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Bank competition, government intervention and SME debt financing

Bank
competition

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Abstract

Purpose – The purpose of this paper is to examine the effects of the government intervention and bank competition on small and medium enterprise (SME) external debt financing in Chinese capital market.

Design/methodology/approach – This study uses ordinary least squares with standard errors clustered at the firm level. In addition, the authors use the dynamic system generalized method of moments to address the possible endogeneity issue in the regressions.

Findings – Using a sample of 908 firms from 2000 to 2010, the authors found that SMEs are more likely to access bank loans only in regions with higher level of government intervention than median government intervention. Further, the result shows that the government is motivated to help SMEs to obtain more external debt in regions where the level of bank competition is lower than the median bank competition index. Last, the authors found evidence that firms with politically connected CEOs are likely to access bank loans.

Research limitations/implications – This paper highlights that government intervention enables the SMEs to secure more bank loans. Second, the authors' results imply that the government is motivated to help SMEs to obtain more external debt in regions with low level of bank competition.

Originality/value – This study contributes to the current literature by revealing that government intervention is the driving force alleviating SMEs' constraints in accessing external financing. Second, this study finds the evidence to supports the argument that government has a strong motive to help SMEs to secure long-term credits for political purpose (Fan *et al.*, 2012), when the level of bank competition is low (Berger and Udell, 2006).

Keywords SME, Bank competition, Government intervention, Debt financing

Paper type Research paper

1. Introduction

There are many studies examining the external financing of small and medium enterprises (SMEs). The “conventional wisdom” on SME financing argues that large banks are reluctant to serve SMEs; while relationship banking allows SMEs to obtain products and service from the niche banks who think SMEs are of strategic importance (Berger and Udell, 2006). De la Torre *et al.* (2010) present new evidence against the “conventional wisdom” by suggesting that SMEs do not depend on relationship lending and large banks are interested in serving SMEs.

There is a literature gap on the possibility that SMEs rely on governments to obtain bank loans. It is probable that SMEs can count on their connections with state-owned banks to secure bank credits. More, the Chinese central government has an incentive to intervene in the public firm's policies in the following ways. First, the government intervenes through majority ownership in public state-owned enterprises (SOEs). Although the private sector

JEL Classification — D22, G28, G32

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has been growing fast (Allen *et al.*, 2005), SOEs continue to dominate the Chinese share markets. For instance, Chen *et al.* (2011) document that 75 percent of their sample firms are SOEs and 33 percent listed SOEs have a chief executive officer (CEO) or a chairman who is a current or former government official. Second, the “big four” state-owned banks (Bank of Constructions, Bank of China, Bank of Agriculture and China Industry and Commerce Bank) discriminate the Chinese banking industry. Hence, when an SOE is in financial trouble, different levels of governments influence the “big four” to provide bank loans with favorite terms to decrease the SOE’s possibility of defaults. Third, regional governments in China frequently interfere with banks’ credit decisions to boost the gross domestic product (GDP). It is common that regional governments help firms with subsidies to lower the firms’ probability of defaulting on short-term borrowing, and help the firms to secure long-term credits to stimulate the local economy (Fan *et al.*, 2012).

Also, there is a debate on whether the improvement in bank competition will reduce the SMEs’ financing constraint (Freixas and Rochet, 1997; Gunji *et al.*, 2009; Stiglitz and Greenwald, 2003). Hence, we test whether the level of bank competition affects the government willingness to intervene state-owned banks’ loan decision. Our sample consists of all firms listed on the Chinese mainboards (A-share companies), which have complete financial information from 2000 to 2010. We use the ordinary least squares (OLS) at the firm level. In addition, we use the dynamic system generalized method of moments (GMM) to address the endogeneity issue in our model. Our results reveal some important findings. First, we find that SMEs are more likely to access bank loans only in regions with a higher level of government intervention than median government intervention. This finding implies that Chinese Government intervention in the SOE banks’ credit policies enables the SMEs to secure more bank loans. Second, the result shows that the government is more motivated to help SMEs to obtain more external debt in regions where the level of bank competition is lower than the median bank competition index. This piece of evidence shows that the government is motivated to alleviate SMEs’ debt constraint in regions with a lower level of bank competition. Last, we find evidence that firms with politically connected CEOs are likely to access bank loans. This finding helps explain why firms’ financing decisions are not independent of government intervention in China.

The remaining paper is organized as follows. Section 2 presents the hypotheses development. Section 3 describes the data and methodology. Section 4 presents the econometric results and Section 5 concludes the paper.

2. Literature review and hypotheses development

There are many studies showing that SMEs are the engine of a nation’s economic development (Beck and Demirguc-Kunt, 2006). For instance, the most recent figure shows that SMEs account for 99 percent of all enterprises, 80 percent of employment, 50 percent of the government taxation, 65 percent of patents, and 80 percent of new product development in China[1]. More, numerous studies have examined the phenomenon that SMEs face difficulties in accessing bank loans compared to large businesses both in the developing and developed world (Berger and Udell, 1998; Galindo and Schiantarelli, 2003). Alleviating SMEs’ financing constraints, therefore, could have a profound effect on the sustainability of any country’s economic growth.

