Government ownership and the capital structure of firms: Analysis of an institutional context from China☆

Xiaohong Huang *, Rezaul Kabir, Lingling Zhang

University of Twente, The Netherlands

A B S T R A C T

Emerging economies provide interesting scenarios for examining how institutional context influences the financing behavior of firms. In this study, we examine the capital structure of Chinese listed firms following the Split-Share Structure Reform of 2005. This reform allowed a reduction of government ownership by making government shares tradable. We find that the impact of government ownership on leverage is dependent on whether the government is the largest shareholder in a firm and whether the government ownership is through a parent state-owned enterprise. In addition, we document that the largest non-government shareholder positively influences leverage. Overall, our results reveal that the largest controlling shareholder, either government or non-government, has a significant impact on the capital structure of Chinese firms.

© 2018 Sun Yat-sen University. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Capital structure decisions are influenced by firm-specific, industry-specific and institutional factors. Rajan and Zingales's (1995) seminal analysis of seven developed countries shows the importance of these three types of factors. Although the variables that influence financing decisions in developed countries are also influential in emerging economies, Booth et al. (2001) show that distinctive institutional features in emerging countries also play important roles. Emerging countries therefore provide interesting scenarios for studying a variety of institutional characteristics.

---

* Corresponding author.
E-mail addresses: x.huang@utwente.nl (X. Huang), r.kabir@utwente.nl (R. Kabir), lingling.zhang@seagate.com (L. Zhang).

Throughout the last decade, academics have become increasingly interested in studying the distinctive institutional context of China—the world's largest emerging economy. Studies of the financing behavior of Chinese firms (Chen, 2004; Allen et al., 2005; Zou and Xiao, 2006; Huang and Song, 2006; Bhabra et al., 2008) report that these firms rely on informal financing channels, prefer short-term finance and use substantially lower amounts of long-term debt than similar firms in developed markets. Ayyagari et al. (2010) document that Chinese firms obtain 20% of their funds from banks and 80% from channels such as retained earnings, informal sources, loans from family and friends, trade credits, investment funds and equity. Chen (2004) and Zou and Xiao (2006) find that the well-documented firm-specific determinants of leverage such as firm size, profitability, growth opportunity and asset tangibility are also relevant in China. Yet, the low explanatory power of these determinants calls for more research into the impact of institutional features on capital structure in China.

A notable institutional context in China is that the ownership of publicly traded firms is highly concentrated, and the government is a major player in corporate financing (Sun and Tong, 2003). Government ownership can induce firms to borrow more through preferential loan policies and loan guarantees and an intention to maintain state control. Alternately, it can lead to less borrowing due to opportunistic managerial behavior and the higher likelihood of approval of equity issues.[1] Among a handful of studies of the effect of government ownership on capital structure, Huang and Song (2006) and Zou and Xiao (2006) observe no impact of government ownership on the leverage of Chinese firms, whereas Bhabra et al. (2008) and Li et al. (2009) document a positive impact on long-term debt. Pessarossi and Weill (2013) show that government ownership facilitates the issuance of corporate bonds.

The Split-Share Structure Reform (hereafter, Reform) was introduced in 2005 to increase privatization in China.[2] The Reform set the stage for reducing the government ownership of Chinese listed firms and allowing government shares to be tradable at market prices. It improved the alignment of interest between the government and other shareholders (Firth et al., 2010; Hou et al., 2012). It also dampened the government's intention to maintain state control. Thus, it is interesting to evaluate the role of government ownership in firms' financing decisions in the post-Reform period. This is the primary contribution of our study.

In discussing the impact of government ownership on capital structure, we consider not only classic capital structure theories like tradeoff theory and pecking order theory, but also supply side theory (Faulkender and Petersen, 2006; Baker, 2009), as it reflects the specific institutional features of China's banking sector. In China, the four dominant national banks that are controlled by the government provide more credit to state-owned enterprises (SOEs) than to non-SOEs.

