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Does Audit Quality Affect Firms' Debt Structure?*

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Abstract

Using a large sample of US firms, we show that high audit quality is associated with a higher proportion of public debt and correspondingly a lower proportion of bank debt in firms' debt financing. The findings are robust to endogeneity issues, alternative measures of audit quality, and alternative model specifications. We also find that the effect of audit quality on the debt mix is stronger in firms with high information asymmetry and poor governance. The results suggest that high audit quality improves firms' transparency, alleviating the concerns of public lenders and thereby enabling firms to borrow more information-sensitive public debt. Particularly, the results suggest that high audit quality mitigates the post-contract moral hazard between public debtholders and managers, which in turn reduces the advantage of bank loans arising from bank monitoring. Last, we show that audit quality is incrementally effective and has a substitutive effect over accruals quality (i.e. audit quality is more effective in shifting the debt preference towards public debt when accruals quality is lower).

***Keywords*:** Audit Quality, Debt Financing Choice, Information Asymmetry, Corporate Governance

***JEL Classification*:** G21, G32, M42

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I. Introduction

There are two major sources of debt financing for US public firms. They can issue debt securities to arms-length investors such as public bondholders (public debt) or borrow directly from financial intermediaries such as commercial banks (bank debt). Both public and bank debt constitute significant proportions of overall debt. However, the relative composition of these two sources of debt varies significantly over time (Federal Reserve, 2014).[4] Given the increase in debt financing and the change in debt composition over time, the investigation of firms' choice between public debt and bank debt has become an increasingly important research question.[5]

Both public and private lenders face two agency costs—adverse selection before the loan is contracted and moral hazard on the use of the loan amount after the contract. To reduce both costs, public lenders rely on public information, whereas banks use both public and private information. In the absence of reliable public information, both the adverse selection and moral hazard costs faced by public lenders are high, whereas banks could reduce these costs by collecting private information and through monitoring.[6] High-quality audits improve the reliability of financial statements and related disclosures, which not only reduces adverse selection before the loan but can also decrease moral hazard by ensuring that the funds are properly utilised and accounted for. Audits, because they improve the public information, alter the incentive for private information collection by banks. By altering the costs and benefits of public and private lenders differentially, high-quality auditing has the potential to affect a firm's debt structure. By documenting that audit quality affects a firm's debt structure, we provide empirical evidence about the effect of information asymmetry on financing choice.

An auditor's primary role is to assure that clients' accounting choices are compliant with generally accepted accounting practices (GAAP). However, managers have considerable discretion in the choice of accounting policies and estimates even when they comply with accounting rules. Higher quality auditors have both the incentive and the ability to pressure managers not merely to comply with GAAP but also to be conservative and avoid the risk of misstatement altogether. Higher quality auditors have a better reputation and face greater costs from audit failures because such failures lead to costly litigation, reputation loss, and a loss of clientele. The higher cost of audit failure incentivises them to redouble their audit effort to reduce the chance of audit failure. Consequently, high-quality audits result in more transparent and reliable financial statements (Myers *et al.*, 2003), lower discretionary accruals (Becker *et al.*, 1998), higher disclosure quality (Dunn and Mayhew, 2004), and lower probability of

[4] Rauh and Sufi (2010) find that about one quarter of US public firms experience significant changes in their debt composition from one year to the next, even though they show no significant change in their total leverage.

[5] The debt load for US corporations has reached a record of $6.3 trillion (S&P Global June 2018).

[6] Banks trade off the cost of monitoring and private information collection with adverse selection and moral hazard costs.

restatements (Chin and Chi, 2009). As a result, *ceteris paribus,* audit quality is negatively related to information asymmetry.

Several papers show that information asymmetry is a primary determinant of a firm's choice of the mix between public and bank debt (see, for example, Leland and Pyle, 1977; Campbell and Kracaw, 1980; Myers and Majluf, 1984; Diamond, 1984, 1991; Fama, 1985; Berlin and Loeys, 1988; Rajan, 1992; Park, 2000). Both public and bank debt are affected by two problems arising from information asymmetry. Prior to contracting for debt, firms with a high credit risk seek to pool with those with a low credit risk to get better access to loans from both private and public lenders, creating an adverse selection problem that is costly to both the lenders and the managers.[7] Both private and public lenders protect against the adverse selection problem by assessing the creditworthiness of the client. In the post-contract stage, managers could shift the use of borrowed funds to non-negotiated projects and other expenditures,[8] creating a moral hazard problem.

We identify three distinct ways in which audit quality could affect the mix of public and bank debt. High-quality auditing improves the information content of financial statements (Chen *et al.*, 2017). Bharath *et al.* (2008) show that firms with higher quality earnings prefer to issue public debt, *ceteris paribus.* Although banks have the ability and resources to collect private information about the borrower, the improved credibility of public information narrows the information advantage gap between banks and public lenders. By ensuring that the firm-specific information is more credible, high-quality auditors reduce the information advantage that banks have over public lenders in the pre-contract period and thereby facilitate a higher (lower) proportion of public (bank) debt to total debt for firms. We call this *the information effect*.

Banks have the advantage of private access to managers in the post-contract period. Prior research has extensively documented that the banks use this access to monitor the managers and ensure that their loans are serviced by the firm.[9] Public lenders generally do not have such private access (nor do they generally have the incentive to seek private access), and therefore they are less able to monitor managers after the loan is made. However, auditors are privy to the decisions made by managers in the disposition of the borrowed funds. Deviations from the contractual terms, especially self-serving allocations by managers, increase the audit

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[7] Facing adverse selection, lenders become overcautious and lose the opportunity to lend to some low-credit-risk clients. The low-credit-risk borrowers lose out by not getting the funds at a low cost that would have prevailed in the absence of adverse selection.

[8] Other expenditures include (but are not limited to) payment of dividends and stock buybacks that shift wealth from the lenders to shareholders as well as managerial perquisites and empire building projects that shift wealth to managers.

[9] Lummer and McConnell (1989) document the consequences of bank monitoring in terms of certification of credit quality and increased market valuation when firms obtain bank loans. Fields *et al.* (2006) find that the bank monitoring benefits have declined over time and are more relevant only to smaller and poorer performing firms or during periods of high credit spreads. Ongena and Roscovan (2013) argue that it is the competitive and skilled banks that can monitor better that provide market value rather than those banks which have easier access to private information about the firm.

risk by adversely affecting current and future cash flows and income. Higher quality auditors are better able to detect and deter such opportunistic managerial activities by managers (Jensen and Meckling, 1976; Becker *et al.*, 1998; Nelson *et al.*, 2002). Therefore, the monitoring by the auditors in the post-contract period reduces the moral hazard problem and thereby reduces the monitoring advantage of banks over public lenders. In effect, monitoring by auditors substitutes for monitoring by banks. This logic suggests, consistent with the information effect, that higher audit quality nudges the mix of loans towards a lower (higher) proportion of bank (public) debt. We call this *the monitoring effect*.

Compared with public loan contracting, the efficiency of bank loan contracting depends more on the credibility, verifiability, and enforceability of the debt covenants in the contract. A higher quality audit produces more precise accounting numbers that help banks in monitoring the borrower (reducing the moral hazard in bank debt) and thereby increase the contracting efficiency of bank lending contracts in terms of their enforceability. This argument suggests a positive relation between high audit quality and bank debt. We call this *the "monitoring complementarity effect".* In summary, the information effect and the monitoring effect predict that higher audit quality results in more public debt and less bank debt, whereas the monitoring complementarity effect predicts an increase in bank debt. Therefore, the overall effect of higher quality audit on the proportion of public debt is an empirical question.

Using a large sample of 4,271 non-financial US firms (25,869 firm-year observations), we empirically investigate how audit quality affects firms' debt financing choices. We obtain large-scale data on the proportion of public debt and bank debt in firms' total debt from Standard and Poor's (S&P) Capital IQ database, which is comprehensive and has only recently become available (Li *et al.*, 2019). Our measure of audit quality is auditor office size, defined as the size of the auditor's practice office that provides auditing services to the firm. Prior research shows that the size of individual offices provides a good proxy for audit quality as larger offices have greater collective human capital and greater "in-house" experience and expertise in dealing with public companies (Wallman, 1996; Francis, 2004; Francis and Yu, 2009; Choi *et al.*, 2010; Chen *et al.*, 2017). We obtain data about auditor office size from the Audit Analytics database, which provides information about the specific audit office that provides auditing and related services to each client firm.

Our extensive and large-scale sample results show that the firms audited by higher quality auditors have a higher proportion of public debt and a correspondingly lower proportion of bank debt in their debt financing compared to similar firms that are audited by lower quality auditors. These findings are consistent with the information effect that predicts that high-quality auditors reduce information asymmetry between managers and investors, which enables firms to issue more information-sensitive public debt. The findings are also consistent with the monitoring effect that predicts that greater monitoring by higher-quality auditors reduces the need for bank monitoring and induces firms to rely less (more) on bank

(public) financing.