The “conventional wisdom” on SME external financing argues that large banks are reluctant to serve SMEs due to SMEs’ low-valued collaterals (Brewer and Genay, 1994). The informational opacity or the imperfect information could explain the “conventional wisdom” on SME external financing. Stiglitz and Weiss (1981) argue that the imperfect information between lending banks and borrowing firms leads to a temporary disequilibrium in the loanable funds market. The intuition is straightforward: commercial banks have the great difficulty in identifying the creditworthy borrowers; hence, to mitigate the default risk, banks will use a variety of screening devices such as high interests or strict collateral requirements.

Uchida *et al.* (2012) further point out that informational opacity is the most important characteristic defining SME finance. According to them, SMEs do not disclose relevant information about their suppliers, customers and employees compared to large public firms. Moreover, many SMEs do not have financial statements scrutinized by the independent auditors. As a result, SMEs may have difficulty signaling high quality to overcome the informational opacity problem (Uchida *et al.*, 2012).

Berger and Udell (2006) argue that relationship lending is the possible solution for the informational opacity problem. In the relationship lending, the bank and the borrowing firm establish a long-term relationship (Berger and Udell, 2006). Both Mian (2006) and Sengupta (2007) suggest that this long-term relationship permits the bank access to the borrowing firm's relevant information. The loan officer gathers the "soft" information through direct contact over time with SMEs and their stakeholders (Beck *et al.*, 2011).

Moreover, Biggs and Shah (2006) suggest that another type of relationship lending – funding from friends and family – plays an important part in firms' financing in the developing countries than the developed countries. In this lending network, members provide personal references and lend to each other based on reputation (Biggs and Shah, 2006).

Both Berger and Udell (2006) and Berger *et al.* (2007) suggest that banks increasingly use different lending technologies as the possible solutions for SMEs' informational opacity problem. Those lending technologies include borrower-selecting mechanisms, loan contract structure, and monitoring procedures (Berger and Udell, 2006). For instance, accounts receivable and inventory can be used as collateral for asset-based lending; while the lessee (borrower) can rent equipment in a leasing relationship from the lessor – (lender) (Berger and Udell, 2006).

De la Torre *et al.* (2010) present new evidence against the "conventional wisdom" by suggesting that large banks are interested in serving SMEs. More specifically, De la Torre *et al.* (2010) argue that banks perceive SMEs as strategic businesses and multiple-service banks are more likely to gain competitive advantage when they deal with SMEs. Moreover, banks' increased catering to SMEs was not affected by the 2007-2009 global financial crisis.

Another strand of literature on credit availability to SMEs focuses on the relationship between institutional factors and SME financing constraints. SMEs face fewer financing constraints in countries with more effective legal systems (Beck *et al.*, 2005). La Porta *et al.*'s (1997, 1998) law and finance argument suggest that better legal protection to both shareholders and creditors and better institutions lead to better outcomes in the development of the financial system. Specifically, the law and finance literature predicts that stronger creditor rights allow borrowers to have more access to longer-term and lower-interest loans (Qian and Strahan, 2007). Due to the differences in laws and institutions, banks in emerging markets charge higher fees interest rates on loans made to SMEs than banks in developed markets (Beck *et al.*, 2011).

When the legal systems are weak, government intervention could influence state-owned banks to grant more loans to SMEs. This argument is built on the social hypothesis, which states that maximizing social welfare is the government's main role and SOEs should help the government by allocating resources to socially beneficial projects and firms in certain industries which have limited access to funds (Gerschenkron, 1962). The social hypothesis also suggests that private banks are reluctant to provide credits to projects with social profits (Stiglitz, 1993). If the social hypothesis holds, then higher government ownership of banks will be positively associated with SMEs' access to bank loans. Andrianova *et al.* (2012) find important evidence to support the social hypothesis using a cross-country data set spanning from 1998 to 2005. More specifically, Andrianova *et al.* (2012) find that countries with more government ownership have, on average, higher GDP per capita growth than countries with less government-owned banks.

Sun and Li (2005) argue that debt maturity not independent of the government intervention through national policies and orders from government officials. Moreover, the

firms without legal protection from legal regime can still be supported with long-term bank loans in China. Thus, Sun and Li (2005) suggest that when debt contracts do not comply with the legal regime effectively, government intervention can act as a substitute mechanism for the legal system and decreases the cost of performing the debt contracts.

Firth *et al.* (2009) conduct a study using a survey questionnaire to investigate how Chinese government-owned banks extend loans to private companies. The authors' results reveal that the government-owned banks provide loans to financially sound firms and firms with better corporate governance system. More, Firth *et al.* find that firms' status with the government as a minority shareholder enables the firm to gain bank loans. The authors' results provide evidence that state ownership is a significant driver of access to debt financing.

Luo and Ying (2014) analyze all Chinese public firms (both listed on the Shanghai and Shenzhen stock exchanges) excluding financial companies for a period from 2004 to 2009. The authors find that firms' political linkages help the firm to access debt financing from state-owned banks. More, the authors' findings show that firms' political connections have a stronger impact on the firm's access to debt financing when the firm is privately owned, faces financial constraints, or is in a region with a high degree of government intervention.