In the very few studies covering the post-Reform period, information on government ownership is almost always collected from the China Stock Market and Accounting Research (CSMAR) database (Chan et al., 2013; Liu et al., 2011; Yu, 2013). The database reports government ownership as the holdings in the form of non-tradable shares or shares with trading restrictions.[3] The CSMAR database does not identify government holdings of tradable shares, and thus underestimates the actual amount of government ownership of Chinese listed firms. Our study contributes to the literature by correcting this oversight; it considers both tradable and non-tradable shares when measuring government holdings.

Government shares are held by government agencies and SOEs. Parent SOEs tend to use their listed subsidiaries to raise funds from the stock market (Bradford et al., 2013; Ying and Wang, 2013), which they then make available for internal financing. We contribute to the literature by examining the differential impact of government ownership on firms with or without parent SOEs.

In studying the differential impact of government ownership on firm leverage, we find that the impact is dependent on whether the government is the largest shareholder. When the government is the largest shareholder, government ownership is non-linearly associated with leverage; however, when it is not the largest shareholder, this association disappears. Moreover, we observe that when the parent SOE is the largest controlling shareholder, government ownership is associated with lower leverage. When the government is *not*

---

[1] Equity issues are bureaucratic in China and listed firms are required to obtain approval from the China Securities Regulation Committee (Ying and Wang, 2013).
[2] It is officially named the Non-Tradable Share Reform. In this study, we denote it simply as the Reform.
[3] See the user's manual of China Listed Firm's Shareholders Research Database of CSMAR (version 2013).

the largest shareholder, we find that the non-government largest shareholding positively influences firm leverage.

The rest of the paper is organized as follows. Section 2 briefly presents the recent institutional arrangement of stock ownership and financing of Chinese firms. In Section 3, the theoretical arguments on the impact of stock ownership on capital structure are reviewed and the hypotheses are presented. Section 4 describes the methodology and the data. Section 5 discusses the empirical results. Section 6 concludes the paper.

2. Institutional features related to ownership and financing in China

Since the start of China's economic reform in the late 1970s, there have been continuous attempts to reduce government ownership in Chinese corporations. When the two Chinese stock exchanges (Shanghai Stock Exchange and Shenzhen Stock Exchange) were established in the early 1990s, the first lot of IPO firms were large or medium-sized state-owned enterprises. This so-called share issue privatization by the Chinese government in the 1990s, which transferred some corporate ownership to private hands, was aimed at reforming its SOEs. Yet, the ideology of the socialist market economy meant that the state still retained a substantial percentage of the ownership of privatized enterprises (Sun and Tong, 2003). The predominance of government ownership appears to have obstructed the development of the Chinese stock market (Beltratti et al., 2012).

State control is maintained by creating different classes of shares. In China, common shares are mainly classified into two categories: A- and B-shares. A-shares can only be sold to domestic investors and include state, legal person, employee and public shares.[4] These shares constitute the largest part of the stock market. B-shares are traded only by foreign investors. Other categories of shares (H-, N- and S-shares) are shares listed outside mainland China (respectively on the Hong Kong, New York and Singapore exchanges). Before 2005, state and legal person shares were not tradable at market prices; they were priced at the book value of assets. Thus, the government could not benefit from any capital gains. The incentive to improve firm performance was almost absent for government agencies. To solve this issue, the 2005 Reform lifted the trading restrictions on state and legal person shares, making these shares publicly tradable. At a practical level, the holders of non-tradable shares compensated the holders of tradable shares by providing them with a portion of their shares at mutually agreed prices. By the end of 2007, the Reform was completed by the majority of the firms concerned (CSRC, 2008; Firth et al., 2010; Li et al., 2011; Liao et al., 2014; Megginson et al., 2014). After the Reform, the non-tradable shares were not immediately tradable, but were gradually phased into tradable shares over a 36-month period. During these 36 months, the shares still carried the name of non-tradable or restricted shares.

