

SHUJUN DING, MINGZHI LIU, AND ZHENYU WU

Financial Reporting Quality and External Debt Financing Constraints: The Case of Privately Held Firms

Using a sample consisting of 1,160,801 observations of privately held firms, we explore the relationship between earnings quality and privately held firms' debt financing, access to debt, and cost of debt, as well as the moderating effects of provincial-level economic development on this relationship. Our findings indicate that better earnings quality increases private firms' access to debt financing and lowers their cost of debt. The empirical results also show that these effects are more pronounced in less developed provinces.

Key words: Debt financing; Earnings quality; Economic imbalance; Private firm.

Privately held firms (i.e., firms that are not traded on public stock exchanges) play a central role in promoting employment opportunities and contributing to economic growth worldwide, in both developed markets and emerging economies. China, for instance, saw the number of small and medium-sized privately held firms exceed 50 million, accounting for 99.8% of the total number of enterprises by the end of 2011 (China Statistics Yearbook, 2012). They provide 75% of urban employment opportunities and their industrial gross product amounts to 60% of the country's GDP.¹ Because private firms are more closely held and have greater managerial ownership, they rely heavily on debt financing (Berger and Udell, 1995, 1998, 2002).

As suggested in the literature, accounting information plays an important role in credit decisions made by creditors because high-quality financial information can reduce adverse selection and the moral hazard cost associated with information asymmetry (Jensen and Meckling, 1976). Firm owners have unlimited upside potential with regard to returns, while creditors have fixed claims based on contractual

SHUJUN DING (ding@telfer.uottawa.ca) is Professor in Accounting at the Telfer School of Management, University of Ottawa; MINGZHI LIU is Assistant Professor in the Department of Accounting and Finance, Asper School of Business, University of Manitoba; and ZHENYU WU is the Canada Research Chair and Associate Professor at the Asper School of Business, University of Manitoba. SHUJUN DING was supported by the RDP program of the University of Ottawa, the SMRF program of the Telfer School of Management, and the CPA-Canada Accounting and Governance Research Centre.

¹ According to the US Census Bureau, there are 29 million privately held firms in the US, generating 50% of the nation's GDP. Forbes reported in 2008 that 441 of the largest private enterprises in the US generated 1.8 trillion in revenue and employed 6.2 million people.

agreements. Accordingly, creditors tend to focus on borrowers' future cash flows to ensure fixed payments of interest and principal. Financial reporting quality is associated with the predictability of future cash flows (Dechow, 1994), and creditors are more likely to take borrowers' financial reporting quality into consideration for debt contracting. Indeed, Ball *et al.* (2008, p. 170) show that debt investors 'generate more demand than equity markets for financial reporting'. Creditors of private firms in particular have fewer information channels about borrowers' financial performance than do creditors from public firms (e.g., analysts, institutional investors, credit rating agencies, media, and regulators focus more on public firms). Thus financial reporting quality is more important for creditors of private firms. Our study specifically measures the quality of financial accounting information by employing an official dataset consisting of detailed financial information from a large group of private firms, and is intended to shed light on the role played by accounting information quality in private firm debt financing. Private firms' access to debt financing is a worldwide issue, and tackling this issue through the lens of accounting quality is understudied. The lack of access to loans could be even more challenging in emerging markets, as lending markets in such jurisdictions are under-developed. We examine private firms' debt financing in a typical emerging market, China, by examining such firms' financial reporting quality.

Recognized as one of the largest emerging economies in the world, China is also characterized by uneven economic and institutional development (Tsui, 1996; Demurger, 2001). For example, development in the coastal regions is more advanced than that in the western and inland provinces, and investor/creditor protection and protection of property rights vary across the country. This provides a unique opportunity to examine whether the association between financial reporting quality and private firms' external financing constraints differ across regions with different levels of legal environment and investor/creditor protection. In less developed regions where creditor protection and legal enforcement are likely to be weak, more credible financial information alleviates information asymmetry and makes managers of private firms more accountable. Consequently, creditors might be increasingly reliant on financial statements as the major source of information, which suggests that financial reporting quality plays a more significant role in releasing external financing constraints in less developed regions.

Extant studies use auditor verified financial statements as a proxy for financial reporting quality for private firms (Minnis, 2011; Kim *et al.*, 2011). However, we suggest that using audit may generate a *less* accurate correlation between financial reporting quality and private firms' financing constraints, because financial reporting quality may still differ substantially among firms with audited financial statements. Another problem is that the audit choice is likely to be sticky, in that removing audit verification generally damages the reputation of the firm and will be considered a negative signal of financial reporting quality. Therefore, firms are reluctant to withdraw from audit verification, which likely minimizes the variation of having audited financial statements. Finally, lenders may explicitly demand an audit

for firms that apply for loans, and having an audit is likely to be a condition for firms to get insurance or guarantee. This suggests that using audit verification to reflect financial reporting quality may generate spurious results.

In this study, we use two proxies of financial reporting quality that have been widely used in the literature. In particular, we include measures based on abnormal accruals and abnormal revenues (see the ‘Data and Methodology’ section for details). Such matrices capture the quality of financial reporting, but are difficult to estimate for privately held firms, as detailed financial disclosure is generally not available for these firms. Thanks to the official data set we employ in this study, we have full access to detailed financial information of privately held firms, enabling us to determine private firms’ accounting information quality directly.

Our sample consists of 1,160,801 firm observations from 1999–2006. We only include firm observations before 2007 in order to minimize the contamination of International Financial Reporting Standards (IFRS) effects on financial reporting in China. Findings show that financial reporting quality of privately held firms is indeed an important factor impacting such firms’ access to, and cost of, debt financing. Firms with higher quality accounting reporting increased their access to debt financing with a lower cost. Furthermore, as expected, regional difference moderates the association between privately held firms’ accounting quality and debt financing, suggesting that sub-national factors are indispensable in improving our understanding of business phenomena. Additional analyses indicate that firms report more conditional conservatism when they have more access to debt financing or have a higher cost of debt, and these associations are more pronounced for firms from less developed regions. Our results hold after a series of robustness tests.