We are cognisant of other potential arguments that can explain our main results. We address these concerns in several robustness checks. The first concern is that a single measure of audit quality might not be adequate (DeFond and Zhang, 2014). We conduct tests using both alternative model specifications and alternative measures of audit quality. Second, we conduct tests designed to address the omitted variables and selection bias problems. The results hold in all the tests. The third concern is that the result could be a result of differential capital access rather than capital choice. We address the issue of lack of access to public debt by examining a cross-section of firms that have issued both public and bank debt. Because the floatation costs of public borrowing are high, it is possible that smaller firms resort less to public financing vs. bank borrowing. We address this issue by using size-matched samples. To further mitigate the endogeneity concerns, we adopt a two-stage least squares (2SLS) approach and find results that are consistent with those from our baseline regression.

Since both the information and monitoring effects have similar predictions, our main analysis does not distinguish between the two. We conduct several channel tests to address this issue. Specifically, we show that the effect of audit quality on debt financing choices is stronger for firms with greater information risk. Since the marginal effect of audit quality is higher when firms face greater information risk, the findings support the information effect. Furthermore, we document that the impact of audit quality on debt financing choices is weaker when a firm's corporate governance is strong. Since firms with good corporate governance have less incremental monitoring need than those with poorer corporate governance, high-quality audits and strong governance mechanisms act as substitutes in explaining debt choice. These findings are consistent with both the information and the monitoring effects coexisting with each other.

In additional analyses, we show that audit quality is more effective than accruals quality in shifting the debt preference towards public debt and that audit quality and accruals quality have a substitutive relationship. Particularly, when the accruals quality is low, the effect of higher audit quality in shifting the debt towards public debt is stronger than when the accruals quality is high. To gain a dynamic perspective on the relationship between audit quality and debt structure, we explore the impact of audit quality on firms' decisions on fresh debt issuance (in addition to our main cross-sectional results). We find that firms with high audit quality are more likely to issue public debt than bank debt. This finding on the dynamic debt issuance decisions complements our finding of a cross-sectional relationship between audit quality and firms' debt structure. Further, we decompose public debt and bank debt into individual debt instruments and find that firms with better quality audits tend to use more subordinated bonds and notes and fewer term loans in debt financing. This result is consistent with our rationale because subordinated bonds are riskier than senior bonds and need the greater lender confidence that is provided by a high-quality audit.

Our study makes several contributions to the literature. First, our results constitute a significant addition to the results on the effect of earnings quality on the debt mix (Bharath *et al.*, 2008). Good accruals quality reduces the adverse selection problem for both public and bank lenders. While both banks and investment banks (underwriters of public debt) assess the borrowers to mitigate the adverse selection issue, the post-contract state provides a distinct point of difference between the accruals quality effect and the audit quality effect. At the post-contract stage, banks can directly monitor the borrowers and mitigate the moral hazard problem, but public lenders do not have similar access to borrowers. As duty-bound monitors of reporting by managers, auditors help reduce the moral hazard problem for public lenders in the post-contract stage. This mechanism of substitution does not become explicit when accruals quality alone is examined as the determinant of debt choice. We show that (1) audit quality has an incremental positive (negative) effect on public (bank) debt after controlling for earnings quality and (2) the effect of audit quality is stronger when the earnings quality is low. In other words, even when the accruals quality is low, there is a significant shift towards (away from) public (bank) debt in firms with higher audit quality. Although auditors undoubtedly play a significant role in improving the accruals quality, our results show that audit quality includes a second mechanism through which auditors affect the debt choice—that of higher quality auditors as external monitors. We contribute to the literature by showing that in addition to auditors contributing to accruals quality, there is a substitutive relation between accruals quality and audit quality. Relatedly, we show that there is a substitutive effect between auditor monitoring and bank monitoring.

Second, we contribute to the emerging literature on the determinants of firms' debt structure. Despite the increasing importance of debt financing in recent decades and the change in debt composition, empirical evidence on what determines firms' debt financing choices remains scarce, perhaps because large-scale and detailed data on firm debt structure have only become available recently (Boubakri and Saffar, 2019; Li *et al.*, 2019). Notable exceptions are Lin *et al.* (2013), Boubaker *et al.* (2017), and Boubakri and Saffar (2019), who examine how a firm's ownership structure (i.e. control-ownership divergence, multiple large shareholders, and state ownership) affects its debt structure; Florou and Kosi (2015), who investigate the impact of mandatory IFRS adoption on a borrowing firm's debt issuance; and Bharath *et al.* (2008), who show that accruals quality has a positive (negative) effect on public (bank) debt issuance for a sample of 709 firms. We contribute to this stream of research by documenting for a large sample of firms that audit quality is an important determinant of firms' debt choice.

Third, we contribute to the auditing literature. Chang *et al.* (2009) document that audit quality affects the financing decisions of firms in that the firms audited by Big Six auditors are more likely to use equity financing than debt financing. El Ghoul *et al.* (2016) show that the proportion of long-term debt in a firm's capital structure is higher when a Big Four auditor

audits the firm. We go one step further by showing that audit quality plays a significant role in firms' choice between debt instruments. Compared with public debt, bank debt usually involves more restrictive covenants and collateral requirements, which restrict a firm's operation. For example, Atanassov (2016) shows that firms that take on more public debt can afford to increase (risky) R&D expenditure, which in turn translates to more innovation. Our findings show that audit quality has a real effect on firm decision-making.

II. Literature Review and Hypotheses

2.1 Literature Review

As early as 1981, DeAngelo (1981) defined audit quality as "the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system and report the breach." By framing the definition in terms of probability, her definition recognises that auditors do not always face clear black-and-white violations of GAAP. Managers have great discretion in the choice of accounting and operating policies and in making estimates of accruals within the ambit of GAAP. For example, managers can choose revenue and cost recognition policies that can hugely impact the firm's short-term earnings. Managers have the discretion to estimate expected warranty and bad debt expenses, the useful lives of fixed assets, the percentage of completion of projects, the amount of intangible asset impairment, and the rate of return in computing the pension expense, among other things. The chief accountant of the enforcement division of the SEC has noted that managers could even violate SEC laws and commit fraud while being in technical compliance with GAAP (Liesman, 2002). Therefore, to improve the credibility of financial statements, auditors need to ensure that managers' choices of accounting policies and estimates are appropriate for a faithful representation of the financial condition of the firm even if they comply with GAAP. Standard setting in auditing has taken cognisance of the increasing role of judgments in auditing. In practice, numerous auditing standards require auditors to assure a level of financial reporting quality that exceeds simple compliance with GAAP. A case in point is Auditing Standard No. 14 that requires auditors to "evaluate the qualitative aspects of the company's accounting practices, including potential bias in management's judgments" (PCAOB, 2010). As such, independent and competent (high quality) auditors typically negotiate with managers to fine-tune their accounting policies and estimates and improve the precision and the information content of the financial statements.

However, the assurance that auditors provide regarding the financial statements is not directly observable. Indirect measures, such as size and specialisation, are typically used to measure audit quality. Simunic (1980) argues that larger auditors face higher litigation and reputation losses from audit failures and devote more resources to the audit than their smaller peers to prevent such losses. Larger auditors are also more independent because their revenues do not rely on any single client. Therefore, large auditors have both the incentive and the

ability to induce managers to adopt accounting policies that better reflect the firm's underlying economics. Becker *et al.* (1998) show that firms audited by non-Big Six auditors report higher discretionary accruals than those audited by Big Six auditors. Dunn and Mayhew (2004) and Chin and Chi (2009) find that industry-specialist auditors help client firms to enhance their disclosure quality and reduce their probability of accounting restatements.

More than 90% of listed firms in the United States are audited by the Big Four auditors. Therefore, classification based on the size of the auditor at the national level is too coarse as a measure of audit quality. Francis and Yu (2009) suggest that firms audited by the larger offices of Big Four auditors are more likely to receive more going-concern audit reports and to exhibit less aggressive earnings management behaviour than those audited by the smaller offices. The complexity of transactions and the technology employed by the client firms has increased exponentially in the last two decades. To audit these clients, there is a need for both technological resources and human expertise. In instances where the audit is conducted by larger offices, access to resources is easier and the cost of using those resources is lower (GAO, 2008). Therefore, auditor office size is a preferred metric for audit quality, and we use it as our primary measure of audit quality.

Although banks and public bondholders are both debtholders of firms, they have different characteristics. First, banks usually have concentrated ownership of debt claims, while most public bondholders have dispersed ownership. Existing theories suggest that public bondholders have weaker incentives to engage in costly information collection and borrower monitoring due to potential free-rider problems and duplication of monitoring cost (Diamond, 1991; Gonton and Winton, 2003). In contrast, because of concentrated ownership, banks have strong incentives and enjoy economies of scale in information acquisition. Concentrated ownership also helps banks to exercise power over managers through the threat of debt liquidation or renegotiation (Park, 2000). Therefore, banks are likely to be more informed about the client and to have higher monitoring efficiency than public bondholders.

Banks also have superior access to private information, some of it proprietary about the firm, compared to public bondholders. Therefore, firms are less inclined to provide proprietary private information to dispersed public bondholders than to banks (Bhattacharya and Chiesa, 1995). Banks can also acquire information actively through in-house communication with managers. For example, firms can disclose information to banks privately without violating Regulation Fair Disclosure, enabling the banks to obtain private information that is not publicly available. This access to private information enables banks to detect and deter managerial opportunistic behaviour more easily (Jensen and Meckling, 1976; Nelson *et al.*, 2002) than public bondholders.

