60)	(-2.23)	(-0.01)	(-3.09)	(-1.31)
Local_regulator	-8.445	-18.363*	-6.867	-14.940***	-1.858	-8.907	-5.328	-14.019*
	(-0.29)	(-1.88)	(-0.88)	(-2.65)	(-0.07)	(-0.77)	(-0.28)	(-1.93)
BIG4	-45.554*	-46.030***	-34.903***	-43.453***	-51.002*	-43.957***	-39.555***	-41.830***
	(-1.86)	(-2.96)	(-3.03)	(-5.52)	(-1.93)	(-2.66)	(-3.45)	(-4.90)
IFRS	9.171	16.393*	5.447	12.825	9.067	12.879	7.987	7.744*
	(0.97)	(1.69)	(1.15)	(1.60)	(0.96)	(1.29)	(0.71)	(1.91)
Lev	54.353	14.931	42.147***	8.397	79.641	29.399	68.294***	24.357**
	(1.07)	(0.55)	(3.03)	(0.75)	(0.96)	(1.23)	(5.84)	(2.24)
Size	-15.441***	-3.254	-10.419***	-4.155***	-18.181***	-4.834*	-14.684***	-5.741***
	(-2.84)	(-1.12)	(-7.57)	(-3.58)	(-5.08)	(-1.78)	(-13.24)	(-5.47)
TANG	16.555	-33.579**	5.267	-31.739***	9.926	-27.191*	7.715	-26.031***
	(0.67)	(-2.49)	(0.60)	(-4.30)	(0.33)	(-1.72)	(0.90)	(-3.18)
Current_ratio	9.572	3.496	15.366***	3.491	4.127	-0.951	8.213***	-0.136
	(0.72)	(0.80)	(5.10)	(1.61)	(0.48)	(-0.25)	(3.28)	(-0.07)
MTB	-38.085***	-2.976	-26.060***	-4.441*	-21.896**	2.497	-14.464***	0.611
	(-3.23)	(-0.57)	(-6.44)	(-1.67)	(-2.14)	(0.47)	(-3.63)	(0.20)
ROA	-197.783	-170.060***	-263.612***	-132.568***	-140.385	-103.624*	-188.148***	-71.437***
	(-1.32)	(-3.07)	(-7.51)	(-5.61)	(-1.20)	(-1.85)	(-5.25)	(-2.61)
Ret	-4.399	-14.674**	4.175	-13.367***	-11.185	-6.792	1.052	-7.698**
	(-0.30)	(-2.30)	(0.96)	(-4.70)	(-0.80)	(-1.14)	(0.25)	(-2.44)
Ret SD	0.005	-0.118	0.008	-0.109	0.023	-0.042	0.028	-0.046
	(0.13)	(-0.61)	(0.20)	(-0.73)	(0.58)	(-0.19)	(0.75)	(-0.30)
O-Score	10.119	9.957**	11.282***	8.505***				
	(1.11)	(2.57)	(5.29)	(4.90)				
DTD					-8.364***	-6.271***	-7.136***	-6.322***
					(-4.94)	(-4.77)	(-11.07)	(-9.42)
Invest_grade	-93.193***	-31.697***	-102.238***	-34.971***	-81.743***	-28.220***	-95.546***	-29.019***
	(-3.27)	(-3.25)	(-18.97)	(-7.12)	(-3.04)	(-2.60)	(-17.94)	(-5.32)
Rated	94.702***	18.696**	85.392***	20.764***	92.201***	23.140**	82.277***	23.976***
	(3.31)	(2.03)	(15.34)	(4.63)	(3.45)	(2.52)	(15.02)	(4.81)
Amount	8.312*	12.099***	7.989***	-9.091***	9.285**	12.697***	9.087***	-9.733***
	(1.95)	(3.96)	(4.79)	(-12.49)	(2.08)	(4.16)	(5.53)	(-12.35)
Maturity	16.404***	19.115***	15.628***	17.852***	17.706***	22.217***	16.393***	20.659***
	(5.67)	(4.14)	(12.52)	(7.81)	(5.93)	(4.66)	(13.30)	(8.42)
Secured	-70.211	64.462***	62.219**	66.354***	88.533	67.991***	74.457***	69.405***
	(-0.68)	(6.19)	(2.27)	(25.83)	(0.87)	(6.35)	(2.79)	(24.30)
Term_spread	10.992	23.259***	8.508**	17.554***	16.538*	20.330***	9.698**	15.562***
	(1.17)	(3.41)	(2.24)	(7.10)	(1.84)	(2.86)	(2.57)	(5.84)

Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,772	8,515	3,772	8,515	3,691	7,224	3,691	7,224
No. of countries	45	44	45	44	44	43	44	43
Adj. R^2	0.213	0.326	H0: $Access_{Public} = Access_{Private}$		0.230	0.322	H0: $Access_{Public} = Access_{Private}$	
			χ^2 (p-value)= 20.77 (<0.01)***				χ^2 (p-value)= 10.09 (<0.01)***	

Table 6 Cross-sectional tests by the importance of bond market.

Analyses based on the importance of bond market. Following Ball et al. (2018), the binary indicator of important bond market (*MP*) is identified based on our sample mean using data from the Global Financial Development database provided by the World Bank. Panel A reports the results of estimating the effects of PCAOB international inspection access on the choice of debt markets based on Equation (1) in which O-Score is the proxy for default risk. Marginal effects are reported for the logistic models in Columns (1) – (4). Panel B reports the results of estimating the effects of PCAOB international inspection access on the costs of public and private debt based on either the single equation analysis or the endogenous switching model. The robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: PCAOB international inspection access on the debt market choice

	Pr.(Public=1) Issue-level		Pr.(Public=1) Firm-level		Public ratio Firm-level	
	Marginal Effects		Marginal Effects			
Column	(1)	(2)	(3)	(4)	(5)	(6)
	MP = 1	*MP* = 0	*MP* = 1	*MP* = 0	*MP* = 1	*MP* = 0
Access	0.046**	0.019	0.054**	0.027	0.110***	0.022
	(2.29)	(1.02)	(2.57)	(1.26)	(4.73)	(0.71)
Control Variables	Included	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Total Observations	8,847		6,835		6,835	
Respective Observations	4,985	3,862	3,981	2,854	3,981	2,854
Pseudo R^2/Adj. R^2	0.254	0.368	0.246	0.359	0.383	0.328

Panel B: PCAOB international inspection access on the cost of debt

	Single equation				Endogenous switching			
	MP = 1		*MP* = 0		*MP* = 1		*MP* = 0	
Column	(1)	(2)	(3)	(4)	(5a)	(5b)	(6a)	(6b)
Cost of Debt	Public	Private	Public	Private	Public	Private	Public	Private
Access	-20.710**	13.288	26.574	-5.649	-18.282***	2.697	20.318	-5.275
	(-2.00)	(1.09)	(1.13)	(-0.65)	(-2.87)	(0.43)	(0.96)	(-0.91)
Controls	Included	Included	Included	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,967	3,909	754	4,049	2,967	3,909	754	4,049
Adj. R^2	0.611	0.398	0.196	0.391	H0: $Access_{Public} = Access_{Private}$		H0: $Access_{Public} = Access_{Private}$	
					χ^2 (p-value)= 31.35 (<0.01)***		χ^2 (p-value)= 0.86 (0.353)	

Table 7 Cross-sectional tests by home country institutions when the bond market is more important in a country (*MP* = 1)

Cross-sectional tests partitioned by home country institutions in the important bond markets (*MP* = 1). Following Ball et al. (2018), the important bond markets (*MP* = 1) are defined based on our sample mean using data from the Global Financial Development database provided by the World Bank. Panel A reports the results of estimating the effects of PCAOB international inspection access on the proportion of public debts to total debts in a firm-year in Equation (1). The *Access* variable is replaced by *Access_H* and *Access_L* based on the respective home country institutions including rule of law, property rights, creditor rights, the efficiency of bankruptcy, and auditor litigation. *Access_H* (*Access_L*) equals one if a country's institutional factor is higher (lower) than the sample mean, and zero otherwise. Panel B reports the results of estimating the effects of PCAOB inspection access on the cost of public and private debt using the endogenous switch model in Equation (2). The robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The impact of PCAOB international inspection access on the debt market choice