This study contributes to the literature by providing empirical evidence that high financial reporting quality releases the external financing constraints for private firms. Given the crucial role played by debt financing on private firms’ survival and growth, our evidence adds to the existing methods that researchers recommend to help alleviate capital constraints facing privately held firms. We are among the first to empirically link private firms’ accounting information quality to such firms’ access to their bloodlines. The interdisciplinary nature of our study contributes to the field of accounting, corporate finance, and entrepreneurship.

Second, our study may have implications for policymakers and accounting standard setters, who recently increased their focus on the need to better understand the financial reporting requirements for small and private firms. For example, in the US, the Financial Accounting Standards Board (FASB) established the Private Company Financial Reporting Committee (PCFRC) in 2007, the purpose of which is to represent all non-public business entities in issues regarding costs/benefits in the standard-setting process. The International Accounting Standards Board (IASB) has also developed a separate set of financial reporting requirements for small and medium enterprises (SMEs), which took effect in 2009. Our findings that high financial reporting quality is associated with reduced external financing constraints essentially justifies the potential costs of mandatorily requiring private firms to provide high-quality accounting information.

LITERATURE AND HYPOTHESIS DEVELOPMENT

Related Literature on Debt Financing in Private Firms

Access to external capital with an acceptable cost (cost of equity and cost of debt) has proved crucial for both publicly listed and privately held firms. Compared to publicly listed firms that have access to both equity and debt markets, privately held firms do not have the privilege to raise capital in the equity markets. As a result, such firms primarily rely on debt financing to satisfy their operation needs. It is shown that 95% of the firms around the globe are privately held firms, over half of which borrow capital from banks (Pacter, 2009). The important role played by debt financing in privately held businesses has been well documented in the entrepreneurship literature (e.g., Chua *et al.*, 2011). As documented in Chen *et al.* (2014), debt financing grants certain advantages to privately held firms. For instance, unlike other sources of capital, debt finance not only enables firms to raise capital but also allows such firms to maintain their managerial control (Chua *et al.*, 2011; Wu and Chua, 2012).

But access to debt financing is always challenging for privately held firms. Agency conflict between lenders and borrowers, liability for being private and relatively small (compared to large, publicly listed companies), and lack of collateral and social capital all compromise privately held firms' access to debt financing (Berger and Udell, 1998; Chua *et al.*, 2011; Chen *et al.*, 2014). Accordingly, the existing literature has suggested a variety of methods to help privately held firms access debt financing; for instance, privately held firms are advised to raise collateral, enhance monitoring to reduce agency problems, borrow social capital through family involvement, increase information transparency, and use credible signals (such as foreign capital involvement in emerging markets) in order to better access debt (e.g., Chua *et al.*, 2011; Chen *et al.*, 2014).

Among the aforementioned mechanisms, the role of accounting and auditing on improving privately held firms' access to debt financing is understudied. Lack of verifiable financial information is a key factor that reduces such firms' chance of receiving loans; as a result, any improvement on the accounting side is expected to alleviate the concerns of lenders, thus helping privately held firms. Existing evidence on the role played by accounting and auditing is emerging, but limited.

Related Literature on Financial Reporting Quality and Debt Financing of Private Firms

Previous studies show that private firms with high financial reporting quality, mainly using voluntary audit as a proxy, generally enjoy lower cost of borrowing. For example, examining the economic value of independent audit, Blackwell *et al.* (1998) find that for a group of private firms in the US, interest rates offered to audited firms are significantly lower than those without audit. Similarly, Collis *et al.* (2004) find that private companies in the UK purchase voluntary audits in an attempt to improve the quality of financial information and have a lending relationship with a bank or other institutional lenders. Allee and Yohn (2009) explore how small privately held firms in the US disclose their financial information. They find that such privately held firms exhibit

different levels of sophistication while preparing financial statements, and potential benefits do arise from more sophisticated financial disclosure. Specifically, firms with audited financial statements are found to have greater access to debt, and accrual-based financial statements enable firms to enjoy a lower cost of borrowing.

Minnis (2011) employs a large proprietary database of US private firms, and documents that audited firms have a significant lower cost of debt. Additionally, he shows that lenders place more weight on audited financial statements when setting interest rates. In a much related vein, using a list of privately held Korean firms, Kim *et al.* (2011) find evidence consistent with that reported by Blackwell *et al.* (1998). In particular, they show that private firms may voluntarily purchase audit, and firms with voluntary audits pay a lower cost of debt. Private firms with audited financial statements receive an interest rate spread between 56 and 124 basis points lower than unaudited firms. In a more recent study, Chen *et al.* (2015) show that firms voluntarily adopting International Accounting Standards (IAS) increased their access to foreign banks because the adoption of IAS is believed to improve accounting information quality in general, and information comparison in particular.²

Hypothesis Development

Although private firms finance investment from external sources including bank lending, insurance of private equity, leasing, trade credit, retained earnings, or additional contribution from owners, bank loans are the most common source of external financing for private firms in emerging markets (Beck *et al.*, 2008). Banks are likely to carefully examine the financial statements of borrowers because banks will not only lend large amounts compared with other sources of financing, but will also extend loans with longer maturity, thus exposing themselves to higher risk of default (Chen *et al.*, 2011).

Prior research suggests that improved financial transparency alleviates information risk, which leads to reduced constraints for external financing. High-quality accounting information effectively lowers the information asymmetry between lenders and borrowers. On one hand, credible financial accounting information enables lenders to assess the overall risk of the borrower to decide whether to provide a loan; on the other hand, reliable accounting information helps lenders evaluate the borrower's ability to generate cash flows from future operations to re-pay the loan, which provides guidance for lenders to set the appropriate interest rate. We therefore expect to find support for the following hypotheses:

H1: High financial reporting quality is *positively* associated with private firm's access to debt financing.

² In contrast, banks may place lower weight on financial statements with inferior quality. For example, Costello and Wittenberg-Moerman (2011) find that lenders decrease their reliance on financial covenants and financial ratio-based performance pricing provisions when a firm reports an internal control weakness.