The Reform diluted government ownership because additional shares were granted to the former tradable shareholders to compensate them for the influx of tradable government shares into the market. Tradability means that shares are priced at market value, and this incentivizes government agencies to be as concerned with share price movements as other shareholders.[5] This improved incentive mechanism mitigates agency conflicts between management and a government owner. The impact of government shareholdings on firms' financing pattern after the Reform has not yet been examined.

The public capital market has played an increasingly important role in financing Chinese corporations since the promulgation of the Securities Law in 1999 (CSRC, 2008). With a nascent stock market and an underdeveloped small public debt market, Chinese listed firms have relied heavily on bank borrowing. World Bank statistics for 2012 show that the domestic credit provided by banks as a percentage of the country's GDP is 134% for China, 50% for the U.S. and 88% for the world. According to the National Bureau of Statistics of China, total stock market capitalization rose from 18% of the GDP in 2005 to 42% in 2013 in China. This growing stock market makes the financing choices of Chinese listed firms an interesting topic to analyze.

---

[4] Legal person shares are held by domestic enterprises or institutions with a legal person status that represents not only state interests, but also private and collective interests. State, legal person and employee shares are non-tradable. Public shares issued to the public are also tradable A-shares.

[5] Since the Reform, some of the government holdings have been transferred to national social security funds, which are evaluated by their stock market investment performance.

3. Capital structure and government ownership

Capital structure decisions are usually explained in the literature by tradeoff theory or pecking order theory. Tradeoff theory argues that debt usage is determined by trading off the costs and benefits of debt. Costs are the cost of financial distress and the agency costs between shareholders and debt-holders. Benefits include tax benefits and the agency benefits of debt monitoring. Pecking order theory ranks financing sources from internal to external sources based on information asymmetry. Both theories identify a few firm-specific determinants of leverage, such as firm size, profitability, growth opportunity and asset tangibility, that are found to be relevant for Chinese firms in studies such as Bhabra et al. (2008), Chen (2004), Huang and Song (2006) and Zou and Xiao (2006). These studies also indicate the important role of government ownership for Chinese firms.

Government ownership is often associated with higher leverage. For example, to avoid the dilution of state control, SOEs tend to borrow rather than issue stocks (Dewenter and Malatesta, 2001). Additionally, SOEs enjoy implicit or explicit loan guarantees, allowing them to borrow at favorable rates, which lowers their risk of financial distress. Tradeoff theory predicts a positive relation between government ownership and leverage.

Government ownership can also negatively affect the leverage of Chinese firms for three reasons. First, severe owner-management conflict arises in SOEs, and the government has no incentive to monitor and control its managers due to double delegation and the segregation of voting and cash flow rights (Lin et al., 2011; Zou and Xiao, 2006).[6] This gives managers the chance to actually control the firm and tunnel resources from the firm for other uses. For example, they can issue equity and direct the raised funds to firms benefiting their personal interests. Debt, as a disciplinary tool, can constrain managers' overspending behavior by imposing debt covenants. Thus, firms with high government ownership and speculative managers tend to avoid debt financing. Second, SOEs in China tend to protect government tax revenues by avoiding aggressive tax planning, as their largest shareholder is the government. Thus, the incentive to use debt for tax benefits is not strong for firms with high government ownership (Chan et al., 2013). Third, pecking order theory prescribes debt before equity financing due to the negative signaling effect of issuing equity. However, the stock market in China is characterized by a government-controlled listing process that favors SOEs, particularly those in strategic industries and in regions with strong political connections (Li et al., 2008, 2012). This market friction nullifies pecking order theory, and suggests that government ownership is associated with equity financing. When the government owner is a firm's parent SOE, the listed firm is often used to raise capital for the parent firm.