2.2 Hypotheses Development

Myers (1984) argues that due to adverse selection costs, firms with high information asymmetry prefer internal funds over external funds. When internal funds are inadequate,

firms follow the pecking order and issue securities whose value varies to a lesser degree when private information is revealed to the market. Since public bondholders are less informed than banks, public debt is more sensitive to private information than bank debt (Myers and Majluf, 1984; Rajan, 1992; Park, 2000). Chen *et al.* (2017) show that high-quality auditing improves the credibility and information content of financial statements, which increases both the quantity and quality of firms' public information. They show that when more reliable public information is available, investors seek less private information because the collection of private information is costly, and the marginal benefit of private information is reduced. As a result, high-quality audits reduce information asymmetry and enable the client firms to issue more information-sensitive debt instruments, such as public debt.

In addition to the information effect given above, external monitoring plays a role in the choice between bank and public debt. Banks have a higher incentive, access, and ability to monitor managers than public bondholders, particularly after the loan is made. Thus, firms with greater monitoring needs are likely to find bank debt more accessible and easier to obtain than public debt (Houston and James, 1996). High-quality auditors can detect and deter managerial opportunistic activities and thereby reduce the moral hazard problem. The reduction in the agency problem, in turn, reduces the need for bank monitoring. In effect, firms with high-quality auditors are more (less) likely to issue public (bank) debt.

Both the information and monitoring effects predict that the proportion of public (bank) debt in total debt is higher (lower) for firms with high-quality audits. However, we also note that high-quality auditing results in more precise and accurate accounting numbers that can help banks to implement debt covenants more effectively. This could result in complementarity between bank and auditors. Whether the monitoring role of the auditor acts as a substitute for bank monitoring or complements bank monitoring is an empirical question. Because the predictions from the information and monitoring effects are likely to be stronger than the monitoring complementarity effect, we formulate our first hypothesis as follows:

Hypothesis 1: Firms audited by high-quality auditors have a higher proportion of public debt as opposed to bank debt.

Hypothesis 1 does not address the issue of whether the effect on the mix of bank and public debt is driven by the information effect, the monitoring effect, or both. To address this issue, we examine the channels through which high-quality auditing affects firms' choice between public debt and bank debt. The information effect is based on the reduction of information asymmetry. Information asymmetry is determined by various aspects of a firm's operations, including the nature of its business, such as industry and growth status, and stock-market conditions, such as investor sophistication and composition. We argue that if the firm has high information asymmetry because of various other factors (e.g. complex business operations), the impact of high-quality auditors on the firm's information environment is amplified. However, if the firm is already transparent, the marginal effect of the high-quality

audit is likely to be low. Therefore, we expect the effect of audit quality on debt financing choices to be stronger for firms with an opaque informational environment. This discussion leads to the second hypothesis:

Hypothesis 2: The effect of audit quality on firms' debt choice is stronger for firms with high information asymmetry.

Because high-quality auditors help both the shareholders and public bondholders in monitoring managers, the monitoring effect predicts that high-quality auditing reduces the need for bank monitoring and thus decreases the proportion of bank debt in total debt. In firms with strong corporate governance, managers are monitored by the board of directors and further scrutinised by institutional investors and other capital market participants. If firms are already well governed (e.g. having more independent boards and higher dedicated institutional ownership), the marginal effect of audit monitoring is likely to be lower compared to the context when the governance is weak. Our third hypothesis is based on this rationale.

Hypothesis 3: The effect of audit quality on firms' debt choice is stronger for firms with poorer corporate governance.

III. Sample, Variable Definitions, and Summary Statistics

3.1 Sample

To investigate how audit quality affects firms' debt financing choices, we use a large sample of US public firms over the period 2002 to 2015. We obtain auditor practice office data from Audit Analytics. Firms' debt financing data are obtained from the new S&P's Capital IQ database, which provides comprehensive data on debt structure from 2002 onwards (Colla *et al.*, 2013; Li *et al.*, 2019). Financial and stock market data are obtained from Compustat and CRSP. Debt rating and investment grade data are obtained from S&P. We exclude financial firms (SIC codes 6000–6999) and firms with missing variables from the sample. Following Francis and Yu (2009), we restrict our sample firms to those audited by Big N auditors. Our final sample contains 25,869 firm-year observations and 4,271 unique firms.

3.2 Regression Variables

3.2.1 Debt structure

Following Lin *et al.* (2013) and Boubakri and Saffar (2019), we consider two dependent variables, *Public debt* and *Bank debt*. *Public debt* is the ratio of public bonds to total debt. *Bank debt* is the ratio of bank loans to total debt. Public bonds are defined as the sum of senior bonds and notes, subordinated bonds and notes, and commercial papers. Bank loans are

defined as the sum of revolving credit and term loans. Total debt is the sum of term loans, revolving credit, senior bonds and notes, subordinated bonds and notes, commercial papers, capital leases, and other debt.

3.2.2 Audit quality

We measure auditor quality (*Audit quality*) by the auditor office size, which is the natural logarithm of the annual aggregate audit fees collected by the auditor's practice office that provides auditing services to the firm (Francis and Yu, 2009). Following Francis and Yu (2009), we restrict our sample to those firms that are audited by the Big N auditors so that our audit quality measure is not affected by the institutional differences between Big N and non-Big N auditors. Auditor office size has been used as a proxy for audit quality in numerous prior studies (Wallman, 1996; Francis, 2004; Francis and Yu, 2009; Choi *et al.*, 2010; Chen *et al.*, 2017).

3.2.3 Control variables

On the basis of the prior literature, we control for a wide range of firm characteristics in our regression: *Auditor tenure*, *Firm size*, *Tobin's Q*, *Leverage*, *Profitability*, *Tangibility*, *Debt rating*, and *Investment grade*. *Auditor tenure* is defined as the natural logarithm of the number of years the firm has retained its current auditor. Francis and Yu (2009) include auditor tenure as a control to avoid the omitted variables problem. *Firm size* is defined as the natural logarithm of total sales. Size could affect firms' debt financing choices because of the lower information asymmetry and economies of scale in large firms. Therefore, incentives for private creditors to monitor large firms are decreased (Houston and James, 1996). *Tobin's Q* is defined as the market value of assets minus deferred taxes, over book value of assets. We control for Tobin's *Q* because it is a proxy for a firm's growth opportunities and investment opportunities that could affect the firm's debt choice (Diamond, 1991; Hoshi *et al.*, 1993). *Leverage* is defined as the ratio of total debt to total assets, and *Profitability* is defined as the ratio of income before extraordinary items to total assets. Firms with more liabilities and profitable firms are likely to be those with better credit quality, which is critical to their debt choice (Diamond, 1991; Blackwell and Kidwell, 1998; Denis and Mihov, 2003). *Tangibility* is the ratio of property, plant, and equipment deflated by total assets. As a collateralisation for debt, tangible assets can mitigate lenders' risk (Williamson, 1988). *Debt rating* is a dummy variable equal to one if the firm has long-term debt rating from S&P and zero otherwise, and *Investment grade* is a dummy variable equal to one if the firm has an investment-grade long-term debt rating from S&P and zero otherwise. Similar to *Debt rating*, *Investment grade* is a proxy for credit quality, which determines firms' debt choice (Diamond, 1991).

3.3 Descriptive Statistics

Table 1 presents the descriptive statistics for the main variables. The mean value for

Table 1 Summary Statistics

	Mean	S.D.	25%	Median	75%
Public debt	0.502	0.417	0.000	0.571	0.944
Bank debt	0.377	0.403	0.000	0.198	0.825
Audit quality	3.552	1.313	2.730	3.705	4.474
Auditor tenure	2.019	0.996	1.386	2.079	2.773
Firm size	6.530	1.666	5.399	6.694	7.902
Tobin's Q	1.514	1.268	0.781	1.125	1.760
Leverage	0.276	0.224	0.109	0.244	0.386
Profitability	-0.034	0.258	-0.022	0.031	0.068
Tangibility	0.300	0.247	0.097	0.218	0.460
Debt rating	0.425	0.494	0.000	0.000	1.000
Investment grade	0.198	0.398	0.000	0.000	0.000
Obs.			25,869		

The table presents the mean, standard deviation (S.D.), 25th percentile (25%), median, and 75th percentile (75%) of each variable.

Public debt is 0.502, while the median is 0.571. These values indicate that more than 50% of US firms' total debt is issued using public debt. The mean value for *Bank debt* is 0.377, while the median is 0.198.[10] Further, the average value for auditor office size is 3.552. With respect to the control variables, the average *Auditor tenure* is 2.019, while the median value is 2.079. The average firm size is 6.53. The mean value of *Tobin's Q* is 1.514. The mean leverage ratio for the sample firms is 0.276, and the mean profitability ratio is -0.034. The mean value of fixed assets to total assets is 0.3. In our sample, 42.5% of the firms have debt ratings, out of which 19.8% have investment grade ratings. Collectively, the descriptive statistics of our sample firms show that our sample is comparable with prior studies (Boubaker *et al.*, 2018; Li *et al.*, 2019).