Dependent Variable	Public Ratio				
Column	(1)	(2)	(3)	(4)	(5)
Home country institutions	Rule of Law	Property Rights	Creditor Rights	Efficiency of Bankruptcy	Auditor litigation
Access_H	0.041	0.065***	0.009*	0.041	0.052**
	(1.51)	(2.60)	(1.93)	(1.59)	(2.07)
Access_L	0.205***	0.293***	0.117***	0.210***	0.231***
	(6.91)	(7.43)	(4.40)	(5.63)	(6.34)
Control Variables	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	3,981	3,981	3,981	3,981	3,680
F-Statistics:					
Access_H= Access_L	34.63***	15.73***	16.26***	19.10***	22.76***

Panel B: The impact of PCAOB international inspection access on the cost of public and private debt

Dependent Variable	Cost of Debt									
Home Country Institutions	Rule of Law		Property Rights		Creditor Rights		Efficiency of Bankruptcy		Auditor Litigation	
Column	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)	(5a)	(5b)
Cost of Debt	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
Access_H	-1.947	8.154	-5.230*	6.525	4.151	-3.246	-7.143	6.621	-9.827*	7.630
	(-0.28)	(1.16)	(-1.79)	(1.00)	(0.51)	(-0.48)	(-0.76)	(0.94)	(-1.72)	(1.05)
Access_L	-32.878***	-7.933	-87.531***	-18.180	-36.430***	19.761	-23.335***	-5.019	-29.692***	1.501
	(-4.78)	(-0.91)	(-7.09)	(-1.46)	(-4.79)	(0.95)	(-3.31)	(-0.56)	(-4.25)	(0.17)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,967	3,909	2,967	3,909	2,967	3,909	2,967	3,909	2,778	3,815
F-Statistics:										
Access_H= Access_L	9.34***	14.56***	24.84***	15.78***	9.33***	9.64***	12.61***	12.82***	17.20***	10.53***
$(Access_H)_{public}= (Access_H)_{private}$	5.78**		9.90***		0.98		15.00***		8.33***	
$(Access_L)_{public}= (Access_L)_{private}$	68.98***		13.31***		17.72***		10.28***		19.28***	

Table 8 Dynamics of the effect of PCAOB international inspection access.

Panel A reports the results of estimating the effects of PCAOB inspection access in year *t-1*, *t*, and *t+n*, on the choice of public versus private debt (Columns (1) and (2)), the proportion of public debt to total debt (Column (3)), and the cost of public and private debt (Columns (4a) and (4b)), respectively, based on the pooled sample. Panel B reports the results of estimating the effect of PCAOB international inspection access in year *t-1*, *t*, and *t+n*, on the cost of public and private debt (Columns (4a) and (4b)) using the endogenous switching model and the sample of the important bond markets (*MP* = 1). Following Ball et al. (2018), the important bond markets (*MP* = 1) are defined based on the sample mean using data from the Global Financial Development database provided by the World Bank. For coefficients, the robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. For F-statistics, the p-values are repoted in the parentheses. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Dynamics of the effect of PCAOB international inspections on a firm's debt financing

	Pr.(Public=1) Issue-level	Pr.(Public=1) Firm-level	Public ratio Firm-level	Cost of Debt Endogenous Switching Model	
Column	(1)	(2)	(3)	(4a)	(4b)
	Marginal Effects	Marginal Effects	Coefficients (t-statistics)	Cost of Public Debt	Cost of Private Debt
$Access_{t-1}$	0.009	0.010	0.027	6.173	10.349
	(0.54)	(0.62)	(1.21)	(0.98)	(1.22)
$Access_{t}$	0.059***	0.075***	0.090***	-17.722**	-11.259**
	(3.07)	(3.67)	(4.85)	(-2.56)	(-2.44)
$Access_{t+n}$	0.067***	0.056**	0.137***	-44.053***	25.849***
	(2.69)	(2.19)	(5.76)	(-4.57)	(4.86)
Control Variables	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
F-Statistics:					
$(Access_t)_{Public} = (Access_t)_{Private}$				32.92*** (<0.01)	
$(Access_{t+n})_{Public} = (Access_{t+n})_{Private}$				22.61*** (<0.01)	
Observations	9,352	7,243	7,243	3,772	8,515