Further, in China, the local governments are motivated by fiscal decentralization and GDP-oriented government performance evaluation scheme to interfere with financial institutions' credit decisions (Fan *et al.*, 2012). More specifically, local governments help firms with subsidies to lower firms' possibility of default on short-term borrowing and to secure long-term credits to stimulate the local economy. Also, local governments help firms to obtain loans through their influence on banks' credits decision to reduce the impact of government officials' turnover on cost of long-term financing (Fan *et al.*, 2012). Based on the preceding discussion, the following relationship is hypothesized:

H1. Government intervention has a positive effect on SME's access to bank loans.

Besides the institutional factors, bank competition may affect SME credit availability (Berger and Udell, 2006; Carbó-Valverde *et al.*, 2009). Berger and Udell (2006) argue that banks with more market power have tight credit standards and charge their customers high rates or fees on loans. More, when bank competition is low, banks with more market power may not be active to search and serve creditworthy SMEs (Berger and Udell, 2006).

We employ Fan *et al.*'s (2010) marketization index as the measure for the local bank competition index. In our sample, the mean of local competition index is 6.874 with a minimum of -4.10, a maximum of 12.76 and a range of 16.86. This large range suggests that there exists substantial regional divergence in the level of bank competition in China. When the degree of local bank competition is high, the government-owned banks are more willing to extend credit to firms for profits rather than for political objectives. Also, there does not exist any apparent "size discrimination" by the non-state-owned banks after all, and thus, non-government-owned banks are more willing to provide credit to more efficient SMEs. Hence, we expect that the government is more motivated to influence the state-owned banks to provide more loans to SMEs in regions where the level of bank competition is low. Therefore, the following relationship is hypothesized:

H2. Government intervention has a positive effect on SME's bank loans only in regions where the level of local bank competition is low.

3. Data collection and empirical model

3.1 Data

Our initial sample firms include all companies listed on the Chinese mainboards (A-share companies), which have complete financial information from 2000 to 2010 in the China Securities Market and Accounting Research's (CSMAR) database. Financial service companies

are excluded from the sample because those companies have different data structures than those of non-financial-service companies. Special treatment (ST) firms and delisting-warning (*ST) firms are also omitted. Firms that have negative net assets are also excluded. In addition, we disregard the firms that have missing critical data, such as bank loans, assets and liabilities. Thus, our final sample consists of 980 companies. We winsorize our variables at the 1st and 99th percentiles to ensure that extremities do not affect the results.

3.2 Empirical model

We use the following equation to test our hypotheses:

$$\begin{aligned} \frac{ST_LOAN_{i,t}}{TOTAL_LOAN_{i,t}} = & \beta_0 + \beta_1 SME_{i,t} + \beta_2 GOV_{i,t} + \beta_3 MB_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 COL_{i,t} \\ & + \beta_6 ROA_{i,t} + \beta_7 AGE_{i,t} + \beta_8 CASHFLOW_{i,t} + \beta_9 PRIVATE_{i,t} \\ & + \beta_{10} POLITIC_{i,t} + \beta_{11} FIN_CONS_{i,t} + \beta_{12} IND_DIR_{i,t} + \beta_{13} YEAR_{i,t} \\ & + \beta_{14} INDUSTRY_{i,t} + \varepsilon_{i,t}. \end{aligned} \quad (1)$$

where TOTAL_LOAN is the firm's total loan ratio; ST_LOAN the short-term loan ratio; SME the dichotomous variable for small- and medium-sized firms; GOV, the dummy for the local government intervention; MB the market-to-book value of equity; Size the firm size; ROA the return on assets; AGE the firm's age; CASHFLOW the firm's operational cash flow; PRIVATE a non-SOE dummy; IND_DIR the number of independent directors and; YEAR and INDUSTRY the year and industry dummies, respectively. Detailed definitions of variables used in Equation (1) are provided in Table I.

Variable	Definitions
AGE	Ln (one plus the firm's years of existence since incorporation)
CASHFLOW	Cash flow generated from operations/total assets
COL	Total fixed assets/total assets
COMPETITION	Bank competition index
LOW_COMP	Low bank competition dummy; takes the value of one if the firm's region has a COMPETITION less than or equal to the median COMPETITION (7.01); otherwise zero
FIN_CONS	The interest coverage ratio; the ratio between firms' total profits before tax and before interest and their total interest payments
GOV	Minus one multiplying reducing-government-intervention-in-business-operations index (RGIIBO)
HIGH_GOV	High government intervention dummy; takes the value of one if the firm's region has a GOV larger than the median GOV (6.23); otherwise zero
IND_DIR	The number of independent directors on the firm's board of directors
INDUSTRY	Industry dummy
STLOAN	Short-term bank loan dollar volume/total assets
TOTALLOAN	(Short-term + long-term bank loan dollar volume)/total assets
MB	Market value/book value of equity
POLITIC	A dummy variable; takes the value of one if the firm's CEO or the chairman of the board of directors is a communist party member; otherwise zero
PRIVATE	A dummy variable; takes the value of one if the firm is a non-SOE; otherwise zero
ROA	Net income/total assets
SME	SME dummy; equals one when a firm is an SME (fixed asset sizes below the first quartile); zero otherwise
SIZE	Ln (total assets)
YEAR	Year dummy variable

Table I.
Variable definitions
for Equation (1)

3.2.1 Dependent variables. This current study focuses on the determinants of the SME firm's bank loan financing. TOTAL_LOAN is defined as the firm's book value of total bank loan (short-term and long-term interest-bearing debt) divided by total assets; ST_LOAN is defined as the firm's dollar value of short-term interests generating debt divided by total assets.