H2: High financial reporting quality is *negatively* associated with private firm's cost of borrowing.

In contrast, previous literature on banking relationships suggests that the 'soft' information obtained through lenders' on-going relationships with borrowers may be an alternative source of information (Petersen and Rajan, 1994, 2002; Petersen, 2004). Such 'soft' information, which includes a loan officer's perception of the potential borrower's capability and trustworthiness, can reduce information asymmetry for private firms (Berger and Udell, 1995; Petersen, 2004). Furthermore, lenders may ask for third-party credit scores to mitigate the risk of lending (Petersen and Rajan, 2002; Berger and Udell, 2007). Finally, major capital providers such as banks generally have a close relationship with the management of private firms and have direct access to corporate information (including accounting information), which implies that the credibility of financial statements is *less* important for banks to make lending decisions. If this is the case for Chinese private firms, it is possible that high financial reporting quality is *not* associated with private firms' access to debt financing or cost of borrowing.

In other words, the role played by accounting information quality in private firm debt financing depends on the extent to which institutional lenders, such as banks, value accounting information disclosed by private firms. Such information is less verifiable and is sometimes difficult to compare across firms thanks to different standards applied;³ as a result banks relying on relationship-lending may resort to other sources of information for decision making. But such information indeed helps banks to better estimate the default risk involved if a certain level of quality is ensured. Therefore, even though we predict a positive role of accounting information quality, we understand whether financial reporting quality of privately held firms makes a difference is an empirical issue.

Prior research in development economics suggests China is characterized by unequal economic and institutional development across its different regions. In particular, the economic and market development of the coastal provinces is more advanced than that in the western and inland provinces (Demurger, 2001; Fan and Wang, 2004). As a result, legal system implementation also varies across different regions. Because investor/creditor protection and legal enforcement are relatively weak in less developed regions, creditors in less developed regions rely more on information provided by financial statements to make lending decisions. Moreover, creditors are likely to place more weight on the quality of financial reports, as high-quality accounting information further reduces information asymmetry and helps lenders assess the overall risk of lending. This suggests that financial reporting quality may play a more pronounced role in releasing external financing constraints for private firms in less developed regions. Therefore, we expect to find support for the following hypotheses:

³ In Canada, for instance, privately held firms may choose between IFRS and Accounting Standards for Private Enterprises (ASPE).

H3: The association between financial reporting quality and access to debt financing is *more pronounced* for private firms located in less developed regions.

H4: The association between financial reporting quality and cost of debt financing is *more pronounced* for private firms located in less developed regions.

DATA AND METHODOLOGY

Sample

To minimize the potential contamination of the IFRS effect on Chinese private firms' financial reporting, our sample consists of private firms that were operating in Mainland China from 1999–2006. Our private firms' financial information is obtained from the China Non-listed Enterprise Database. GTA Information Technology Company Limited (www.gtadata.com) developed this database with sources from the National Bureau of Statistics of China.⁴ In order to describe regional development across the country, China's National Economic Research Institute (NERI) has developed a comprehensive index for each province and major municipality. This index captures: 1) the government–market relationship (i.e., the role of the market in resource allocation); 2) the development of non-state-owned sectors (i.e., the percentage of total industrial output that is contributed by the private sector); 3) the development of product markets; 4) the development of factor markets; and 5) market intermediates and legal environment (i.e., auditing firm) and legal environment (i.e., protection of property rights). The data from the NERI index were originally compiled by Fan and Wang (2004). The reliability of the NERI index has been established in prior research including Chen *et al.* (2006) and Firth *et al.* (2011).

Our initial sample consisted of 1,889,061 firm observations from the China Non-listed Enterprise Database from 1998–2006. From this sample we deleted 24,612 observations due to missing information regarding province of operations. Then we eliminated 672,400 observations with incomplete data for calculating proxies for financial reporting quality (all observations from 1998 were eliminated for lagged variable requirements). Finally, we deleted 31,248 observations with incomplete data in control variables. In total, our final sample contains 1,160,801 firm observations.⁵ The sample selection process is presented in detail in Table 1.

⁴ GTA owns broad recognition from securities supervisory departments in China and overseas, international investment institutions as well as researchers from renowned universities. Its CSMAR database series is the only China securities market database available in Wharton Research Data Services (WRDS).

⁵ All variables are winsorized by 1% and 99% to control for the effect of outliers.

TABLE 1
SAMPLE SELECTION

Sample selection process	No. of observations removed	No. of observations remaining
Initial sample (1998–2006)		1,889,061
Missing information re province of operation	24,612	1,864,449
Missing information re measuring earnings quality	672,400	1,192,049
Missing information re control variables	31,248	1,160,801
Sample used for analysis (1999–2006)		1,160,801

Empirical Models and Variables

Our empirical models combine those utilized in prior research (Chua *et al.*, 2011; Wu and Chua, 2012; Chen *et al.*, 2014) in the relevant literature. As pointed out by Petersen (2009), the standard errors calculated by OLS regression for panel data may be biased due to residual correlations. Thus, we correct the standard errors of the OLS regression coefficients for firm-level clustering, as well as for heteroskedasticity. We use the following empirical models to test the joint effects of earnings quality and regional marketization on privately held firms’ debt financing, both access to and cost of borrowings:

$$Debt = a_0 + a_1EQ + a_2NERI + a_3EQ*NERI + a_4Other\ Control\ variables + \varepsilon \tag{1}$$

$$IntRate = b_0 + b_1EQ + b_2NERI + b_3EQ*NERI + b_4Other\ Control\ variables + \varepsilon \tag{2}$$

Debt is the first dependent variable, denoting the dollar value of interest-bearing liabilities scaled by total assets, and *IntRate* is used to capture the cost of borrowing, calculated as interest expense divided by the dollar value of interest-bearing liabilities. We used two proxies to capture the quality of financial reporting, following prior literature: *EQ1* (Kothari *et al.*, 2005) and *EQ2* (Stubben, 2010), as discussed in detail below. *NERI* refers to the NERI index of marketization of each province in China, representing the level of development across provinces in China. We also included a variety of control variables. The variable *Size* is calculated as the logarithm of total assets, and *Leverage* is measured by long-term debt scaled by total assets. Firm-level financial performance is measured using an indicator, which takes the value of one if net income is negative, and zero otherwise. Firm age (*Age*) is measured by the number of years a firm has been in business, and *PPE* refers to the dollar value of property, plant, and equipment scaled by total assets. We also have two control variables related to cash. *Slack* is the dollar value of cash scaled by total assets, and *CashConstraints* is an indicator variable that takes the value of one if cash balance scaled by total assets is above the median, and zero otherwise.