Table 2 Correlation Matrix

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
(1) Public debt	1.000										
(2) Bank debt	-0.772	1.000									
(3) Audit quality	0.081	-0.080	1.000								
(4) Auditor tenure	0.189	-0.127	0.030	1.000							
(5) Firm size	0.366	-0.236	0.146	0.308	1.000						
(6) Tobin's Q	-0.066	-0.031	0.034	-0.088	-0.212	1.000					
(7) Leverage	0.232	-0.040	-0.010	-0.029	0.125	-0.049	1.000				
(8) Profitability	0.074	-0.003	0.036	0.164	0.446	-0.122	-0.081	1.000			
(9) Tangibility	0.140	-0.063	-0.085	0.029	0.163	-0.199	0.246	0.120	1.000		
(10) Debt rating	0.454	-0.320	0.095	0.197	0.618	-0.173	0.307	0.196	0.214	1.000	
(11) Investment grade	0.397	-0.330	0.096	0.278	0.521	-0.043	0.003	0.177	0.134	0.576	1.000

The table presents the correlation matrix of the variables.

[10] The sum of *Public debt* and *Bank debt* is less than one because there are capital lease and other debt components in total debt.

Table 2 presents the correlation matrix of the variables. The correlation matrix shows that *Audit quality* is positively related to *Public debt* and negatively related to *Bank debt*. Moreover, *Public debt* is positively correlated with *Auditor tenure*, *Firm size*, *Leverage ratio*, *Profitability*, *Tangibility*, *Debt rating*, and *Investment grade* and negatively correlated with *Tobin's Q*. In contrast, *Bank debt* is negatively correlated with all of the control variables.

IV. Main Analysis: The Effect of Audit Quality on Firms' Debt Financing Choices

4.1 Model Specification

We use the following regression model to examine the effect of audit quality on firms' debt financing choices:

$$\begin{aligned} Debt\ financing\ choices_{i,t} = {} & \beta_0 + \beta_1 Audit\ quality_{i,t} + \beta_2 Auditor\ tenure_{i,t} \\ & + \beta_3 Firm\ size_{i,t} + \beta_4 Tobin's\ Q_{i,t} \\ & + \beta_5 Leverage_{i,t}, + \beta_6 Profitability_{i,t} \\ & + \beta_7 Tangibility_{i,t} + \beta_8 Debt\ rating_{i,t} \\ & + \beta_9 Investment\ grade_{i,t} + Year\ F.E. \\ & + Industry\ F.E. + \varepsilon \end{aligned} \quad (1)$$

In the above expression, *i* and *t* are indicators for the firm and year, respectively. *Debt financing choices* are *Public debt* or *Bank debt*. We include year and industry fixed effects (*Year F.E.* and *Industry F.E.*) in the model. The *t*-statistics are computed using standard errors robust to clustering at the firm level and heteroscedasticity.

4.2 Results

Table 3 presents the regression results on how audit quality affects firms' debt financing choices. Column (1) presents the results using public debt as the dependent variable, while column (2) presents the results using bank debt as the dependent variable. When *Public debt* is the dependent variable, the coefficient on *Audit quality* is significantly positive (0.01, t = 2.625). However, when *Bank debt* is the dependent variable, the coefficient on *Audit quality* is significantly negative (-0.015, t = -3.943).

The signs of the coefficients on the control variables are largely consistent with the prior literature. More specifically, *Public debt* is positively associated with *Auditor tenure*, *Firm size*, *Leverage*, *Debt rating*, and *Investment grade* and negatively associated with *Profitability*. Moreover, consistent with our expectation, *Bank debt* is negatively associated with *Auditor tenure*, *Firm size*, *Tobin's Q*, *Debt rating* and *Investment grade* and positively associated with *Leverage* and *Profitability*.

Our findings show that firms audited by high-quality auditors have a higher proportion of public debt and a lower proportion of bank debt. This result supports our argument that a

high-quality audit reduces information asymmetry and enhances monitoring, enabling the client firms to issue more public debt.

Table 3 Debt Choice and Audit Quality

Dependent Variable:	*Public debt*	*Bank debt*
	(1)	(2)
Audit quality	0.010	-0.015
	(2.625)***	(-3.943)***
Auditor tenure	0.032	-0.022
	(7.018)***	(-4.728)***
Firm size	0.043	-0.026
	(9.404)***	(-5.646)***
Tobin's Q	0.003	-0.025
	(0.763)	(-6.648)***
Leverage	0.300	0.049
	(12.122)***	(2.024)**
Profitability	-0.088	0.147
	(-4.888)***	(8.069)***
Tangibility	-0.023	-0.006
	(-0.758)	(-0.204)
Debt rating	0.164	-0.163
	(11.363)***	(-11.678)***
Investment grade	0.176	-0.153
	(12.826)***	(-12.013)***
Obs.	25,869	25,869
Adj. R^2	0.305	0.187

The table presents the regression results on debt choice and audit quality. Constant and industry and year fixed effects are included in all the columns. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

4.3 Robustness Checks

We conduct several tests to ensure that our results are robust to varying model specifications, audit quality measures, additional control variables, matched sample regressions, and subsample analyses. Panel A of Table 4 presents the regression results using alternative model specifications. First, we partition audit quality and the control variables into decile rankings. The results remain unchanged. The effect of *Audit quality* on *Public debt* remains positive (0.004, t = 2.572), and its effect on *Bank debt* remains negative (-0.005, t = -3.195). Further, the results show that the effect of audit quality on debt choice is also economically significant. The increase in *Audit quality* from the first to the tenth decile results in increasing (decreasing) *Public debt* (*Bank loans*) by 0.004*9 = 3.6% (-0.005*9 = -4.5%) in the firm's debt composition. Since the mean *Public debt* and *Bank debt* are 50.2% and 37.3%, respectively, the magnitudes of these changes (around 10%) are significant.

Our main sample contains only Big N firms. In an additional test, we expand our sample by including non-Big N firms. The results show that our previous findings are not sensitive to

the inclusion of non-Big N firms. The coefficient on *Audit quality* is positive when *Public debt* is the dependent variable (0.009, t = 2.477), while the coefficient on *Audit quality* is negative when *Bank debt* is the dependent variable (-0.014, t = -3.692).

Panel B of Table 4 presents the results using alternative measures of audit quality. Our first alternative audit quality measure is the natural logarithm of aggregate total fees, where total fees are the sum of audit fees and non-audit fees. When the dependent variable is *Public debt*, the coefficient on our first alternative audit quality measure is positive (0.009, t = 2.53). When the dependent variable is *Bank debt*, the coefficient on our first audit quality measure is negative (-0.014, t = -3.841). The results suggest that our previous findings are robust to different auditor office size measures.

Our second and third alternative audit quality measures are auditor-level industry specialisation and auditor office-level industry specialisation. Auditors with industry specialisation have greater industry-specific knowledge and competence than other auditors. They can provide higher-quality audits because of their specific industry expertise (Dunn and Mayhew, 2004). Also, reputation losses to industry specialist auditors are larger in the case of audit failure. Therefore, they are less likely to compromise with clients' irregularities and misrepresentation behaviours. Prior literature also finds that auditor industry specialisation improves audit quality (DeFond *et al.*, 2000; Krishnan, 2003; Gul *et al.*, 2009). Thus, we use auditor industry specialisation as our alternative audit measure. For auditor-level industry specialisation, we define it, following Gul *et al.* (2009), as a dummy variable indicating whether the firm's auditor has the largest market share among all the auditors in the same industry, where industry classification is based on the two-digit SIC. For auditor office-level industry specialisation, we define it as a dummy variable, with a value of 1 indicating that the firm's auditor has the largest market share among all the auditor offices in the same industry. The results presented in Panel B of Table 4 remain unchanged. Firms whose auditors are industry specialists prefer more public debt over bank debt, consistent with our previous findings.

We then test the validity of our main findings by controlling for omitted variables. The results are presented in Panel C of Table 4. We first include a number of corporate governance variables as additional controls. The additional controls are *Dedicated institutional ownership*, *G-index*, *Board independence*, *CEO unity*, *Audit committee size*, and *Audit committee busyness*. *Dedicated institutional ownership* is defined as the proportion of shares held by institutional investors with a long investment horizon and concentrated ownership.[11] We construct *G-index* following Gompers *et al.* (2003). It is measured using the count of the number of anti-takeover provisions in a firm's charter and in the legal code of the state in which the firm is incorporated. *Board independence* is defined as the proportion of

[11] Thomson Financial provides institutional ownership data. Classification of institutional investor is from Brian Bushee's website at http://accounting.wharton.upenn.edu/faculty/bushee/IIclass.html.

independent directors on the board. *CEO unity* is a dummy variable equal to one if the CEO and the Chairman of the board are the same and zero otherwise. *Audit committee size* is the natural logarithm of the number of audit committee members. *Audit committee busyness* is the percentage of directors in the audit committee that have more than one outside directorships.[12] Including these corporate governance variables as additional controls does not alter our findings. The coefficient on *Audit quality* is positive when *Public debt* is the dependent variable (0.008, $t = 2.131$). The coefficient on *Audit quality* is negative when *Bank debt* is the dependent variable (-0.014, $t = -3.536$).