3.2.2 Explanatory variables. The measurement of SME varies internationally and varies among the sources reporting SME information (Ayyagari *et al.*, 2007). Some of the commonly used criteria are average annual sales (De la Torre *et al.*, 2010; Beck *et al.*, 2011), the number of employees (Ayyagari *et al.*, 2007), total net assets (Cassar and Holmes, 2003), and investment level (Choe, 2007). In the current study, we use a firm's fixed assets size to divide the sample firms into SME group (whose fixed assets size below the first quartile). We choose fixed assets size as measurement of SME because the loan request of SME is often rejected by banks, due to the firm's low-valued fixed assets serving as collaterals (Stiglitz and Weiss, 1981). In addition, banks cut the volume of bank credit available first to borrowing firms with small-size fixed assets during a credit crunch (Mizen and Yalcin, 2002; Yalcin *et al.*, 2002). There are 3,690 SME-year observations according to our SME definition.

GOV is the measure for the local government intervention in this study. We use the reducing-government-intervention-in-business-operations (RGIIBO) index to determine the value of government intervention for our sampling firms. RGIIBO is a basic index in the Government and Market categorical index in Fan *et al.*'s (2011) marketization overall index. The prior literature (e.g. Firth *et al.*, 2009; Wei and Kong, 2014) has extensively used Fan *et al.*'s (2011) Government and Market index to measure China's regional public governance and legal system. In RGIIBO index, the rating of a region ranges from zero to ten in the base year. The rating is comparative: a higher rating in a year shows that the region's index value has increased compared to the rating in the base year. RGIIBO is a reverse index: the higher the value of the index, the lower the level of government intervention in that region. We use the region-level RGIIBO index as the proxy for the government intervention in our study for two reasons. First, our study focuses on the impact of regional differences in government intervention on the firm's long-term debt choice. Second, Chen *et al.* (2011) suggest that the political linkage variable may be endogenous, that is, non-SOEs may hire politically connected CEO or chairman to gain competitive advantage. Based on the reciprocal nature of the RGIIBO index, we multiply negative one by this index to generate the value of our independent variable – GOV.

The impact of political connections cannot be ignored in the Chinese context. For example, Chen *et al.* (2011) use an SOE indicator dummy as the proxy for government intervention. The dummy assumes a value of one when the firm's controlling shareholder is an SOE, or the firm is politically connected (the firm has a CEO or a chairman who is a present or previous government official, Chen *et al.*, 2011). Luo and Ying (2014) total the scores of CEOs and the board chairs to derive the political connection index and find that firms' political linkages help the firm to secure more debt financing from state-owned banks. Thus, we control for the firm's political connections in our model by inserting a dummy POLITIC into our main model. POLITIC assumes the value of one if the firm's CEO or the board chairman is a member of the Chinese Communist Party[2].

We use Fan *et al.* (2011) marketization index as the measure for the local bank competition index. The higher the value of Fan *et al.* (2010) index, the quicker the process of local marketization and therefore the greater degree of the local competition. Consistent with Boyd and De Nicolo (2005) and Fu and Heffernan (2009), we use the Herfindahl-Hirschman index (HHI) as an alternative measure for bank competition to perform the robustness check.

Further, we control for firm size, collateral, accounting performance ROA, firm age, operating cash flow, firm financial constraints, private ownership, corporate governance, region effects, year effects and industry effects in Equation (1). We control for MB, the

measure for growth option, because higher-MB firms are more likely to use more short-term debt contracts (Childs *et al.*, 2005; Fan *et al.*, 2012). We control for a firm's collateral (COL), measured as tangible assets ratio, because the firm with a higher level of tangible assets borrows with longer maturities (Qian and Strahan, 2007). Firm age and size are proxies for informational asymmetry. Smaller firms have more informational problems, such as less-detailed financial statements and less experience (Berger *et al.*, 2001); on the other hand, Berger and Udell (2006) suggest that old firms have more public information to the market. Further, we control for a firm's quality measured as earning ability (ROA and CASHFLOW) because Flannery's (1986) separating equilibrium theory argues that high-quality firms tend to borrow short-term debt.

We control for the private ownership of the sample firms using a binary variable PRIVATE, with a value of one if the firm is a non-SOE, otherwise zero. According to Ganguli (2013), firm ownership structure impacts the firm's capital structure. Also, Firth *et al.*'s (2009) study shows that state ownership benefits the firm's access to debt financing. We control for the firm's internal financial constraints because SMEs with internal financial difficulties are more likely to face obstacles in obtaining bank loans (Saeed and Sameer, 2015). We measure financial constraints as the interest coverage ratio, which is defined as the firms' total profits before tax and before interest scaled by total interest payments. We also control for the firms' corporate governance, because sound corporate governance mechanism can help the firm to obtain external debt (Du and Dai, 2005; Firth *et al.*, 2009). We measure corporate governance using the number of independent directors (IND_DIR) in the company's board of directors. We use the secondary coding for the manufacturing industry and the primary coding for other industries based on the industry classification codes from China Securities Regulatory Commission.