TABLE 2

VARIABLE DEFINITIONS

Variable	Definition
<i>Debt</i>	Dollar value of interest-bearing liabilities scaled by total assets
<i>IntRate</i>	Interest expense divided by the dollar value of interest bearing debt
<i>EQ</i>	Two proxies for earnings quality: EQ1 (Kothari <i>et al.</i> , 2005) and EQ2 (Stubben, 2010)
<i>NERI</i>	NERI index of marketization of each province in China
<i>Size</i>	Logarithm of total assets
<i>Leverage</i>	Long-term debt scaled by total assets
<i>Performance</i>	An indicator variable that takes the value of one if net income is negative, and zero otherwise
<i>Age</i>	Firm age measured by number of years a firm has been in business
<i>PPE</i>	Dollar value of property, plant, and equipment scaled by total assets
<i>Slack</i>	Dollar value of cash scaled by total assets
<i>CashConstraints</i>	An indicator variable that takes the value of one if cash balance scaled by total assets is above median, and zero otherwise.

Table 2 summarizes our variable definitions. In line with the literature, we include industry and year indicators in the above regression models to further control for potential differences across industries and over time (Shi, 2003).⁶

Proxies for Financial Reporting Quality

In this study, we use two measures of earnings quality. First, following Kothari *et al.* (2005), we use the performance-adjusted modified Jones Model to estimate a firm's discretionary accruals. For each industry with sufficient data, we measure the quality of accruals with the absolute value of the residual with the following regression:

$$TAccruals_t / TA_{t-1} = c_0 + c_1 1 / TA_{t-1} + c_2 (\Delta Rev_t - \Delta AR_t) / TA_{t-1} + c_3 PPE_t / TA_{t-1} + c_4 NIBE_t / TA_{t-1} + \varepsilon \quad (3)$$

where $TAccruals$ = current assets – Δ current liabilities – Δ cash + Δ short-term debt – depreciation expense (total accruals); TA = total assets; ΔRev = change in sales revenue; ΔAR = change in accounts receivable; PPE = property, plant, and equipment; $NIBE$ = earnings before extraordinary items.

We run regression (3) for each year in each industry and the coefficients estimated from this industry regression are used to compute the residual from the firm-level regression. Specifically, we multiply its absolute value with -1 for our first financial reporting quality proxy ($EQ1$). Thus, a higher value indicates better financial reporting quality.

Second, we follow Stubben (2010) to estimate discretionary revenues with the following regression:

⁶ According to the China Non-listed Enterprise Database, there are 40 industry categories for Chinese private firms.

TABLE 3
DESCRIPTIVE STATISTICS

Variable	Mean	Median	Std Dev.	25P	75P
<i>Debt</i>	0.535	0.522	0.316	0.298	0.738
<i>IntRate</i>	0.031	0.011	0.068	0	0.036
<i>EQ1</i>	-0.217	-0.129	0.251	-0.278	-0.053
<i>EQ2</i>	-0.188	-0.069	0.441	-0.171	-0.029
<i>NERI</i>	8.022	8.21	1.721	6.55	9.9
<i>Size</i>	9.822	9.664	1.444	8.83	10.685
<i>Leverage</i>	0.069	0	0.145	0	0.063
<i>Performance</i>	0.241	0	0.428	0	0
<i>Age</i>	12.823	8	27.338	4	15
<i>PPE</i>	0.368	0.342	0.22	0.193	0.519
<i>Slack</i>	0.202	0.154	0.179	0.062	0.296
<i>CashConstraints</i>	0.5	0	0.5	0	1

Sample size: N = 1,160,801.

$$\Delta AR_t / TA_{t-1} = d_0 + d_1 \Delta Rev_t / TA_{t-1} + \varepsilon \quad (4)$$

where ΔAR is change in accounts receivable; TA = total assets; and ΔRev is change in revenues. Similarly, we run regression (4) for each year in each industry and the coefficients estimated are used to compute the residual from the firm-level regression. Specifically, we multiply its absolute value with -1 for our second financial reporting quality proxy (*EQ2*). Again, a higher value indicates better financial reporting quality.

EMPIRICAL FINDINGS

Table 3 summarizes the descriptive statistics and shows that, on average, the annual interest rate approximated 3.07%,⁷ and 53% of total assets were financed by interest-bearing liabilities for Chinese private firms. The average firm age was 12.8 years. Of the total 1,160,801 firm observations, 24% reported a loss in earnings. Table 4 displays the correlation matrix. Many of the variables are significantly correlated with each other. In particular, we find that *IntRate* is negatively related to financial reporting quality proxies, suggesting that firms with higher financial reporting quality could borrow debt at a lower interest rate. We also observe that *Debt* is positively related to both financial reporting quality proxies, which indicates that, in general, firms with better financial reporting quality could borrow more debt relative to their total assets than firms with poor financial reporting quality. In addition, both dependent variables *IntRate* and *Debt* are negatively related to *NERI*,

⁷ The average interest rate is low because some firms did not use debt financing and therefore they had no interest expense.