The Reform required the government to reduce its shareholdings, allowing firms to respond to market forces. When the incentive to retain government control is dampened in this way, there is less need to provide firms with debt financing to maintain state control. In the post-Reform period, corporate governance is improved by the alignment of government owner and management interests, so debt can be used as a disciplinary tool. These developments offset the effect of government on debt use, and a clear-cut effect is then more dependent on the magnitude of the government ownership.

We envisage three alternate scenarios in which the government continues to be the largest shareholder in a firm in the post-Reform period. First, the government may simply choose to retain its ownership of quality firms that have good prospects. As government ownership is valued at market prices in the post-Reform period, government owners benefit from any capital gains in the stock market. Under these circumstances, the government will be willing to ensure good corporate governance by using debt to discipline the managers. Second, the government might retain control of firms in strategically important sectors, such as the energy and financial sectors (Yu, 2013). To facilitate the growth of these industries, the government can provide them with more resources through more bank lending. Third, the government might remain the largest owner of firms for which implementing the Reform would have created financial difficulties. Equity financing is unavailable to troubled firms, and bank loans are the only capital available to solve their financing problems. All three scenarios involve the government in funding firms via government-controlled banks.

---

[6] Under the double delegation system, Chinese citizens are the ultimate owners of government shares. They delegate the management of state assets to government agencies, which further delegate the authority to managers. The segregation of voting and cash flow rights means that government agencies have the control rights but not the cash flow rights, which are received by the Ministry of Finance. Government agency staff members receive civil servant salaries, which are independent of firm performance. Thus, government agencies have no incentive to monitor and control managers who are more inclined to serve their private interest.

The positive impact of government ownership on debt financing is also in line with the predictions of supply side theory proposed by Faulkender and Petersen (2006) and Baker (2009). They argue that the capital structure of firms is determined by the supply of funds. If it is cheaper and easier to obtain a certain type of financing, firms will preferentially use this type of financing. In China, the banking sector is dominated by four state banks that favor SOEs when extending credit. Bhabra et al. (2008), Li et al. (2009), Liu et al. (2011) and Zou and Xiao (2006) document the positive role of government ownership in helping Chinese firms to obtain bank financing.

Therefore, we put forward our first hypothesis as follows.

H1. Government ownership has a positive impact on a firm's leverage when the government is its largest shareholder.

Government ownership includes shareholding by government agencies and SOEs. SOEs can be parent SOEs or non-parent SOEs (Hope, 2013; Liao and Young, 2012). Many listed firms were originally spun off from their unlisted parent SOEs and floated on the stock market. For some listed firms, their parent SOEs remain the controlling shareholder and tend to tunnel resources out of subsidiary firms (Bradford et al., 2013; Ying and Wang, 2013). In China, gaining and maintaining listed status is very important. Controlling shareholders tend to support their listed firms by providing credit guarantees and capital injections to maintain the firm's financing and refinancing eligibility (Ying and Wang, 2013). Thus, we hypothesize that when parent SOEs are the largest shareholder, they tend to use their listed subsidiaries to raise capital from the stock market and then make it available for internal financing. Our second hypothesis is as follows.

H2. Ownership by parent SOEs has a negative impact on a firm's leverage.

When the government is *not* the largest shareholder, it can be the result of a deliberate choice by the government to reduce its ownership. We expect the government to exert little influence on these firms, as they are operating under market forces. In listed firms that originated as private firms, the government has too small shareholdings to have a significant impact on leverage. In either case, government ownership has no impact on leverage. Thus, we formulate the following hypothesis.

H3. Government ownership has no impact on leverage when the government is not a firm's largest shareholder.

4. Methodology and data

4.1. Methods

To study the impact of government ownership on leverage across firms over the study period, we undertake pooled ordinary least squares regressions and time-averaged ordinary least squares regressions. As government ownership is rather stable throughout our sample period, the fixed effect panel regression technique is not appropriate.[7] To mitigate problems related to the potential endogeneity of the independent variables with respect to leverage, the independent variables are all lagged by one year. We add a squared term of government ownership to account for the non-linear effect of government ownership on leverage.