The models in our main analysis include year and industry fixed effects. In the next test, we replace industry fixed effects with firm fixed effects. The results are not sensitive to the inclusion of firm fixed effects. The coefficient on *Audit quality* is positive when *Public debt* is the dependent variable (0.007, t=2.008), while the coefficient on *Audit quality* is insignificant when *Bank debt* is the dependent variable. Third, we examine whether changes in *Audit quality* have any effect on changes in firm debt choice. Specifically, we regress the one-year change in public debt or bank debt against concurrent changes in auditor office size and the control variables. The coefficient on the change in auditor office size is positive when *Public debt* is the dependent variable (0.005, $t = 1.832$) and insignificant when *Bank debt* is the dependent variable.

Further, we run the regression on a matched sample to mitigate the concern that our findings are driven by differences in firm fundamentals among firms with high and low audit quality. We conduct a matched sample analysis by auditor office size, auditor-level industry specialisation, and auditor office-level industry specialisation. Specifically, we divide the sample firms in each year into two groups based on auditor office size. We match each firm in the large auditor office size group with a firm from the small auditor office size group. The matchings are based on the two-digit SIC industry codes and the closest firm size, without replacement. Our matched sample results presented in Panel D of Table 4 show that the coefficient of *Audit quality* is positive when the dependent variable is *Public debt* (0.013, $t = 3.074$) and negative when the dependent variable is *Bank debt* (-0.016, $t = -3.758$).

In our last set of tests, we perform a number of subsample analyses to address the concern that our findings are driven by firms in our sample that do not have access to public debt. We run regressions for the subsamples of large firms (i.e. firms whose size is above the sample median), firms with non-zero public debt, and firms that have a debt rating, respectively. Large firms and firms with a debt rating are likely to have access to the public debt market. Firms that have already issued public debt earlier have demonstrable access to the public debt market. The results of the subsample analyses are presented in Panel E of Table 4. In the vast majority of the analyses, the coefficient on *Audit quality* remains positive when the dependent variable is *Public debt* and negative when the dependent variable is *Bank debt*.

[12] Data used to measure governance index and board of directors are from RiskMetrics.

Table 4 Robustness Checks

Dependent Variable:	*Public debt* (1)	*Bank debt* (2)
Panel A Alternative specifications		
(1) Decile ranking regression		
	0.004	-0.005
	(2.572)**	(-3.195)***
(2) Including both Big N and non-Big N firms		
	0.009	-0.014
	(2.477)**	(-3.692)***
Panel B Alternative measures of audit quality		
(1) Measure auditor office size by total fees		
	0.009	-0.014
	(2.530)**	(-3.841)***
(2) Auditor-level industry specialisation as measure of audit quality		
	0.006	-0.021
	(0.647)	(-2.315)**
(3) Auditor office-level industry specialisation as measure of audit quality		
	0.036	-0.051
	(1.834)*	(-2.934)***
Panel C Omitted variable		
(1) With additional controls		
	0.008	-0.014
	(2.131)**	(-3.536)***
(2) With firm fixed effects		
	0.007	-0.002
	(2.008)**	(-0.700)
(3) Changes analysis		
	0.005	-0.002
	(1.832)*	(-0.670)
Panel D Matched sample analysis		
	0.013	-0.016
	(3.074)***	(-3.758)***
Panel E Subsample analysis		
(1) Subsample by firm size		
	0.010	-0.013
	(1.795)*	(-2.732)***
(2) Subsample with non-zero public debt		
	0.010	-0.012
	(2.759)***	(-3.697)***
(3) Subsample with debt rating		
	0.003	-0.007
	(1.219)	(-3.051)***

The table presents the regression results for various robustness checks. For the sake of brevity, the table only reports the coefficient of audit quality. Constant and industry and year fixed effects are included in all the tests. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Our robustness checks suggest that our previous findings are not sensitive to different model specifications, alternative measures of audit quality, omitted variables, or using a matched sample, or driven by selective access to public debt. In all cases, firms audited by high-quality auditors have a higher proportion of public debt and a lower proportion of bank debt in their debt structure.

4.4 Instrumental Variable

Although the tests presented in panels C, D, and E of Table 4 give us some assurance that our evidence is robust to different sources of endogeneity, we complement our endogeneity test by using a 2SLS regression approach. We use an instrumental variable approach to control for endogeneity arising from certain omitted factors that affect both the decision to engage high-quality auditors and the firm's debt financing. With an appropriately chosen instrumental variable, the 2SLS method provides consistent estimates in the presence of potential omitted correlated variables (Larcker and Rusticus, 2010). Following Chen *et al.* (2017), we use the instrumental variable *Local office size*, which is defined as the distance-weighted average auditor office size within a 500-mile radius of the firm. The weight is the reciprocal of the geographic distance between the firm and the auditor's office. To determine the distance, we manually collect the geographic location of the auditor's practice offices from the Audit Analytics database. Data on the geographic location of the headquarters of our sample firms are obtained from Compustat. We calculate the geographic distance between the auditor and the client on the basis of the latitude and longitude of their locations using Vincenty's (1975) equations. *Local office size* is an appropriate instrumental variable because it is closely related to the firm's auditor office size, while it is unlikely to influence the firm's debt structure other than through a firm's auditor office size.

The results of this analysis are presented in Table 5. Column (1) shows the results of the first-stage regression. In the first stage, the dependent variable is *Audit quality*, and we include *Local office size* and the same controls in the second stage. The coefficient of *Local office size* is significantly positive (0.919, t = 35.932), suggesting that it is a good predictor of *Audit quality*. To check the validity of our instrument, we conduct two tests. We first run an F-test of the excluded exogenous variable. The results reject the null hypothesis that the instrument does not explain audit quality. We also conduct a Kleibergen-Paap *rk* LM test, which rejects the null hypothesis that the model is under-identified at the 1% level. The results of the second stage are presented in columns (2) and (3). The coefficient on instrumented *Audit quality* remains positive when *Public debt* is the dependent variable (0.02, t = 2.677). The coefficient on instrumented *Audit quality* remains negative when *Bank debt* is the dependent variable (-0.017, t = -2.292). Collectively, the results show that our findings are unlikely to be driven by endogeneity.

Table 5 Instrumental Variables

	First-stage Regression	Second-stage Regression	
Dependent Variable:	*Audit quality*	*Public debt*	*Bank debt*
	(1)	(2)	(3)
Instrumental variable	0.919		
	(35.932)***		
Instrumented audit quality		0.020	-0.017
		(2.677)***	(-2.292)**
Auditor tenure	-0.009	0.031	-0.018
	(-0.564)	(6.102)***	(-3.495)***
Firm size	0.092	0.042	-0.026
	(6.670)***	(8.518)***	(-5.347)***
Tobin's Q	0.001	0.003	-0.026
	(0.092)	(0.763)	(-6.378)***
Leverage	-0.081	0.313	0.053
	(-1.047)	(11.605)***	(2.036)**
Profitability	-0.145	-0.085	0.141
	(-2.710)***	(-4.521)***	(7.385)***
Tangibility	0.038	-0.009	-0.020
	(0.387)	(-0.275)	(-0.607)
Debt rating	0.039	0.159	-0.160
	(0.924)	(10.357)***	(-10.884)***
Investment grade	-0.039	0.164	-0.147
	(-0.765)	(10.932)***	(-10.746)***
Obs.	22,872	22,872	22,872
Adj. R^2	0.463	0.286	0.176

The table presents results for two-stage least squares regression (2SLS). Constant and industry and year fixed effects are included in all the tests. *t*-statistics (in parentheses) are computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

V. Channel Tests

The above results show that firms audited by high-quality auditors have a higher proportion of public debt relative to bank debt in their debt mix. In this section, we analyse whether this result is driven by the information effect, the monitoring effect, or both. We examine whether the relationship varies across firms with different levels of information asymmetry and corporate governance. This analysis not only provides insights into the channels through which the documented relationship operates but also strengthens identification given that this link is unlikely to arise if our measure of audit quality simply reflects unobserved economic forces.

5.1 The Role of Information Asymmetry

Higher quality auditors are more effective in reducing information asymmetry. Information asymmetry could be influenced by other factors, such as operating complexity, firm growth, or firm disclosures. We argue that when the information asymmetry is high, the