TABLE 4
CORRELATION MATRIX

Variable	IntRate	Debt	EQ1	EQ2	NERI	Size	Leverage	Performance	Age	PPE	Slack	CashConst
IntRate	1											
Debt	-0.183***	1										
EQ1	-0.041***	0.063***	1									
EQ2	-0.017***	0.080***	0.365***	1								
NERI	-0.069***	-0.098***	-0.024***	-0.059***	1							
Size	-0.090***	0.031***	0.115***	0.060***	0.002***	1						
Leverage	-0.021***	0.352***	0.089***	0.074***	-0.189***	0.139***	1					
Performance	-0.095***	0.288***	0.055***	0.060***	-0.136***	0.002**	0.140***	1				
Age	-0.028***	0.109***	0.071***	0.048***	-0.094***	0.073***	0.090***	0.095***	1			
PPE	0.106***	-0.015***	0.112***	0.106***	-0.217***	0.055***	0.240***	0.095***	0.054***	1		
Slack	-0.053***	-0.014***	-0.005***	-0.012***	0.072***	0.022***	-0.085***	-0.067***	-0.010***	-0.363***	1	
CashConst	-0.045***	-0.013***	0.020***	-0.001	0.063***	0.052***	-0.069***	-0.072***	0.002*	-0.279***	0.764***	1

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Sample size: N = 1,160,801.

suggesting that differences in provincial-level marketization may also impact private firms' access to, and cost of, debt.

Hypotheses 1 and 2 predict that financial reporting quality impacts privately held firms' access to, and cost of, debt. We test Model (1) and present the empirical results in Table 5. Columns (1) and (2) concern the relationship between financial reporting quality and access to debt financing, while Columns (3) and (4) concern the relationship between financial reporting quality and cost of debt financing. Findings indicate that neither of the two hypotheses is rejected because the coefficients on EQ1 and EQ2 are significantly positive when the dependent variable is *Debt* (access to debt financing), and significantly negative when the dependent variable is *IntRate* (cost of debt financing). More specifically, the coefficients on EQ1 are 0.0166 and -0.0077 respectively, both being significant at the 1% level, when *Debt* and *IntRate* are used as dependent variables. These indicate that one standard deviation of change in a firm's discretionary accruals-based earnings quality increases its use of debt financing by 1.3% and decreases its cost of debt by 284 basis points. Similarly, the coefficients on EQ2 are 0.0102 and -0.0025 respectively, both being significant at the 1% level, when *Debt* and *IntRate* are used as dependent variables. These indicate that one standard deviation of change in a firm's discretionary revenue-based earnings quality increases its use of debt financing by 0.8% and decreases its cost of debt by 92.3 basis points. Consistent with prior research in this stream of the literature, in addition, all the control variables, except *CashConstraints* in the tests for access to debt financing, are significant, indicating that these are important factors influencing access to, and/or cost of, private firm's debt financing.

We then turn to Model (2) in order to test Hypotheses 3 and 4 about the moderating effects of provincial marketization level on the relationship between financial reporting quality and private firms' debt financing. Results are presented in Table 6, with Columns (1)–(4) showing access to debt and Columns (5)–(8) showing cost of debt. In order to ensure the robustness of our empirical findings, we not only use alternative measures of financial reporting quality (i.e., EQ1 and EQ2), but also construct an alternative measure of NERI, NERI Dummy which takes the value of one if a firm is located in a province with higher-than-median NERI index, and zero otherwise.

As shown in Table 6, coefficients on the interactive variables, EQ1*NERI, EQ1*NERI Dummy, EQ2*NERI, and EQ2*NERI Dummy, are significantly negative in the tests for access to debt financing, and the coefficients are significantly positive in the tests for cost of debt. Furthermore, all are significant at the 1% level. These findings show that the positive role played by accounting information quality on privately held firms' access to, and cost of, borrowing is moderated by imbalanced economic development across provinces in China such that the association between the two is more pronounced in less developed provinces. In other words, neither Hypothesis 3 nor Hypothesis 4 is rejected. Again, all the control variables, except *CashConstraints* in the tests for access to debt financing, are significant. These findings echo those in Chen *et al.* (2014) about the important moderating effects rooted in the imbalanced development of macro-level economic environment among provinces in China, and in a broader perspective, also respond to the

TABLE 5
EARNINGS QUALITY AND SMALL BUSINESS DEBT FINANCING: MAIN EFFECTS (HYPOTHESES 1 AND 2)

	Access to debt		Cost of debt	
	(1)	(2)	(3)	(4)
<i>EQ1</i>	0.0166 (12.55***)	0.0102 (15.51***)	-0.0077 (-22.95***)	-0.0025 (-12.33***)
<i>EQ2</i>	0.0093 (28.33***)	0.0094 (28.72***)	-0.0040 (-63.96***)	-0.0041 (-65.23***)
<i>Size</i>			-0.0088 (-20.29***)	-0.0091 (-20.91***)
<i>Leverage</i>			-0.0154 (-108.1***)	-0.0155 (-108.3***)
<i>Performance</i>	0.1868 (171.75***)	0.1868 (171.66***)	-0.0000 (-7.99***)	-0.0000 (-8.34***)
<i>Age</i>	0.0006 (10.53***)	0.0006 (10.55***)	0.0377 (76.93***)	0.0373 (76.35***)
<i>PPE</i>	-0.1151 (-50.72***)	-0.1146 (-50.57***)	-0.0037 (-5.65***)	-0.0037 (-5.58***)
<i>Slack</i>	-0.1945 (-6.16***)	-0.0196 (-6.22***)	-0.0008 (-3.85***)	-0.0009 (-4.62***)
<i>CashConst</i>	-0.0003 (-0.25)	0.0000 (0.01)	Yes	Yes
<i>Industry Dummies</i>	Yes	Yes	Yes	Yes
<i>Year Dummies</i>	Yes	Yes	Yes	Yes
<i>Constant</i>	0.4626 (27.06***)	0.4588 (26.86***)	0.0457 (17.45***)	0.0480 (18.39***)
<i>F value</i>	2471.8***	2474.47	448.30***	447.78***
<i>R-square</i>	0.1911	0.1911	0.0465	0.0460

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Sample size: N = 1,160,801.