Leverage is measured using two robust definitions: total debt (TD), which is the sum of long- and short-term debt, and long-term debt (LD). Both are scaled by the book value of total assets. Ownership variables include government and non-government ownership. Government ownership (GOV) is measured as the proportion of shares held by all government agencies and SOEs out of the total number of issued shares. We identify the ownership proportion of parent SOEs by looking into the history of the listed firms. We also estimate the proportion of shares held by the largest owner (LARG).

In addition to leverage and ownership variables, we consider well-documented determinants of capital structure, such as firm size, liquidity, profitability, growth opportunity, tangibility and industries as control

---

[7] We apply the fixed effect regression method only as a robustness test.

Table 1
Definition of variables.

Variable	Notation	Definition
Leverage	TD	Total debt (sum of long- and short-term debt) divided by the book value of total assets
	LD	Long-term debt divided by the book value of total assets
Largest ownership	LARG	Number of shares held by the largest shareholder divided by the total number of shares
	$LARG^2$	Square of LARG
State ownership	GOV	Number of shares held by the government divided by the total number of shares
	GOV^2	Square of GOV
Parent SOE ownership	Parent SOEs	Number of shares held by the parent SOE divided by the total number of shares
	Parent $SOEs^2$	Square of Parent SOEs
Firm size	SIZE	Book value of total assets, in million Chinese RMB
Liquidity	LIQ	Current assets divided by current liabilities
Profitability	PROF	Earnings before interest and tax divided by total assets
Growth opportunity	Q	(Equity market value + Liabilities book value)/(Book value of total assets)
Tangibility	TANG	Fixed assets divided by total assets

variables (Huang and Song, 2006; Zou and Xiao, 2006). We use the book value of total assets to measure firm size. Liquidity is measured as the ratio of current assets to current liabilities. Profitability is defined as the ratio of earnings before interest and tax divided by total assets. Q-ratio is used to measure growth opportunities. Tangibility is measured as the ratio of fixed assets to total assets. All of the variables and their measurements are summarized in Table 1.

4.2. Data

We compile a large dataset of domestic Chinese firms listed on the Shanghai and Shenzhen Stock Exchanges between 2007 and 2012. The start year is chosen because Chinese listed firms began complying with the International Financial Reporting Standards when the new Chinese GAAP came into effect in January 2007. The data are drawn from the China Stock Market and Accounting Research (CSMAR) database and the annual reports of listed firms. The mainland Chinese stock market consists of three separate boards: the Main Board (MB), Small and Medium Enterprises Board (SME) and Growth Enterprise Market (GEM). The MB includes large mature corporations with large-scale operations, whereas the SME and GEM comprise small and fast-growing innovative firms. Due to differences in the boards' supervisory and financial reporting systems, we focus on MB listed firms on the Shanghai and Shenzhen Stock Exchanges.

Financial firms like banks, insurance agencies and securities companies are excluded from the sample. As we focus on domestic listed Chinese firms, firms cross-listed on Hong Kong and overseas stock exchanges are excluded, due to the potential institutional differences and different investor bases.[8] We also exclude firms that do not have complete data or have negative equity.

We observe that government ownership as defined by data from the commonly used CSMAR database includes non-tradable shares only. Therefore, we search company annual reports and hand-collect ownership data to determine the top 10 shareholders of all firms in the database. This top 10 list includes both tradable and non-tradable shareholdings. We check each owner on this list to identify firms' ownership types. We follow Delios et al. (2008) to define government ownership as state shares and legal person shares that are held by the central and local government, government agencies (such as the State-Owned Assets Supervision and Administration Commission and state asset management bureaus) and SOEs. Many Chinese listed firms were carved out of SOEs and listed on the stock market. For example, Sinopec Limited, listed on the Shanghai Stock Exchange, is a major subsidiary of China Petrochemical Corporation, a state-owned oil company. To differentiate the impact of different types of government ownership, we also identify whether the government owners are the parent SOEs.