4. Empirical results

4.1 Descriptive statistics

Table II presents the descriptive statistics of the data. The mean TOTAL_LOAN is 0.414, which suggests that on average, for one dollar of total assets, 41 cents are financed by bank loans. The maximum TOTAL_LOAN is 0.827, which suggests that the bank loans account for about 83 percent of the total assets for some firms. The mean short-term bank loans ratio (TOTAL_LOAN) is 0.158, which suggests that on average the firm's short-term bank loans account for about 16 percent of the total assets in our sample firms. The minimum of ST_LOAN is 0, implies that some public firms do not possess any short-term loans;

Variable	Obs	Mean	Median	Min.	Max.	SD
STLOAN	9,080	0.158	0.145	0	0.475	0.121
TOTALLOAN	9,080	0.414	0.408	0.045	0.827	0.174
GOV	9,080	6.316	6.230	-2.170	12.670	3.352
COMPETITION	9,080	6.874	7.016	-4.100	12.760	2.681
MB	9,080	3.677	8.24	-28.158	101.54	9.472
SIZE	9,080	21.424	21.271	19.236	24.887	1.041
COL	9,080	0.961	0.979	0.731	1	0.052
ROA	9,080	0.033	0.033	-0.113	0.157	0.049
AGE	9,080	2.359	2.398	0	3.367	0.510
CASHFLOW	9,080	0.048	0.037	-24.974	1	0.302
IND_DIR	9,080	2.912	3	0	8	1.178
FIN_CONS	9,080	2.375	0.993	-134.23	300.471	15.734

Note: All data are in the 2012 prices

Source: CSMAR database

Table II.
Descriptive statistics
of the sample firms

the maximum of MATURITY is 0.475, which suggests that for some firms half of their total assets are financed by the short-term bank loans.

The mean of GOVERNMENT is 6.316 with a minimum of -2.17 , a maximum of 12.67 and a range of 14.84. This large range of government intervention suggests that there is enormous regional divergence in the level of government interventions in firms' corporate decisions in China. This finding confirms the argument that there exist substantial differences with regards to the legal and institutional environment in Chinese provinces due to the divergence in regional resource endowments, geographic location and national policies (Fan *et al.*, 2011).

Table III reports the Pearson's correlation coefficients for the variables in Equation (1). The correlation matrix uncovers a positive correlation between TOTAL_LOAN, ST_LOAN and GOV. This provides some preliminary support for our *H1* that the higher the level of the government intervention, more access of public firms to bank loans. In addition, both TOTAL_LOAN and ST_LOAN are significant and negatively associated with the SME dummy. These negative correlations suggest that SMEs obtained less bank loans compared to SOEs.

4.2 Empirical results

We have a panel data set with small period (T), large number of cross-sections (N). To address the issues of under-estimated standard errors and over-estimated significance level of the parameter coefficients, we use the robust OLS estimator with the standard errors clustered at the firm level (Petersen, 2009). Next, we use the dynamic system GMM with one-year lagged dependent variable as an alternative specification to address the possible dynamic endogeneity issue. More specifically, we use the second-lagged GOV as the GMM instruments for the endogenous variable and all control variables as the instrumental variables for the exogenous variables. Columns (1) and (2) in Table IV document the results of estimating Equation (1) with ST_LOAN as the dependent variable; columns (3) and (4) present the regression results of estimating Equation (1) using TOTAL_LOAN as the alternative dependent variable. Columns (1) and (3) in Table IV report the results using the OLS with firm-level clustered standard errors, and columns (2) and (4) document the system GMM estimation results.

As anticipated, the estimates on SMEs in all columns in Table IV are negative and significant. The GMM estimates in columns (2) and (3) are significant at the 1 percent level, after the endogeneity issue is addressed. These findings suggest that SMEs, on average, have less bank loans than the large firms with more fixed assets. Hence, our results provide some evidence to support the "conventional wisdom" that banks prefer extending loans to large firms.

Also, we note that the estimates on ROA are significant and negative across all columns in Table IV. This finding implies that profitable firms borrow less bank loans. Further, the results in Table IV show that AGE has significantly positive effect on total bank loans. This finding implies that old firms have more access long-term bank loan (Cai *et al.*, 2008; Guedes and Opler, 1996). One possible explanation for this finding is that the transactions costs of issuing long-term debt are too high for small firms (Titman and Wessels, 1988). Further, we find that large firms have more access to both short-term and long-term bank loans. This finding is likely due to the fact that larger firms have less informational problems (Berger *et al.*, 2001). In addition, we find the positive and significant signs on COL in columns (3) and (4). This piece of finding supports the argument that the firm with a higher level of tangible assets borrows with longer maturities since the maturity of tangible assets is relatively long (Qian and Strahan, 2007). The system GMM results in Table IV also reveal the negative association between a firm's financial constraints and external debt. This finding confirms the argument that firms with internal financial constraints are more likely to face obstacles in assessing bank loans (Guariglia, 2008). Further, the results show a