TABLE 6
EARNINGS QUALITY AND SMALL BUSINESS DEBT FINANCING: JOINT EFFECTS (HYPOTHESES 3 AND 4)

	Access to debt			Cost of debt				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>EQ1</i>	0.0448 (25.90***)	0.1377 (22.58***)			-0.0138 (-26.05***)	-0.0393 (-24.16***)		
<i>EQ2</i>			0.0223 (22.80***)	0.0582 (16.76***)			-0.005 (-14.23***)	-0.0171 (-15.40***)
<i>NERI Dummy</i>	-0.0385 (-33.76***)		-0.0303 (-30.00***)		-0.0068 (-33.35***)		-0.0092 (-48.23***)	
<i>NERI</i>		-0.0110 (-32.11***)		-0.0088 (-28.78***)		-0.0015 (-25.60***)		-0.0021 (-37.21***)
<i>EQ*NERI Dummy</i>	-0.0558 (-23.35***)		-0.0216 (-17.45***)		0.0146 (22.72***)		0.0048 (12.31***)	
<i>EQ*NERI</i>		-0.0150 (-20.47***)		-0.0057 (-14.30***)		0.0040 (21.52***)		0.0017 (14.31***)
<i>Size</i>	0.0093 (28.58***)	0.0095 (29.21***)	0.0095 (28.97***)	0.0097 (29.64***)	-0.004 (-63.45***)	-0.0039 (-62.63***)	-0.004 (-64.47***)	-0.004 (-63.81***)
<i>Leverage</i>					-0.0117 (-26.72***)	-0.0114 (-25.75***)	-0.0122 (-27.62***)	-0.0117 (-26.55***)
<i>Performance</i>	0.1846 (171.00***)	0.1835 (170.52***)	0.1847 (171.00***)	0.1836 (170.50***)	-0.016 (-109.8***)	-0.0162 (-109.7***)	-0.016 (-110.0***)	-0.0162 (-109.9***)
<i>Age</i>	0.0006 (10.44***)	0.0006 (10.39***)	0.0006 (10.46***)	0.0006 (10.42***)	-0.0000 (-8.99***)	-0.0000 (-9.10***)	-0.0000 (-9.27***)	-0.0000 (-9.36***)
<i>PPE</i>	-0.123 (-53.90***)	-0.1229 (-53.97***)	-0.1226 (-53.82***)	-0.1225 (-53.88***)	0.0349 (72.30***)	0.0357 (73.68***)	0.0346 (71.88***)	0.0354 (73.24***)
<i>Slack</i>	-0.0198 (-6.29***)	-0.0198 (-6.29***)	-0.0198 (-6.27***)	-0.0199 (-6.31***)	-0.0037 (-5.58***)	-0.0037 (-5.61***)	-0.0037 (-5.62***)	-0.0037 (-5.59***)
<i>CashConst</i>	0.0001 (0.11)	0.0001 (0.11)	0.0004 (-0.36)	0.0003 (-0.35)	-0.0007 (-3.35***)	-0.0007 (-3.48***)	-0.0008 (-3.97***)	-0.0008 (-4.14***)
<i>Industry Dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year Dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 6
CONTINUED

	Access to debt			Cost of debt				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Constant</i>	0.4738 (27.94****)	0.5356 (31.38****)	0.4668 (27.58****)	0.515 (30.32****)	0.0469 (17.53****)	0.0537 (19.90****)	0.0497 (18.60****)	0.06 (22.34****)
F value	2401.1****	2396.8****	2398.7****	2396.3****	444.82****	440.40****	442.98****	438.60****
R-square	0.1931	0.1930	0.1928	0.1928	0.0519	0.0500	0.0510	0.0493

*, **, and **** indicate significance at the 10%, 5%, and 1% levels, respectively. Sample size: N = 1,160,801.

findings in Chen *et al.* (2014) about the importance of unequal economic and legal development among countries worldwide.

According to Watts (2003) debt contracting is one of the widely recognized explanations for conditional conservative financial reporting. Timely loss recognition improves *ex-post* monitoring and increases the likelihood of a debt covenant violation. In the case of a covenant violation, the decision rights transfer from equity holders to debt holders. Thus, conditional conservatism serves as a platform for efficient contracting (Watts, 2003). Ball and Shivakumar (2005) compare the timeliness in loss recognition between UK private and public firms. The results indicate that UK private firms are associated with less conditional conservatism reporting when compared with public firms. As an additional analysis, we use Ball and Shivakumar's (2005) time-series measure of timeliness in loss recognition to investigate the association between conditional conservatism and small business debt financing. Results are reported in Table 7. The coefficients of α_3 and β_3 are negative and significant for all four model specifications, which is in line with findings in Ball and Shivakumar (2005). More importantly, the coefficients of α_7 and β_7 are negative and significant for models testing access to debt (Columns (1) and (2)) and cost of debt (Columns (3) and (4)), respectively. Overall, this suggests that firms report more conditional conservatism when they have more access to debt financing or have higher cost of debt. With regard to the moderating effect of regional marketization, the coefficients of α_{11} and β_{11} are positive and significant for models testing access to debt (Column (2)) and cost of debt (Column (4)), respectively. This suggests that the above discussed association between conditional conservatism and small business debt financing is more pronounced for firms that operate in less developed regions. Overall, additional analyses indicate that firms with more access to debt and higher cost of debt might face more restrictions from creditors and thus have to report more conditional conservatism. In addition, firms that operate in less developed regions might face more demand for conditionally conservative reporting.

Table 8 presents the results from selected robustness tests. Columns (1)–(4) are based on a subsample consisting of firms needing debt financing only; Columns (1) and (2) show access to debt financing, while Columns (3) and (4) are related to cost of debt. The rationale for doing so is addressed in Wu and Chua (2012) because the observed use and cost of privately held firms' debt financing may be determined by demand, supply, or both. Therefore, we consider a firm whose leverage is lower than its industry average level as a proxy for the needs of debt financing. Prior research (e.g., Wu and Chua, 2012) also point out that a firm's cost of debt may also be determined by its use of debt, and therefore we conduct a two-stage least squares (2SLS) model and present the second-stage results in Columns (5) and (6) of Table 8. No qualitative change has been found. In addition, all the results presented in Table 8 are based on the discretionary revenue-based earnings quality, but those based on discretionary accruals-based earnings quality do not show a qualitative difference either. Hence, we conclude that our findings are robust.