Panel B: Dynamics of the effect of PCAOB international inspections on the cost of debt when the bond market is more important in a country (*MP* = 1)

	Single Equation		Cost of Debt Endogenous Switching Model	
Column	(1)	(2)	(3a)	(3b)
Cost of Debt	Public	Private	Public	Private
$Access_{t-1}$	-9.316	9.315	6.410	7.695
	(-0.96)	(0.70)	(1.04)	(1.59)
$Access_{t}$	-24.533**	4.978	-18.086***	-12.610
	(-2.17)	(1.01)	(-2.65)	(-2.63)
$Access_{t+n}$	-19.187***	20.842	-15.941***	23.674
	(-2.62)	(1.61)	(-2.80)	(1.27)
Control Variables	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
F-Statistics:				
$(Access_{t})_{Public} = (Access_{t})_{Private}$			9.46*** (<0.01)	
$(Access_{t+n})_{Public} = (Access_{t+n})_{Private}$			17.02*** (<0.01)	
Observations	2,967	3,909	2,967	3,909

Table 9 The impact of PCAOB inspection reports on a firm's debt financing.

Panel A report the effect of PCAOB international inspection access (*Access*) and report (*Report*) on the choice of public versus private debts (Columns (1) and (2)), the proportion of public debts to total debt (Column (3)), and the costs of public and private debts (Columns (4a) and (4b)), respectively, based on the pooled sample. Following Lamoreaux et al. (2020), *Report* is a binary variable set to one in the years after an auditor's first PCAOB inspection report is publicly available, and zero otherwise. Panel B reports the effect of PCAOB inspection reports based on the countries that allow PCAOB international inspection access (*Access* = 1). *Def* is a binary variable equal to one when the PCAOB inspection report indicates at least one deficiency in the inspected audit engagement(s), and zero otherwise. For coefficients, the robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. For F-statistics, the p-values are repoted in the parentheses. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The impact of PCAOB inspection reports on a firm's debt financing

Dependent Variable	Pr.(Public=1) Issue-level	Pr.(Public=1) Firm-level	Public ratio	Cost of Debt Endogenous Switching Model	
Column	(1)	(2)	(3)	(4a)	(4b)
	Marginal	Marginal	Firm-level	Public	Private
Access	0.457**	0.491***	0.062***	-16.158***	-5.808*
	(2.50)	(2.84)	(3.79)	(-2.60)	(-1.77)
Report	0.209**	0.171**	-0.024	-3.675***	-9.504***
	(2.45)	(2.22)	(-1.59)	(-2.97)	(-2.77)
Control Variables	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	9,352	7,243	7,243	3,772	8,515
Observations of *Access* = 1	5,931	4,727	4,727	3,134	4,949
Observations of *Report* = 1	3,444	2,829	2,829	2,203	2,657
Observations of *Def* = 1	1,747	1,459	1,459	1,070	1,167
F-Statistics:					
Access = *Report*	6.42** (0.01)	6.93*** (<0.01)	14.95*** (<0.01)		
$Access_{Public} = Access_{Private}$				12.30*** (<0.01)	
$Report_{Public} = Report_{Private}$				0.95 (0.33)	