Variable	STLOAN	TOTALLOAN	SME	MB	SIZE	COL	ROA	AGE	CASHFLOW	GOV	COMPETITION	FIN_CONS	IND_DIR	PRIVATE	POLITIC
STLOAN	1														
TOTALLOAN	0.791***	1													
SME	-0.326***	-0.001*	1												
MB	0.280***	0.294***	-0.917***	1											
SIZE	0.029***	0.051***	-0.155***	0.052**	1										
COL	0.136***	0.036***	-0.221***	0.137	0.110***	1									
ROA	0.041***	0.019	-0.176***	0.004**	0.168***	-0.039***	1								
AGE	0.054***	0.028	-0.035	0.114***	0.152***	-0.151***	0.064***	1							
CASHFLOW	0.031***	0.053***	0.251	-0.001	0.043***	0.040***	0.006	0.072***	0.010	1					
GOV	0.071***	0.081***	-0.304***	0.002	0.190***	0.025	0.064***	0.306***	0.022	0.585***	1				
COMPETITION	-0.014***	-0.042***	-0.223	0.010	0.228***	-0.029***	0.012	0.721***	0.007	0.353***	0.043***	1			
FIN_CONS	0.176***	0.076***	0.205***	0.004**	-0.189***	0.053*	0.103***	0.413***	0.014*	0.217***	0.065***	0.010*	1		
IND_DIR	-0.347***	-0.18***	0.073	0.467***	0.214***	-0.031*	0.002	0.004	0.007*	0.014	0.043***	0.314***	0.013**	1	
PRIVATE	0.437***	0.276***	0.071*	0.006	-0.394***	0.074**	0.391***	0.418***	0.164*	0.173**	0.183***	0.007*	0.074**	0.074**	1

Notes: ***, **, * Significant at 10, 5, and 1 percent levels, respectively

Bank
competition

Table III.
Pearson correlation
coefficients

CFRI

Dependent variable Independent variables	ST_LOAN		TOTAL_LOAN	
	(1) OLS	(2) GMM	(3) OLS	(4) GMM
SME	-0.032** (-2.25)	-0.012*** (-2.78)	-0.035** (-1.55)	-0.018*** (-3.62)
GOV	0.001 (0.93)	0.002 (1.58)	0.000 (0.11)	0.001 (1.53)
ROA	-0.777*** (-14.10)	-0.774*** (-14.09)	-1.047*** (-12.48)	-1.044*** (-12.40)
AGE	-0.002 (-0.32)	-0.002 (-0.27)	0.064*** (6.27)	0.063*** (6.31)
COL	-0.038 (-0.68)	-0.031 (-0.55)	0.181** (1.99)	0.187** (2.07)
CASHFLOW	-0.003 (-0.60)	-0.003 (-0.53)	-0.005 (-1.41)	-0.004 (-1.30)
SIZE	0.013* (1.84)	0.019** (2.17)	0.014** (1.99)	0.013* (1.85)
MB	-0.002 (-0.31)	-0.001 (-0.29)	-0.001 (-0.30)	-0.001 (-0.27)
FIN_CONS	-0.172 (-0.60)	-0.163** (-2.17)	-0.094 (-1.41)	-0.087* (-1.67)
IND_DIR	-0.002 (-0.31)	0.001 (-0.29)	-0.001 (-0.30)	0.001 (-0.27)
PRIVATE	-0.032** (-2.05)	-0.027** (-2.10)	-0.042*** (-3.12)	-0.036** (-2.10)
POLITIC	0.132** (2.25)	0.214*** (3.14)	0.098** (2.36)	0.175*** (3.12)
Year effects	Control	Control	Control	Control
Region effects	Control	Control	Control	Control
Industry effects	Control	Control	Control	Control
<i>n</i>	9,080	9,080	9,080	9,080
Adjust <i>R</i> ²	0.22	0.23	0.26	0.24
AR (2) (<i>p</i> -value)		0.423		0.408
Hansen's <i>J</i> (<i>p</i> -value)		0.541		0.362

Notes: *t*-values in parenthesis are obtained using standard errors clustered at the firm-level. AR(2) tests the autocorrelation of the first-differenced errors. The AR(2) has a null hypothesis that there is no autocorrelation in the first-differenced errors. Hansen's *J* tests whether the GMM model is over-identified. The null hypothesis of Hansen's *J* test is that the model is valid. The variables are defined in Table I. *, **, ***Significant at 10, 5, and 1 percent levels, respectively

Table IV.
Regression results
of Equation (1)

negative association between private ownership (PRIVATE) and bank loans in all columns in Table IV, which supports the argument that private ownership has difficulties in accessing bank debt financing (Firth *et al.*, 2009). We also note that the estimates on POLITIC have positive and significant signs, which is consistent with the findings of Luo and Ying (2014) that firms' political linkages help the firm to obtain more loans from state-owned banks.