In summary, the above findings fill the gap in the literature on entrepreneurial finance and accounting by studying private firm debt financing. In fact, our study

TABLE 7
ADDITIONAL ANALYSES: CONDITIONAL CONSERVATISM AND SMALL BUSINESS DEBT FINANCING

	Access to debt		Cost of debt	
	(1)	(2)	(3)	(4)
$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1}^* \Delta NI_{t-1} + \alpha_4 Debt + \alpha_5 Debt^* \Delta NI_{t-1} + \alpha_6 Debt^* \Delta NI_{t-1} + \alpha_7 Debt^* D\Delta NI_{t-1}^* \Delta NI_{t-1} + \alpha_8 NERI + \alpha_9 NERI^* Debt^* D\Delta NI_{t-1} + \alpha_{10} NERI^* Debt^* \Delta NI_{t-1} + \alpha_{11} NERI^* Debt^* \Delta NI_{t-1}^* \Delta NI_{t-1} + \varepsilon$				
$\Delta NI_t = \beta_0 + \beta_1 D\Delta NI_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 D\Delta NI_{t-1}^* \Delta NI_{t-1} + \beta_4 IntRate + \beta_5 IntRate^* \Delta NI_{t-1} + \beta_6 IntRate^* \Delta NI_{t-1} + \beta_7 IntRate^* D\Delta NI_{t-1}^* \Delta NI_{t-1} + \beta_8 NERI + \beta_9 NERI^* IntRate^* D\Delta NI_{t-1} + \beta_{10} NERI^* IntRate^* \Delta NI_{t-1} + \beta_{11} NERI^* IntRate^* D\Delta NI_{t-1}^* \Delta NI_{t-1} + \varepsilon$				
$D\Delta NI_{t-1} (\alpha_1)$	-0.0055 (-8.41***)	-0.0064 (-9.26***)	$D\Delta NI_{t-1} (\beta_1)$	-0.0049 (-14.25***)
$\Delta NI_{t-1} (\alpha_2)$	0.0612 (11.41***)	0.0617 (11.47***)	$\Delta NI_{t-1} (\beta_2)$	-0.0075 (-2.22**)
$D\Delta NI_{t-1}^* \Delta NI_{t-1} (\alpha_3)$	-0.3349 (-31.05***)	-0.3402 (-31.36***)	$D\Delta NI_{t-1}^* \Delta NI_{t-1} (\beta_3)$	-0.3826 (-59.53***)
$Debt (\alpha_4)$	-0.0221 (-33.68***)	-0.0233 (-35.11***)	$IntRate (\beta_4)$	0.1571 (30.22***)
$Debt^* D\Delta NI_{t-1} (\alpha_5)$	-0.0024 (-2.31**)	-0.0195 (-9.45***)	$IntRate^* D\Delta NI_{t-1} (\beta_5)$	-0.0479 (-5.58***)
$Debt^* \Delta NI_{t-1} (\alpha_6)$	-0.1306 (-14.43***)	0.0920 (4.02***)	$IntRate^* \Delta NI_{t-1} (\beta_6)$	0.3014 (8.61***)
$Debt^* D\Delta NI_{t-1}^* \Delta NI_{t-1} (\alpha_7)$	-0.1024 (-5.59***)	-0.5453 (-11.75***)	$IntRate^* D\Delta NI_{t-1}^* \Delta NI_{t-1} (\beta_7)$	-0.3982 (-4.39***)
$NERI (\alpha_8)$		-0.0014 (-13.91***)	$NERI (\beta_8)$	-0.0006 (-8.70***)
$NERI^* Debt^* D\Delta NI_{t-1} (\alpha_9)$		0.0023 (9.49***)	$NERI^* IntRate^* D\Delta NI_{t-1} (\beta_9)$	-0.0048 (-1.35)
$NERI^* Debt^* \Delta NI_{t-1} (\alpha_{10})$		-0.0287 (-10.24***)	$NERI^* IntRate^* \Delta NI_{t-1} (\beta_{10})$	-0.1152 (-5.56***)
$NERI^* Debt^* D\Delta NI_{t-1}^* \Delta NI_{t-1} (\alpha_{11})$		0.0580 (10.10***)	$NERI^* IntRate^* D\Delta NI_{t-1}^* \Delta NI_{t-1} (\beta_{11})$	0.1289 (2.44**)

TABLE 7
CONTINUED

	Access to debt		Cost of debt	
	(1)	(2)	(3)	(4)
Intercept (α_0)	0.0235 (52.51***)	0.0354 (36.37***)	0.0070 (31.08***)	0.0122 (19.40***)
N	730777	730777	730777	730777
F value	1668.18***	1091.17***	1411.18***	906.87***
R-square	0.0347	0.0361	0.0373	0.0378

Δ NI: change in net income; D Δ NI: a dummy variable taking the value of one if change in net income (Δ NI) is negative, and zero otherwise. The definitions of all other variables are provided in Table 2.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 8
RESULTS FROM ROBUSTNESS TESTS