Table 6 Cross-Sectional Tests by Information Uncertainty

Panel A Financial Market Uncertainty

	Subsamples by *Probability of informed trading*				Subsamples by *Analyst forecast dispersion*			
	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty
Dependent Variable:	*Public debt*		*Bank debt*		*Public debt*		*Bank debt*	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Audit quality	0.014	0.005	-0.021	-0.010	0.015	0.003	-0.018	-0.009
	(3.059)***	(0.819)	(-4.276)***	(-1.878)*	(2.884)***	(0.585)	(-3.409)***	(-1.721)*
Auditor tenure	0.020	0.029	-0.007	-0.019	0.041	0.036	-0.029	-0.030
	(3.326)***	(4.315)***	(-1.115)	(-3.002)***	(6.603)***	(5.415)***	(-4.563)***	(-4.502)***
Firm size	0.022	0.034	-0.003	-0.013	0.053	0.044	-0.035	-0.029
	(3.532)***	(4.727)***	(-0.441)	(-1.871)*	(8.693)***	(5.620)***	(-5.731)***	(-3.718)***
Tobin's Q	-0.006	-0.001	-0.023	-0.016	0.004	-0.008	-0.032	-0.014
	(-1.169)	(-0.207)	(-4.167)***	(-2.930)***	(0.957)	(-1.178)	(-6.491)***	(-2.169)**
Leverage	0.346	0.366	0.039	-0.018	0.333	0.282	0.035	0.049
	(11.988)***	(9.731)***	(1.301)	(-0.526)	(10.255)***	(6.442)***	(1.112)	(1.089)
Profitability	-0.101	-0.082	0.139	0.123	-0.035	-0.065	0.070	0.175
	(-4.803)***	(-2.766)***	(6.608)***	(4.153)***	(-1.548)	(-1.372)	(2.894)***	(3.406)***
Tangibility	-0.035	-0.041	0.051	0.001	-0.034	0.011	0.000	-0.073
	(-0.896)	(-0.926)	(1.263)	(0.036)	(-0.856)	(0.244)	(0.005)	(-1.618)
Debt rating	0.189	0.106	-0.209	-0.087	0.162	0.107	-0.154	-0.107
	(9.985)***	(5.082)***	(-11.074)***	(-4.511)***	(8.859)***	(4.860)***	(-8.656)***	(-5.095)***
Investment grade	0.106	0.178	-0.093	-0.163	0.115	0.231	-0.101	-0.207
	(3.665)***	(10.152)***	(-3.264)***	(-10.279)***	(6.704)***	(11.588)***	(-6.464)***	(-11.073)***
Obs.	9,328	9,328	9,328	9,328	9,304	9,304	9,304	9,304
Adj. R^2	0.184	0.294	0.097	0.192	0.287	0.366	0.156	0.262

Panel B Operating Uncertainty

	Subsamples by *Cash flow volatility*				Subsamples by *R&D*			
	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty	High uncertainty	Low uncertainty
Dependent Variable:	*Public debt*		*Bank debt*		*Public debt*		*Bank debt*	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Audit quality	0.013	0.006	-0.015	-0.013	0.012	0.005	-0.017	-0.006
	(2.756)***	(1.205)	(-2.946)***	(-2.878)***	(1.684)*	(0.700)	(-2.347)**	(-0.845)
Auditor tenure	0.036	0.028	-0.022	-0.025	0.033	0.019	-0.018	-0.017
	(6.442)***	(4.598)***	(-3.798)***	(-4.285)***	(3.750)***	(2.421)**	(-1.832)*	(-2.073)**
Firm size	0.045	0.044	-0.022	-0.041	0.057	0.048	-0.026	-0.054
	(7.800)***	(7.191)***	(-3.752)***	(-6.579)***	(6.682)***	(5.282)***	(-3.063)***	(-5.653)***
Tobin's Q	0.002	-0.002	-0.022	-0.032	-0.004	-0.019	-0.016	-0.010
	(0.645)	(-0.200)	(-5.658)***	(-4.306)***	(-0.929)	(-2.475)**	(-3.323)***	(-0.981)
Leverage	0.364	0.206	0.032	0.057	0.645	0.152	-0.125	0.144
	(13.071)***	(6.100)***	(1.115)	(1.775)*	(15.706)***	(3.281)***	(-3.203)***	(3.055)***
Profitability	-0.066	-0.122	0.105	0.263	-0.032	-0.024	0.050	0.140
	(-3.478)***	(-2.457)**	(5.541)***	(4.674)***	(-1.413)	(-0.454)	(2.238)**	(2.368)**
Tangibility	-0.089	0.041	0.065	-0.087	-0.258	0.056	0.189	-0.103
	(-2.362)**	(1.099)	(1.700)*	(-2.354)**	(-3.627)***	(0.936)	(2.691)***	(-1.765)*
Debt rating	0.195	0.147	-0.198	-0.135	0.094	0.187	-0.082	-0.155
	(10.625)***	(8.152)***	(-11.203)***	(-7.754)***	(2.827)***	(6.912)***	(-2.549)**	(-5.981)***
Investment grade	0.170	0.182	-0.139	-0.156	0.160	0.211	-0.170	-0.163
	(9.008)***	(10.817)***	(-7.790)***	(-9.889)***	(4.802)***	(8.825)***	(-5.536)***	(-7.268)***
Obs.	12,276	12,276	12,276	12,276	7,263	7,261	7,263	7,261
Adj. R^2	0.275	0.331	0.141	0.257	0.289	0.354	0.117	0.248

The table presents the regression results on cross-sectional tests by information uncertainty. Constant and industry and year fixed effects are included in all the columns. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

effect of higher quality auditing in reducing the information asymmetry is stronger.

We examine the role of information asymmetry from two angles: the information asymmetry created by financial market uncertainty and the information asymmetry created by operating uncertainty. To measure financial market uncertainty, we use *Probability of informed trading* (PIN) and *Analyst forecast dispersion*, with high values indicating high information asymmetry. To measure operating uncertainty, we use *Cash flow volatility* and *R&D*, with high values indicating high operating uncertainty. Following Easley *et al.* (2010), we measure *Probability of informed trading* using the extended version of the EKO market microstructure model. *Analyst forecast dispersion* is measured using the standard deviation of one-year EPS forecasts, deflated by the mean value of forecasts. *Cash flow volatility* is measured using the standard deviation of quarterly operating cash flow over the past 12 quarters. *R&D* is calculated as the ratio of R&D expenditure to sales.

The results are presented in Table 6. Panel A presents the results investigating the role of financial market uncertainty. The first four columns show the results using *Probability of informed trading* as the partitioning variable. The last four columns show the results using *Analyst forecast dispersions* as the partitioning variable. We find evidence consistent with our prediction that the effect of audit quality on firms' debt financing choices is higher when financial market information asymmetry is higher. Specifically, we find that the firms with high PIN or firms with high analyst forecast dispersion have a higher (lower) proportion of public (bank) debt when they are audited by high-quality auditors.

Panel B presents the results examining the role of operating uncertainty. The first four columns show the results using *Cash flow volatility* as a proxy, and the last four columns show the results using *R&D* as a proxy. The results are similar to those presented in Panel A. Firms with high cash flow volatility or firms with high R&D expenses have a higher (lower) proportion of public (private) debt if they are audited by high-quality auditors. In effect, we show that the impact of audit quality on firms' debt financing choices is more pronounced when their operating uncertainty is high.

Collectively, the results in Table 6 show that the effect of audit quality on firms' debt financing choices is more pronounced for firms with high information asymmetry and are consistent with our prediction in H2.

5.2 The Role of Corporate Governance

Besides governance by banks and auditors, firms are internally monitored by institutional investors and their board of directors. We argue that if firms have strong governance mechanisms, the benefits of external monitoring from auditors or banks are smaller. Therefore, we expect the firms with a better governance system to have a lower proportion of bank debt even if they have low-quality audits because the need for external monitoring from banks is reduced.

We use dedicated institutional ownership, board independence, and G-index as proxies

Table 7 Cross-Sectional Tests by Corporate Governance

Panel A Subsamples by Dedicated Institutional Ownership

	Strong governance	Weak governance	Strong governance	Weak governance
Dependent Variable:	*Public debt*		*Bank debt*	
	(1)	(2)	(3)	(4)
Audit quality	0.006	0.014	-0.010	-0.019
	(1.140)	(3.158)***	(-2.059)**	(-4.195)***
Auditor tenure	0.039	0.025	-0.029	-0.015
	(6.410)***	(4.652)***	(-4.891)***	(-2.582)***
Firm size	0.043	0.041	-0.030	-0.022
	(6.627)***	(7.692)***	(-4.662)***	(-3.984)***
Tobin's Q	0.008	-0.002	-0.030	-0.022
	(1.659)*	(-0.413)	(-5.998)***	(-4.627)***
Leverage	0.301	0.301	0.024	0.069
	(8.885)***	(10.743)***	(0.730)	(2.383)**
Profitability	-0.066	-0.102	0.142	0.153
	(-2.254)**	(-5.066)***	(4.679)***	(7.617)***
Tangibility	-0.019	-0.026	-0.007	-0.004
	(-0.497)	(-0.761)	(-0.193)	(-0.122)
Debt rating	0.151	0.178	-0.138	-0.188
	(8.130)***	(10.461)***	(-7.761)***	(-11.143)***
Investment grade	0.164	0.190	-0.140	-0.169
	(9.539)***	(10.970)***	(-8.870)***	(-10.239)***
Obs.	12,862	12,800	12,862	12,800
Adj. R^2	0.298	0.309	0.195	0.183

Panel B Subsamples by Board Independence

	Strong governance	Weak governance	Strong governance	Weak governance
Dependent Variable:	*Public debt*		*Bank debt*	
	(1)	(2)	(3)	(4)
Audit quality	0.004	0.014	-0.007	-0.019
	(0.563)	(1.947)*	(-0.908)	(-2.832)***
Auditor tenure	0.004	0.026	-0.001	-0.017
	(0.482)	(2.676)***	(-0.104)	(-1.867)*
Firm size	0.057	0.040	-0.048	-0.028
	(4.918)***	(3.407)***	(-4.298)***	(-2.542)**
Tobin's Q	-0.000	0.007	-0.006	-0.033
	(-0.007)	(0.803)	(-0.642)	(-3.790)***
Leverage	0.347	0.353	0.032	0.011
	(5.744)***	(6.069)***	(0.549)	(0.217)
Profitability	-0.031	-0.107	0.094	0.189
	(-0.561)	(-2.230)**	(1.463)	(3.992)***
Tangibility	-0.015	0.007	-0.083	-0.030
	(-0.240)	(0.117)	(-1.458)	(-0.506)
Debt rating	0.107	0.166	-0.100	-0.162
	(3.505)***	(6.352)***	(-3.410)***	(-6.783)***
Investment grade	0.169	0.137	-0.140	-0.116
	(6.973)***	(5.818)***	(-6.239)***	(-5.529)***
Obs.	5,507	5,507	5,507	5,507
Adj. R^2	0.350	0.302	0.265	0.234