---

[8] These firms are subject to different accounting and tax rules, and have access to international financial market. Their investors also have a different risk return preference. Therefore, the capital structure decision for this group of firms differs from their domestic peers. These firms are excluded from our sample.

Table 2
Descriptive statistics. The table provides descriptive statistics of the variables. The sample includes Chinese Main Board listed firms with A-shares from 2007 to 2012. For the dependent variables TD and LD, the statistics are based on the 2008–2012 period. For the independent variables, the statistics are based on the 2007–2011 period. All variables are defined in Table 1. Panels B and C present the descriptive statistics for the two sub-samples. Panel B is for firms in which the government is the largest owner, and Panel C is for firms in which the government is *not* the largest owner.

Panel A Full sample (5075 firm-year observations)

Variables	Mean	Median	St. Dev.	Minimum	Maximum
TD	0.246	0.239	0.169	0	0.692
LD	0.087	0.038	0.113	0	0.523
LARG	0.359	0.337	0.156	0.079	0.781
GOV	0.292	0.300	0.233	0	0.814
Parent SOEs	0.096	0	0.194	0	0.74
SIZE (mill. RMB)	6340	2760	11,700	190	105,000
LIQ	1.426	1.201	0.950	0.158	6.451
PROF	0.056	0.052	0.065	−0.250	0.296
Q	1.966	1.589	1.221	0.745	8.991
TANG	0.270	0.236	0.189	0.001	0.822

Panel B Firms in which the government is the largest owner (3285 firm-year observations)

Variables	Mean	Median	St. Dev.	Minimum	Maximum	Mean Difference from Panel C
TD	0.255	0.247	0.176	0	0.692	0.027[***]
LD	0.095	0.047	0.119	0	0.523	0.022[***]
LARG	0.385	0.382	0.154	0.079	0.781	0.074[***]
GOV	0.435	0.443	0.156	0.036	0.814	0.407[***]
SIZE (mill. RMB)	7690	3190	13,800	190	105,000	3850[***]
LIQ	1.349	1.15	0.894	0.158	6.451	−0.218[***]
PROF	0.055	0.051	0.062	−0.25	0.296	0.002
Q	1.83	1.513	1.054	0.745	8.991	−0.385[***]
TANG	0.291	0.257	0.193	0.001	0.822	0.060[***]

Panel C Firms in which the government is not the largest owner (1790 firm-year observations)

Variables	Mean	Median	St. Dev.	Minimum	Maximum
TD	0.229	0.227	0.153	0	0.692
LD	0.073	0.025	0.099	0	0.523
LARG	0.311	0.273	0.150	0.079	0.781
GOV	0.028	0	0.053	0	0.269
SIZE (mill. RMB)	3850	2000	5690	190	81,300
LIQ	1.567	1.297	1.029	0.158	6.451
PROF	0.057	0.054	0.07	−0.25	0.296
Q	2.216	1.763	1.448	0.745	8.991
TANG	0.231	0.196	0.176	0.001	0.822

The final sample consists of 1207 firms (5075 firm-year observations). These firms are distributed across 12 different industries: farming; mining; manufacturing; electricity, gas and water supply; civil engineering and construction; transportation and storage; information technology; wholesale and retail sale; real estate; public service; publishing, broadcasting and media; and conglomerates.

5. Empirical results

5.1. Descriptive statistics

Table 2 provides the summary statistics of all variables.[9] Panel A presents the descriptive statistics of the entire sample consisting of 5075 firm-year observations. The mean (median) total debt ratio (TD) of the

---

[9] All variables are winsorized at the 0.5% level at both tails to eliminate the impact of outliers.

Table 3
Correlation matrix.