Next, we perform a sub-sample analysis to test our *H1* that government intervention has a positive impact on SME's bank loans. The results in Table V present some important evidence that strongly supports our *H1*. Specifically, the results in columns (1) and (3) (SME sub-samples) show that the coefficient estimates on high government intervention dummy HIGH_GOV (0.002 and 0.004) are significant at least at the 5 percent level. This finding suggests that when the region's government intervention high, SMEs tend to obtain more debt financing; on the other hand, there is no association between high degree of government intervention and external debt for non-SMEs. Hence, our study provides some new evidence supporting the argument that the Chinese firms' capital structure choice is not independent of the government intervention (Sun and Li, 2005; Fan *et al.*, 2012). In addition, our finding shows that when debt contracts do not comply with the legal regime effectively, government intervention can act as a substitute mechanism for the legal regime (Sun and Li, 2005). Further, our finding supports the social hypothesis (Gerschenkron, 1962; Stiglitz, 1993) based on the positive association between government intervention and bank loans.

The social hypothesis explains the positive relation between government intervention and SME bank loans. Further, we expect this positive relation to be more pronounced when the firm has a low degree of local bank competition. To test our *H2*, we add an interaction term HIGH_GOV × LOW_COMPETITION in our sub-sample analysis. If the estimate on this interaction term has a positive sign, then it will indicate that government

Dependent variable Independent variables	STLOAN		TOTALLOAN		Bank competition
	(1) SME	(2) Non-SME	(3) SME	(4) Non-SME	
HIGH_GOV	0.002** (2.10)	0.001 (1.37)	0.004*** (3.01)	0.000 (0.10)	
ROA	-0.712*** (-10.11)	-0.770*** (-9.38)	-0.881*** (-9.27)	-1.147*** (-8.37)	
AGE	0.005 (1.24)	-0.011 (-0.21)	0.102 (0.52)	0.080** (2.63)	
COL	-0.010 (-0.23)	-0.054 (-0.75)	0.105** (1.94)	0.263** (2.25)	
CASHFLOW	-0.005 (-0.09)	-0.094 (-0.53)	-0.005 (-1.54)	0.047 (0.83)	
MB	-0.003 (-0.36)	-0.001 (-0.27)	-0.003 (-0.36)	-0.002 (-0.25)	
SIZE	0.015* (1.87)	0.019** (2.17)	0.013** (1.97)	0.012* (1.76)	
FIN_CONS	-0.230* (-1.74)	-0.172* (-1.51)	-0.201** (-2.01)	-0.111*** (-3.31)	
IND_DIR	-0.002 (-0.41)	-0.001 (-0.27)	-0.001 (-0.40)	-0.001 (-0.62)	
PRIVATE	-0.030** (-2.00)	-0.021** (-2.01)	-0.037*** (-3.01)	-0.034*** (-2.72)	
POLITIC	0.125** (2.25)	0.182*** (3.11)	0.115** (2.31)	0.130*** (3.00)	
Year effects	Control	Control	Control	Control	
Region effects	Control	Control	Control	Control	
Industry effects	Control	Control	Control	Control	
<i>n</i>	3,514	5,375	3,514	5,375	
Adjust <i>R</i> ²	0.36	0.42	0.29	0.34	
AR (2) (<i>p</i> -value)	0.414	0.412	0.417	0.315	
Hansen's <i>J</i> (<i>p</i> -value)	0.382	0.342	0.560	0.354	

Notes: *t*-values in parenthesis are obtained using standard errors clustered at the firm-level. AR(2) tests the autocorrelation of the first-differenced errors. The AR(2) has a null hypothesis that there is no autocorrelation in the first-differenced errors. Hansen' *J* tests whether the GMM model is over-identified. The null hypothesis of Hansen' *J* test is that the model is valid. The variables are defined in Table I. *, **, *** Significant at 10, 5, and 1 percent levels, respectively

Table V.
The effects of
government
intervention on SME
debt financing

intervention has a positive effect on SME's bank loans only in regions where the level of local bank competition is low.

The results in columns (1) and (3) in Table VI exhibit that the estimates on the interaction term HIGH_GOV × LOW_COMPETITION are positive and significant. This evidence implies that the government is more encouraged to alleviate SMEs' debt constraint in regions where the level of bank competition is lower than the median bank competition index. Hence, our results show the evidence supporting our *H2* that government intervention increases an SME firm's bank loans only in the region where the level of bank competition is low.

The results in Table VI also show that estimates on ROA and COL exhibit similar effects as those in Tables IV and V. These findings suggest that less-profitable firms borrow fewer bank loans. Also, banks still prefer firms with higher level of tangible assets when granting bank loans regardless of whether the company is an SME or not. Moreover, the estimates on PRIVATE and POLITIC are similar in Tables IV-VI, which suggest that it is easier for SOE or politically connected firms to access bank loans.