Panel C Subsamples by G-Index

Dependent Variable:	Strong governance	Weak governance	Strong governance	Weak governance
	Public debt		*Bank debt*	
	(1)	(2)	(3)	(4)
Audit quality	0.006	0.017	-0.011	-0.022
	(0.745)	(2.047)**	(-1.518)	(-2.793)***
Auditor tenure	0.012	0.008	-0.012	-0.005
	(1.183)	(0.729)	(-1.381)	(-0.513)
Firm size	0.042	0.039	-0.033	-0.032
	(3.163)***	(3.583)***	(-2.760)***	(-3.106)***
Tobin's Q	0.009	-0.002	-0.021	-0.019
	(0.815)	(-0.185)	(-2.104)**	(-2.143)**
Leverage	0.276	0.278	0.008	0.003
	(4.638)***	(5.115)***	(0.140)	(0.063)
Profitability	-0.110	-0.091	0.211	0.162
	(-1.625)	(-1.556)	(2.933)***	(2.656)***
Tangibility	-0.005	-0.024	-0.052	-0.006
	(-0.067)	(-0.350)	(-0.818)	(-0.090)
Debt rating	0.173	0.104	-0.170	-0.089
	(5.024)***	(3.590)***	(-5.527)***	(-3.259)***
Investment grade	0.124	0.187	-0.103	-0.145
	(4.924)***	(7.768)***	(-4.616)***	(-6.651)***
Obs.	5,585	5,582	5,585	5,582
Adj. R^2	0.318	0.262	0.257	0.193

The table presents regression results on cross-sectional tests by corporate governance. Constant and industry and year fixed effects are included in all the columns. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

for corporate governance. *Dedicated Institutional ownership* is the ratio of the number of shares held by dedicated institutional investors to total shares outstanding. We classify institutional investors into dedicated, quasi-index, and transient following Bushee (1998). Dedicated institutional investors have large stockholdings and long investment horizons. Therefore, they are more likely to monitor the management. *Board independence* is defined as the proportion of independent directors on the board of directors. *G-index* is a governance index, calculated following Gompers *et al.* (2003) and defined in Section 4.3.

The results are presented in Table 7. Panel A shows the results using *Dedicated institutional ownership* as the partitioning variable; Panel B shows the results using *Board independence* as the partitioning variable; and Panel C shows the results using *Dedicated G-index* as the partitioning variable. The results are consistent with our predictions. The effect of audit quality on firms' debt financing choices is more pronounced for firms with low dedicated institutional ownership, less board independence, or a larger G-index. Overall, we find evidence that the effect of audit quality on debt financing choices is larger for firms with poor corporate governance. Collectively, the results in Table 7 are consistent with our prediction in H3.

VI. Additional Analyses

We conduct three additional tests to complement our finding that higher audit quality increases the proclivity of the client firm to choose more public rather than bank debt. First, we differentiate our study from Bharath *et al.* (2008). Second, we investigate the effect of audit quality on firms' debt issuance decisions. Third, we explore the role of audit quality on debt instruments.

6.1 Accruals Quality and Audit Quality

Bharath *et al.* (2008) show that, compared to firms with lower accruals quality, firms with higher accruals quality are more (less) likely to choose public (bank) debt. Their result is consistent with the information effect. However, higher accruals quality is a consequence of several factors, including higher audit quality. Auditors could affect debt choice both by improving the accruals quality and by providing greater monitoring. To differentiate our study from Bharath *et al.* (2008), we first control for accruals quality and second examine whether audit quality complements or substitutes for accruals quality in the choice of debt. We construct the accruals quality measure (*Accruals quality*) following Bharath *et al.* (2008) by using the principal component of the accruals quality measures of Dechow and Dichev (2002), Teoh *et al.* (1998), and Dechow *et al.* (1995). A higher value of the measure indicates better accruals quality.

The results are presented in Table 8. The first two columns show that after controlling for accruals quality, audit quality is still significant in explaining the debt choice. The coefficient on *Audit quality* is positive when *Public debt* is the dependent variable (0.01, t = 2.718) and negative when *Bank debt* is the dependent variable (-0.016, t = -4.115). The last four columns in Table 8 show that the effect of audit quality on firms' debt choice is stronger when accruals quality is low. This evidence suggests that when the borrowing firm has poor accruals quality, public lenders still rely on audit quality in mitigating the moral hazard concerns of public debt, suggesting a substitutive relationship between the two.

6.2 Debt Issuance Decision and Audit Quality

Our main analysis focuses on the level of public debt and bank debt for each firm, which are relatively static measures of firm debt structure. In this section, we further explore the impact of audit quality on firms' dynamic debt issuance decisions. Following Becker and Ivashina (2014), we construct two samples. The first sample consists of observations in which the firm issues public debt only, bank debt only, or both public debt and bank debt during the current year. The second sample consists of observations in which the firm issues public debt only or bank debt only during the current year. We obtain bond issuance data from the Mergent Fixed Income Securities Database (FISD) and bank loan issuance data from Dealscan.

We define bond issuance dummy (*Bond issue*) as a dummy variable equal to one if the firm issues public debt during the year and zero otherwise. We perform a regression on each

Table 8 Controlling for and Cross-Sectional Tests by Accruals Quality

	Control for Accruals Quality		Subsamples by Accruals Quality			
			High Accruals quality	Low Accruals quality	High Accruals quality	Low Accruals quality
Dependent Variable:	*Public debt*	*Bank debt*	*Public debt*		*Bank debt*	
	(1)	(2)	(3)	(4)	(5)	(6)
Audit quality	0.010	-0.016	0.006	0.014	-0.011	-0.019
	(2.718)***	(-4.115)***	(1.447)	(3.130)***	(-2.694)***	(-4.131)***
Auditor tenure	0.032	-0.022	0.036	0.027	-0.026	-0.018
	(6.938)***	(-4.779)***	(6.559)***	(5.029)***	(-4.744)***	(-3.151)***
Firm size	0.042	-0.025	0.042	0.043	-0.029	-0.025
	(9.120)***	(-5.347)***	(7.614)***	(8.140)***	(-5.043)***	(-4.725)***
Tobin's Q	0.004	-0.026	0.001	0.004	-0.027	-0.025
	(0.991)	(-6.704)***	(0.101)	(0.901)	(-4.679)***	(-6.272)***
Leverage	0.300	0.052	0.242	0.350	0.068	0.031
	(12.103)***	(2.146)**	(7.873)***	(12.790)***	(2.229)**	(1.090)
Profitability	-0.093	0.149	-0.090	-0.076	0.190	0.125
	(-5.185)***	(8.198)***	(-2.843)***	(-4.072)***	(5.531)***	(6.663)***
Tangibility	-0.022	-0.006	0.027	-0.070	-0.060	0.046
	(-0.731)	(-0.214)	(0.715)	(-2.194)**	(-1.683)*	(1.356)
Debt rating	0.164	-0.164	0.176	0.153	-0.171	-0.151
	(11.276)***	(-11.687)***	(10.248)***	(9.096)***	(-10.265)***	(-9.269)***
Investment grade	0.177	-0.154	0.158	0.193	-0.147	-0.155
	(12.784)***	(-12.037)***	(9.671)***	(11.631)***	(-9.885)***	(-9.783)***
Accruals quality	-0.071	0.037				
	(-2.515)**	(1.186)				
Obs.	25,254	25,254	12,889	12,365	12,889	12,365
Adj. R^2	0.302	0.186	0.311	0.301	0.207	0.173

The table presents regression results after controlling for accruals quality and cross-sectional tests by accruals quality. Constant and industry and year fixed effects are included in all the columns. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

of the two samples with the bond issuance dummy as the dependent variable. The regressions are performed by the Logit model, with standard errors adjusted for heteroscedasticity and clustering at the firm level. The regression results are reported in Table 9; they show that the coefficient on *Audit quality* is significantly positive for both samples (0.039, t = 2.011, and 0.069, t = 2.302, respectively). The findings suggest that firms with better quality audits are more likely to issue public debt as opposed to bank debt when they need debt financing, which is consistent with our findings with regard to the level of public debt and bank debt.