Panel B: The information content of PCAOB inspection reports

Dependent Variable	Pr.(Public=1)	Pr.(Public=1)	Public ratio	Cost of Debt Endogenous Switching Model	
Column	(1)	(2)	(3)	(4a)	(4b)
	Issue-level	Firm-level	Firm-level	Public	Private
	Marginal Effects	Marginal Effects			
Report	0.226**	0.169**	0.016	-11.207***	-3.510
	(2.17)	(2.01)	(1.21)	(-2.86)	(-0.76)
*Report*Def*	0.215	0.142	-0.025*	4.932**	2.692**
	(1.00)	(0.82)	(-1.86)	(2.36)	(2.56)
Control Variables	Included	Included	Included	Included	Included
Country, Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations (Obs.)	5,931	4,727	4,727	3,134	4,949
Obs. of *Report* = 1	3,444	2,829	2,829	2,203	2,657
Obs. of *Def* = 1	1,747	1,459	1,459	1,070	1,167
F-statistics:					
Report +*Report*Def* =0	3.01* (0.08)	3.03* (0.08)	3.10* (0.07)	3.14*	29.66***
$Report_{Public}$ = $Report_{Private}$				27.97*** (<0.01)	
$(Report*Def)_{Public}$ = $(Report*Def)_{Private}$				0.19 (0.63)	
$(Report+Report*Def)_{Public}$ = $(Report+Report*Def)_{Private}$				34.62*** (<0.01)	

Table 10 The impact of PCAOB international inspection access on bank loan covenants.

This table reports the results of estimating the effects of PCAOB international inspection access on the indicator variables capturing whether the loan contains any collateral requirement, whether the loan contract contains any covenant, and whether the loan contract contains at least one tight covenant. Marginal effects are reported. The robust t-statistics are reported in parentheses based on standard errors clustered at country-auditor level. All variables are defined in Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Column	(1)	(2)	(3)
Issue-level	Pr.(Secured=1)	Pr.(Covenant=1)	Pr. (Tightness=1)
	Marginal Effects	Marginal Effects	Marginal Effects
Access	-0.555***	-0.318**	-0.213*
	(-3.77)	(-2.07)	(-1.82)
BIG4	-0.231	-0.152	-1.360**
	(-0.65)	(-1.30)	(-2.12)
IFRS	0.220	1.344***	0.925***
	(1.37)	(7.22)	(3.58)
Local_regulator	-0.230	-0,999*	-0.510
	(-1.00)	(-1.88)	(-0.98)
Lev	1.951***	0.397*	0.927**
	(4.73)	(1.67)	(2.43)
Size	0.230***	0.068	-0.220***
	(4.93)	(0.97)	(-4.03)
TANG	-0.059	-0.234	-0.480
	(-0.17)	(-0.50)	(-1.11)
MTB	0.171	-0.385***	-0.667***
	(1.44)	(-2.61)	(-3.86)
ROA	-2.898***	-0.265	-1.123
	(-2.71)	(-0.26)	(-0.90)
Ret	-0.130	-0.016	-0.006
	(-1.22)	(-0.24)	(-0.04)
Ret_SD	0.004	0.013	0.001
	(0.59)	(1.16)	(0.02)
O-Score	0.123**	0.212***	0.243**
	(2.23)	(2.98)	(2.44)
Invest_grade	-0.320	-1.004***	-0.197
	(-1.24)	(-2.83)	(-0.49)
Rated	-0.023	-0.481	-0.238
	(-0.14)	(-1.39)	(-0.57)
Cap_access	-0.202	-0.458*	-0.146
	(-1.01)	(-1.66)	(-0.35)
GDPG	-0.030	0.005	-0.043
	(-1.19)	(015)	(-0.98)
Country_rating	-0.112	-0.049	-0.342**
	(-1.78)	(-0.36)	(-1.97)

Loan Type	Yes	Yes	Yes
Loan Purpose	Yes	Yes	Yes
Country, Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Obs.	8,577	8,577	8,577
Pseudo R^2/Adj. R^2	0.144	0.163	0.183