	TD	LD	LARG	GOV	SIZE	LIQ	PROF	Q	TANG
Panel A Full sample									
TD	1								
LD	0.366	1							
LARG	0.060	0.124	1						
GOV	0.079	0.120	0.548	1					
SIZE	0.296	0.387	0.319	0.294	1				
LIQ	−0.512	−0.096	−0.005	−0.096	−0.122	1			
PROF	−0.230	−0.013	0.149	0.035	0.163	0.152	1		
Q	−0.303	−0.249	−0.175	−0.167	−0.445	0.169	0.133	1	
TANG	0.012	0.190	0.038	0.153	0.047	−0.397	−0.028	−0.052	1
Panel B Sample of firms in which the government is the largest owner									
TD	1								
LD	0.384	1							
LARG	−0.016	0.061	1						
GOV	0.008	0.102	0.866	1					
SIZE	0.308	0.392	0.276	0.256	1				
LIQ	−0.541	−0.163	0.009	−0.007	−0.134	1			
PROF	−0.273	−0.030	0.139	0.122	0.146	0.143	1		
Q	−0.307	−0.259	−0.088	−0.107	−0.385	0.196	0.198	1	
TANG	0.021	0.256	0.046	0.070	0.042	−0.404	−0.004	−0.081	1
Panel C Sample of firms in which the government is not the largest owner									
TD	1								
LD	0.318	1							
LARG	0.144	0.208	1						
GOV	0.023	−0.069	−0.112	1					
SIZE	0.242	0.345	0.290	−0.133	1				
LIQ	−0.457	0.058	0.041	−0.017	−0.045	1			
PROF	−0.160	0.026	0.186	−0.043	0.216	0.162	1		
Q	−0.284	−0.225	−0.230	−0.012	−0.497	0.109	0.057	1	
TANG	−0.046	−0.007	−0.081	−0.051	−0.051	−0.365	−0.068	0.043	1

sample firms is 24.6% (23.9%), lower than in other developing countries such as Brazil and India (Céspedes et al., 2010; Chakraborty, 2010).[10] The mean (median) long-term debt ratio (LD) is only 8.7% (3.8%), notably lower than in developing and developed countries (Booth et al., 2001).

Government ownership varies across listed firms, ranging from 0% to 81.4%. The mean (median) government ownership is 29.2% (30%), significantly lower than that reported in studies of the pre-Reform period.[11] In the post-Reform period, shares are no longer concentrated in government hands. Private shareholding by institutions, families and individuals is the most common type of ownership. In our sample, the largest shareholder (LARG) owns, on average, over one third of a firm's outstanding shares, suggesting a high level of ownership concentration in China.

To distinguish the effect of government ownership, we split the sample into two subsamples: firms in which the government is the largest shareholder (Panel B) and firms in which the government is *not* the largest shareholder (Panel C). A comparison of the two subsamples shows that firms that have the government as the largest shareholder tend to be larger, less liquid and less market-valued. These firms are more leveraged and have more tangible assets.

Table 3 presents the Pearson correlation coefficients between the major variables in the full sample and two subsamples. The two measures of leverage are, as expected, positively correlated with each other. The correlations between the explanatory variables are relatively low. The correlation for the government-concentrated

---

[10] Chakraborty (2010) reports an average total debt ratio of 35.5% in India. Céspedes et al. (2010) report an average of 35.85% in Brazil.
[11] Bhabra et al. (2008) and Zou and Xiao (2006) find about 61% ownership by state and legal persons in a pre-Reform sample period.

Table 4

Impact of government ownership on leverage when the government is the largest shareholder. This table presents the OLS regression results on the impact of government ownership on leverage. The sample includes only those firms in which the government is the largest shareholder. All variables are defined in Table 1. GOV^2 is the squared term of GOV. The sample period is 2007–2012. Industry and year dummies are included in all regressions. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