	Access to debt			Cost of debt		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>EQ2</i>	0.0083 (12.70***)	0.0147 (14.27***)	-0.0010 (-4.78***)	-0.0033 (-8.51***)	-0.0023 (-11.29***)	-0.0460 (-12.98***)
<i>NERI Dummy</i>		-0.0139 (-13.30***)		-0.0111 (-49.93***)		-0.0096 (-50.23***)
<i>EQ2* " NERI Dummy</i>		-0.0113 (-8.59***)		0.0039 (8.79***)		0.0044 (11.29***)
<i>Size</i>	0.0000 (1.28)	0.0005 (1.38)	-0.0050 (-64.07***)	-0.0049 (-63.18***)	-0.0040 (-64.67***)	-0.0039 (-64.18***)
<i>Leverage</i>			0.0600 (14.60***)	0.0356 (8.68***)	0.0244 (56.49***)	0.0257 (58.92***)
<i>Performance</i>	0.1533 (129.01***)	0.1523 (128.63***)	-0.0164 (-93.05***)	-0.0173 (-95.31***)	-0.0112 (-80.95***)	-0.0117 (-83.41***)
<i>Age</i>	0.0004 (8.12***)	0.0004 (8.04***)	-0.0000 (-7.54***)	-0.0000 (-8.11***)	-0.0000 (-4.52***)	-0.0000 (-6.30***)
<i>PPE</i>	-0.2011 (-85.87***)	-0.2061 (-86.72***)	0.0424 (77.18***)	0.0378 (69.91***)	0.0335 (72.22***)	0.0303 (66.00***)
<i>Slack</i>	-0.0295 (-8.68***)	-0.0301 (-8.88***)	-0.0012 (-1.62)	-0.0018 (-2.36**)	-0.0042 (-6.37***)	-0.0042 (-6.47***)
<i>CashConst</i>	0.0029 (2.64***)	0.0032 (2.87***)	-0.0017 (-7.00***)	-0.0014 (-5.79***)	-0.0009 (-4.42***)	-0.0007 (-3.67***)
<i>Industry Dummies</i>	No	No	No	No	Yes	Yes
<i>Year Dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	0.6063 (166.25***)	0.6155 (164.51***)	0.0644 (78.28***)	0.0712 (82.81***)	0.0601 (22.87***)	0.0628 (23.40***)
<i>N</i>	886024	886024	886024	886024	1160801	1160801
<i>F value</i>	5964.1***	5226.4***	1113.1***	1025.0***	449.62***	446.08***
<i>R-square</i>	0.1549	0.1553	0.0381	0.0446	0.0510	0.0564

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

moves forward this new field of entrepreneurial accounting by combining the accounting and entrepreneurship literature. It is very rare to study impacts of financial reporting quality in the entrepreneurship literature, as it is usually difficult to access detailed financial data of private firms. The sample used for this study is unique because it consists of accounting information from a huge sample of privately held firms from an official source, thus enabling us to explore the relationship between accounting quality and private firms' debt financing, both access to, and cost of, debt, as well as the moderating effects of provincial-level economic development on this relationship.

CONCLUSIONS AND FUTURE STUDIES

In this study we explore the impact of accounting information quality on privately held firms' access to, and cost of, borrowing. Such firms' debt financing has been extensively studied in the literature, and some researchers have proposed various methods to help private firms access bank loans, such as relationship lending, signaling, monitoring, and third party assurance (e.g., Chen *et al.*, 2014; Kim *et al.*, 2011). In general, privately held firms are not mandatorily required to purchase audit service, and accounting researchers mainly focus on the role played by external audit on facilitating debt financing. Audit signals to the lender that financial reports by private firms with audit are of higher quality, and *ceteris paribus* should be able to alleviate the agency conflict between lenders and borrowers arising from information asymmetry. But audit only provides an indirect yet general signal about financial reporting quality; more detailed and specific measurement of accounting quality is rarely examined in the literature, partly because detailed financial accounting information from privately held firms is proprietary and not disclosed to the public. Our study helps fill this gap by employing a unique official data set consisting of such valuable information, measuring specific attributes of accounting earnings following prior literature, and exploring the association between such earnings attributes and private firms' debt financing.

As expected, we document a positive role played by accounting quality in private firms' debt financing. Firms with higher quality accounting information have greater access to loans, and enjoy a lower rate of interest. Furthermore, we show that the imbalanced economic development in China moderates the association between accounting quality and debt financing, because accounting quality plays a greater role in under-developed provinces. As a result, we believe that our study contributes to the literature on accounting information quality, entrepreneurship, small business management, and corporate finance in a significant way. Furthermore, given the engine role played by the private sector in today's economy and the crucial role of debt financing to private firms' survival and growth, our study offers important policy insights into how to promote economic prosperity through the lens of accounting.

Our study has several limitations. First, our measure of cost of borrowing follows prior literature (e.g. Kim *et al.*, 2011), but we acknowledge the interest rate charged by banks is a better proxy to capture the cost of borrowing. Second, we do not have

access to loan officers who make the lending decisions. Such access is valuable, as it helps unveil the underlying mechanisms by which accounting information is used in the debt financing process. Third, we are not able to control some personal attributes of owners due to lack of data. But the existing literature shows that loan officers value this “soft” information. Finally, previous research on debt financing suggests that loan characteristics (i.e., size of the loan, loan maturity) and contractual terms (i.e., use of collateral, guarantee and contingent provisions) have an important impact on loan pricing decisions. Because we do not have such data, we are unable to control for loan characteristics and contracting terms in our analysis.

Future studies may further examine privately held firms’ debt financing by continuing to employ the accounting perspective. For instance, Chen *et al.* (2015) show that IAS adopters among privately held firms have improved access to foreign banks. It will be interesting to see if IFRS, which has been increasingly adopted by private firms around the world, helps tackle the financing challenge facing private firms. Furthermore, existing studies show mixed evidence on the role of audit on private firm debt financing (Kim *et al.*, 2011; Allee and Yohn, 2009). Future studies may investigate why loan officers may perceive audit differently. Next, family ownership, which is a unique organization structure, is popular among privately held firms. Prior accounting studies show that family ownership leads firms to disclose accounting information of different quality, and future research may examine if ownership interacts with accounting information quality to affect debt financing. Finally, researchers may incorporate personal attributes of entrepreneurs into the loan pricing decisions of private firms, as the characteristics of owners (i.e., owner’s education, business experience, and personal credit history) play a more significant role in loan pricing in private firms relative to that in public firms. Furthermore, an owner’s personal characteristics might be associated with the accounting practice of his firm. Conditional on data availability, future research can provide more insights into the interplay between an entrepreneur’s characteristics, accounting quality, and debt financing in private firms.

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