Appendix: Variable Definitions

Variables		Definitions
Public	=	an indicator constructed for each observation in the total sample of public bonds and private loans in year *t+1*, which is equal to 1 if a firm borrows from the public market and 0 if a firm borrows from private lenders;
Public ratio	=	a continuous variable indicating the proportion of public debt in total debt for each firm in year *t+1*, where the proportion is calculated as the amount of public debt issued in year *t+1* divided by the sum of public and private debts issued in year *t+1*;
Cost of debt	=	Cost of debt in year *t+1*. For public bonds, the basis point spread over the benchmark government bond with comparable maturity and in the same currency; for private loans, the basis point spread that borrowers pay over LIBOR (or the LIBOR equivalent) for the drawn portion of the loan facility;
Access	=	an indicator equal to 1 if a country allows PCAOB inspections in the year *t*, and 0 otherwise;
Local_regulator	=	an indicator equal to 1 if a firm is domiciled in a country with a local audit regulator in year *t*, and 0 otherwise;
BIG4	=	an indicator equal to 1 for a firm's financial statement is audited in year *t* by a big-four affiliated auditor (i.e., Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers), and 0 otherwise;
IFRS	=	an indicator equal to 1 if a firm reports its annual financial statements under International Financial Reporting Standards (IFRS) in year *t*, and 0 otherwise;
Lev	=	leverage defined as the ratio of long-term debt to total assets in year *t*;
Size	=	natural logarithm of total assets in U.S. dollars in year *t*;
TANG	=	tangibility defined as the ratio of net property, plant, and equipment to total assets in year *t*;
Current_ratio	=	the ratio of current assets to current liabilities in year *t*;
MTB	=	market-to-book ratio defined as a firm's market value divided by its book value in year *t*;
ROA	=	return on assets defied as the ratio of earnings before interest and tax to total assets in year *t*;
Ret	=	natural logarithm of the monthly return index on the first day of month *m* divided by the monthly return index on the first day of month *m-12* in year *t*; the return index (RI) data is from Datastream;
Ret_SD	=	the standard deviation of the monthly return index over the fiscal year *t*;
Rated	=	an indicator equal to 1 if a firm is rated by Standard & Poor's in year *t* and 0 otherwise;
O-Score	=	the measure of default risk developed by Ohlson (1980) in year *t*;
Invest_grade	=	an indicator equal to 1 if a firm's Standard & Poor's or estimated credit rating is BBB- or higher and therefore classified as investment grade in year t, and 0 otherwise;
Cap_access	=	an indicator equal to 1 if a firm has public bonds issued in year *t-1*, and 0 otherwise;
GDPG	=	annual growth of gross domestic product (GDP) at market prices in year *t+1* based on constant local currency from International Monetary Fund (IMF) database;
Country_rating	=	numerical conversion of Standard & Poor's sovereign credit rating ranging from 1 to 23 for ratings D to AAA+ in year *t+1*, based on Reeb et al. (2001);
Amount	=	natural logarithm of bond and loan amounts in U.S. dollars in year *t+1*;
Maturity	=	natural logarithm of the number of months between issue and maturity date of a bond or loan in year *t+1*;

Secured	=	an indicator equal to 1 if a bond or loan is secured with collateral requirements in year *t+1*, and 0 otherwise;
Term_spread	=	the difference between ten-year and two-year government bond rate in each country-month in year *t*;
DTD	=	the year-month distance to default measure at firm level in year *t*; the data is from Credit Research Initiative at National University of Singapore;
MP	=	an indicator equal to 1 if the aggregate market capitalization of public bonds in percent of GDP in a country is greater or equal to the mean of this measure in the sample, and 0 otherwise following Ball et a. (2018);
Report	=	an indicator equal to 1 for fiscal years after the public disclosure of initial PCAOB inspection report, and 0 otherwise;
Def	=	an indicator equal to 1 for fiscal years after the public disclosure of an initial PCAOB inspection report that indicates at least one audit deficiency in the inspected audit engagement(s), and 0 otherwise;
Covenant	=	an indicator equal to 1 if a loan facility has at least one covenant in year *t+1*, and 0 otherwise;
Tightness	=	an indicator equal to 1 if a loan facility has at least one out of the two tight financial covenants in year *t+1*, and 0 otherwise; the two tight covenants are based on current ratio and debt-to EBITDA ratio, respectively;