4.3 Sensitivity tests

We run the sensitivity tests in the following ways. First, we use bank loans issued by the non-"big-four" banks divided by the total local loans as an alternative proxy for local bank competition. Second, we use Ayyagari *et al.*'s (2007) definition of SME indicator for a robustness test, in which SME dummy equals 1 when the number of the firm's employees is less than or equal to 250. Third, to alleviate the potential bias from the large dispersion of government intervention in our sample distributions, we eliminate Shanghai (885 observations) and Guangdong (753 observations), which have the maximum number of observations. Next, consistent with Boyd and De Nicolo (2005) and Fu and Heffernan (2009), we use the HHI index

CFRI	Dependent variable Independent variables	STLOAN		TOTALLOAN	
		(1) SME	(2) Non-SME	(3) SME	(4) Non-SME
	HIGH_GOV	0.002** (1.97)	0.001 (1.41)	0.002*** (2.72)	0.002 (0.18)
	LOW_COMP	-0.001 (-0.83)	-0.001 (-0.98)	-0.000 (-0.23)	-0.000 (-0.76)
	HIGH_GOV × LOW_COMP	0.010** (2.26)	0.000 (1.01)	0.008*** (3.14)	0.005 (0.15)
	ROA	-0.711*** (-10.11)	-0.770*** (-9.38)	-0.880*** (-9.27)	-1.146*** (-8.37)
	AGE	0.005 (1.24)	-0.011 (-0.21)	0.102 (0.52)	0.080** (2.63)
	COL	-0.010 (-0.23)	-0.054 (-0.75)	0.105** (1.94)	0.263** (2.25)
	CASHFLOW	-0.005 (-0.09)	-0.094 (-0.53)	-0.005 (-1.54)	0.047 (0.83)
	MB	-0.003 (-0.36)	-0.001 (-0.27)	-0.003 (-0.36)	-0.002 (-0.25)
	SIZE	0.015* (1.87)	0.019** (2.17)	0.013** (1.97)	0.012* (1.76)
	FIN_CONS	-0.230* (-1.74)	-0.171* (-1.51)	-0.202** (-2.01)	-0.112*** (-3.30)
	IND_DIR	-0.002 (-0.41)	-0.001 (-0.27)	-0.001 (-0.40)	-0.001 (-0.62)
	PRIVATE	-0.030** (-2.00)	-0.021** (-2.01)	-0.037*** (-3.01)	-0.034*** (-2.72)
	POLITIC	0.125** (2.25)	0.182*** (3.11)	0.115** (2.31)	0.130*** (3.00)
	Year effects	Control	Control	Control	Control
	Region effects	Control	Control	Control	Control
	Industry effects	Control	Control	Control	Control
	<i>n</i>	3,514	5,375	3,514	5,375
	Adjust <i>R</i> ²	0.30	0.28	0.31	0.29
	AR (2) (<i>p</i> -value)	0.263	0.317	0.404	0.306
	Hansen's <i>J</i> (<i>p</i> -value)	0.343	0.281	0.430	0.317

Table VI.
The moderating effects of bank competition on SME debt financing and government intervention association

Notes: *t*-values in parenthesis are obtained using standard errors clustered at the firm-level. AR(2) tests the autocorrelation of the first-differenced errors. The AR(2) has a null hypothesis that there is no autocorrelation in the first-differenced errors. Hansen's *J* tests whether the GMM model is over-identified. The null hypothesis of Hansen's *J* test is that the model is valid. The variables are defined in Table I. *, **, ***Significant at 10, 5, and 1 percent levels, respectively

to perform the alternative specification check for bank competition. We retrieve the HHI index also from the CSMAR database. In addition, we use a firm's high-ranking officers' (those officers include directors, supervisors and top management team members) relatives' political connections as the alternative measure of government intervention. Our main results remain the same based on the above alternative specification checks (the sensitivity test results are available upon request).

5. Conclusions

Firth *et al.* (2009) discover the evidence that state ownership is a significant driver of a firm's external debt financing. Due to relationship lending (De la Torre *et al.*, 2010), it is probable that SMEs can rely on their connections with state-owned banks to secure bank credits. In this study, we examine whether government intervention allows SMEs to access to bank loans using a panel data set drawn from 908 firms from 2000 to 2010. In our model, we control for an extensive collection of factors that possibly affect the firm's external debt financing and use the system GMM estimation method to address the endogeneity issue.

Our results exhibit that in regions with a higher level of state intervention, SMEs tend to access more bank loans than non-SMEs. This finding supports the social hypothesis that state-owned banks help the government by allocating financial resources to firms with financing difficulties. Furthermore, this finding supports Sun and Li (2005) argument that when debt contracts do not comply with the legal regime effectively, government intervention could act as a substitute mechanism for the legal regime and decreases the cost of performing the debt contracts. In addition, we find important evidence that the government is more motivated to help SMEs to obtain more external debt in regions with a lower level of bank competition. This finding supports the argument that government has a

strong motive to help SMEs to secure long-term credits for political purpose (Fan *et al.*, 2012) when the level of bank competition is low (Berger and Udell, 2006). Last, consistent with Luo and Ying (2014), we observe that firms with politically connected CEOs are likely to access bank loans. This finding may help explain why firms' financing decisions are not free from government intervention in China.

Notes

1. Source: News release, National Bureau of Statistics of China, 2008, available at: <http://data.stats.gov.cn/workspace/index?m=hgnd> (accessed May 6, 2012).
2. The political connection information can be found at China Corporate Figure Characteristic Database in CSMAR database.

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