Table 9 Debt Issuance Decision and Audit Quality

	Sample of firms that issue bond only, loan only, or both bond and loan	Sample of firms that issue bond only or loan only
Dependent Variable:	*Bond issue*	*Bond issue*
	(1)	(2)
Audit quality	0.039	0.069
	(2.011)**	(2.302)**
Auditor tenure	0.164	0.235
	(6.444)***	(5.932)***
Firm size	0.196	0.106
	(7.253)***	(2.572)**
Tobin's Q	0.118	0.188
	(4.009)***	(4.573)***
Leverage	2.139	1.955
	(14.178)***	(9.295)***
Profitability	-0.859	-0.892
	(-4.359)***	(-3.946)***
Tangibility	-0.613	-0.779
	(-3.985)***	(-3.109)***
Debt rating	1.242	1.040
	(17.621)***	(10.037)***
Investment grade	0.052	0.005
	(0.805)	(0.046)
Obs.	10,086	8,423
Pseudo R^2	0.152	0.134

The table presents regression results on debt issuance decision and audit quality. Constant and industry and year fixed effects are included in all the columns. The regression is performed by Logit, with the z-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

6.3 Debt Instruments and Audit Quality

In the main analysis, we aggregate all the debt instruments in public debt or bank debt. To obtain further insight, we conduct an analysis of individual debt instruments in these two types of debt. We decompose public debt into senior bonds and notes, subordinated bonds and

Table 10 Debt Instruments and Audit Quality

Dependent Variable:	Public debt instruments			Bank debt instruments	
	Senior bonds/notes	*Subordinated bonds/notes*	*Commercial papers*	*Term loans*	*Revolving credit*
	(1)	(2)	(3)	(4)	(5)
Audit quality	0.002	0.008	-0.000	-0.011	-0.004
	(0.955)	(2.066)**	(-0.024)	(-3.640)***	(-1.220)
Auditor tenure	0.006	0.024	0.002	0.004	-0.026
	(2.369)**	(5.109)***	(2.793)***	(1.179)	(-6.853)***
Firm size	-0.003	0.043	0.003	0.007	-0.033
	(-1.079)	(9.464)***	(3.133)***	(1.906)*	(-8.532)***
Tobin's Q	-0.004	0.004	0.003	-0.018	-0.007
	(-2.338)**	(1.029)	(3.603)***	(-6.536)***	(-2.359)**
Leverage	0.166	0.134	0.000	-0.030	0.079
	(10.471)***	(5.445)***	(0.021)	(-2.071)**	(3.849)***
Profitability	0.017	-0.109	0.004	0.091	0.056
	(1.789)*	(-6.211)***	(2.629)***	(7.629)***	(3.725)***
Tangibility	-0.129	0.102	0.004	0.058	-0.065
	(-8.238)***	(3.332)***	(1.083)	(2.343)**	(-2.601)***
Debt rating	0.101	0.067	-0.004	-0.198	0.036
	(9.602)***	(4.329)***	(-2.818)***	(-19.552)***	(3.077)***
Investment grade	-0.120	0.257	0.039	-0.032	-0.121
	(-12.821)***	(16.563)***	(11.294)***	(-3.513)***	(-11.791)***
Obs.	25,662	25,662	25,662	25,662	25,662
Adj. R^2	0.125	0.277	0.111	0.156	0.112

The table presents regression results on debt instruments and audit quality. Constant and industry and year fixed effects are included in all the colum ns. The regression is performed by OLS, with the *t*-statistics (in parentheses) computed using standard errors robust to both clustering at the firm level and heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

notes, and commercial papers and decompose bank debt into term loans and revolving credit. Then, we include the ratios of these debt instruments as the dependent variables in the analysis (see also Li *et al.*, 2019).

The regression results are presented in Table 10. The table shows that for public debt, the coefficient on *Audit quality* is significantly positive only when *Subordinated bonds/notes* is the dependent variable (0.008, t = 2.066). For bank debt, the coefficient on *Audit quality* is significantly negative only when *Term Loans* is the dependent variable (-0.011, t = -3.64). The coefficient on *Audit quality* is not significant for all the other debt instruments. Overall, the results suggest that firms with better quality audits issue more subordinated bonds and notes and fewer term loans in debt financing. Because subordinated bonds are riskier than senior bonds (Li *et al.*, 2019), our finding shows that the higher quality of auditing improves market credibility and allows the firm to issue riskier subordinated bonds.

VII. Conclusion

In this study, we examine how audit quality affects firms' choice between public debt and bank debt. Lenders are faced with an adverse selection problem before a loan is made (adverse selection of a high-risk borrower) and a moral hazard problem after the loan is made (managers using the funds for other projects, dividend payments, etc.). While both bank and public lenders rely on acquiring information on the borrower's default risk to mitigate the adverse selection problem before the loan, they need to rely on monitoring the managers in mitigating the moral hazard problem after the loan. Banks have a natural advantage over public lenders in addressing the moral hazard problem through direct access and monitoring to enforce debt covenants. Public lenders typically do not have direct access to managers and have less incentive to monitor, given that public debt is distributed over a large number of credit investors. Instead, they rely on intermediaries, such as auditors, in monitoring the actions of managers to mitigate the moral hazard problem. As a result, firms with higher quality auditing are more likely to borrow from the public and less likely to borrow from the bank.

Consistent with our expectation, the results show that firms audited by higher quality auditors have a higher proportion of public debt and a lower proportion of bank debt. Our channel tests show that the effect audit quality on debt choice is stronger for firms with greater information risk and weaker for firms with strong corporate governance. In an additional analysis, we show that the effect of audit quality persists after controlling for accruals quality and that audit and accruals quality have substitutive effects on debt choice. We also show that firms with high audit quality are more likely to issue public debt when they need debt financing. Particularly, they are likely to issue subordinated bonds because of the increased confidence in the credit market regarding the post-contract performance by managers in servicing the debt.

Overall, the results are consistent with both the information and the monitoring channels being incrementally effective over each other. Auditors play significant roles in shaping firms' information environment and corporate governance. When information asymmetry is high, managers tend to prefer the less information-sensitive bank debt. High-quality auditing improves the credibility and information content of financial statements, which improves firms' information environment. Thus, firms are better able to issue more public debt when audit quality is high. Further, banks have a superior ability to monitor managers as compared to public bondholders. Since high-quality auditors mitigate the agency problems between shareholders and managers, shareholders' need for bank monitoring is lower. This leads to a lower proportion of bank debt and thus a higher proportion of public debt.

Our study contributes to the emerging literature on the determinants of firms' debt financing choices by documenting audit quality as another important determinant. This deepens our understanding of why firms prefer one particular type of debt financing over the other. Our study further contributes to the auditing literature by showing that audit quality has a real effect on firms' decision-making. It suggests another way through which high-quality auditing improves firms' operation and, in turn, the market value of firms.

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Appendix Variable Definitions

Variable	Definition
Public debt	The ratio of public bonds to total debt. Public bonds are the sum of senior bonds and notes, subordinated bonds and notes, and commercial papers. Total debt is the sum of term loans, revolving credit, senior bonds and notes, subordinated bonds and notes, commercial papers, capital leases, and other debt.
Bank debt	The ratio of bank loans to total debt. Bank loans are the sum of revolving credit and term loans.
Audit quality	Natural logarithm of the annual aggregate audit fees (in millions of US dollars) collected by the auditor's practice office that provides auditing services to the firm, taken from all the observations in the Audit Analytics database.
Auditor tenure	Natural logarithm of the number of years the firm has retained its current auditor.
Firm size	Natural logarithm of sales (*SALE*).
Tobin's Q	The ratio of the market value of assets minus deferred taxes (*TXDB*) to the book value of assets (*AT*). The market value of assets is the sum of long-term debt (*DLTT*), debt in current liabilities (*DLC*), and the product of stock price (*PRCC_F*) and the number of shares outstanding (*CSHPRI*).
Leverage	The ratio of long-term debt (DLTT) plus debt in current liabilities (DLC) to the book value of total assets (AT).
Profitability	The ratio of income before extraordinary items (*IB*) to book value of total assets (*AT*).
Tangibility	The ratio of property, plant, and equipment (*PPENT*) to the book value of total assets (*AT*).
Debt rating	Dummy variable equal to 1 if the firm has long-term debt rating from S&P and zero otherwise.
Investment grade	Dummy variable equal to 1 if the firm has an investment-grade (BBB- and above) long-term debt rating from S&P and zero otherwise.
Probability of informed trading	The probability of informed trading estimated using an extended version of the popular EKO market microstructure model, following Easley, Kiefer, and O'Hara (1997).
Analyst forecast dispersion	The standard deviation of one-year earnings-per-share (EPS) forecasts scaled by mean one-year EPS forecast.
Cash flow volatility	The standard deviation of quarterly cash flow over the past 12 quarters. Quarterly cash flow is the ratio of operating income before depreciation (*OIBDPQ*) to book value of total assets (*ATQ*).
R&D	The ratio of R&D expenditure (*XRD*) to sales (*SALE*).
Dedicated institutional ownership	The ratio of the number of shares held by dedicated institutional investors to total shares outstanding.

Board independence	The proportion of independent directors on the board of directors.
G-index	Governance index proposed by Gompers *et al.*, (2003).
Accruals quality	The principal component of the accruals quality measures of Dechow and Dichev (2002), Teoh *et al.* (1998), and Dechow *et al.* (1995).
Bond issue	Dummy variable equal to 1 if the firm issues public debt during the current year and 0 otherwise.
Senior bonds/notes	The ratio of senior bonds and notes to total debt.
Subordinated bonds/notes	The ratio of subordinated bonds and notes to total debt.
Commercial paper	The ratio of commercial papers to total debt.
Term loans	The ratio of term loans to total debt.
Revolving credit	The ratio of revolving credit to total debt.