	(1) TD	(2) TD	(3) LD	(4) LD
GOV	−0.098***	0.249***	−0.034***	0.138***
	(−5.89)	(3.28)	(−3.03)	(2.89)
GOV^2		−0.396***		−0.197***
		(−4.61)		(−3.57)
SIZE	0.040***	0.042***	0.032***	0.034***
	(15.04)	(15.93)	(18.46)	(18.80)
LIQ	−0.053***	−0.053***	−0.001	−0.001
	(−16.47)	(−16.38)	(−0.46)	(−0.38)
PROF	−0.354***	−0.353***	−0.108***	−0.108***
	(−6.88)	(−6.86)	(−3.46)	(−3.45)
Q	−0.016***	−0.015***	−0.005***	−0.005***
	(−5.84)	(−5.63)	(−3.31)	(−3.14)
TANG	0.162***	0.166***	0.107***	0.109***
	(8.93)	(9.15)	(7.87)	(8.02)
Adj. R^2	0.37	0.37	0.35	0.35
N	3285	3285	3285	3285

subsample presented in Panel B shows that the largest shareholder (LARG) and government ownership (GOV) are, as expected, highly correlated (0.866). In Panel C, we present the correlations for the non-government-concentrated subsample. We observe that the largest shareholder variable (LARG) is more cor-related with leverage than the government ownership (GOV), indicating that the largest private shareholder, not government ownership, is more related to the financing mix of these firms.

5.2. Regression results

Table 4 reports the impact of government ownership in firms where the government is the largest share-holder. Models (1) and (3) show a negative and statistically significant impact of government ownership on leverage. These two models do not consider the non-linear effect of government ownership. When we include the squared term of government ownership, Models (2) and (4) show a significant non-linear effect of govern-ment ownership on total and long-term debt. The coefficient estimates suggest that up to a threshold of 31.4% for the total debt regression and 35% for the long-term debt regression government ownership has a positive effect on leverage.[12] This positive effect reverses once these high threshold levels are exceeded. The finding par-tially supports the first hypothesis, as it indicates that firms with more government ownership use more debt. The finding affirms the prediction of supply side theory that firms with government ownership enjoy better access to credit. It is also consistent with the prediction related to the agency benefits of debt: in the post-Reform period, the government uses debt to discipline managers (Bhabra et al., 2008; Li et al., 2009).

The observed impact of the control variables on leverage is consistent with prior studies (Bhabra et al., 2008; Chen, 2004; Huang and Song, 2006; Zou and Xiao, 2006). Large size, high asset tangibility and low growth opportunity are associated with high leverage, consistent with the predictions of tradeoff theory. High profitability and liquidity are associated with low leverage, as predicted by pecking order theory.

We also perform a similar analysis segregating a few industries that are essential to the economy and there-fore highly regulated (Liao and Young, 2012): farming; electricity, gas and water supply; and civil engineering and construction. The results presented in Table 5 show that the addition of government ownership in Models

---

[12] Based on the estimates of Model (2), the turning point is computed as 0.249/(2 ∗ 0.396).

Table 5
Impact of government ownership on leverage: Sub-sample analysis of three industries. This table presents the OLS regression results on the impact of government ownership on leverage for firms in three industries: farming; electricity, gas and water supply; and civil engineering and construction. The sample includes only those firms in which the government is the largest shareholder. All variables are defined in Table 1. GOV^2 is the squared term of GOV. The sample period is 2007–2012. Year dummies are included in all regressions. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

	(1) TD	(2) TD	(3) TD	(4) LD	(5) LD	(6) LD
GOV		−0.452***	0.059		−0.226***	0.336
		(−8.55)	(0.19)		(−5.02)	(1.22)
GOV^2			−0.523*			−0.575**
			(−1.71)			(−2.17)
SIZE	0.014	0.030***	0.027***	0.039***	0.047***	0.044***
	(1.56)	(3.44)	(3.13)	(5.06)	(6.18)	(5.75)
LIQ	−0.056***	−0.052***	−0.050***	−0.020***	−0.018***	−0.016***
	(−7.70)	(−6.39)	(−6.53)	(−3.47)	(−2.86)	(−2.62)
PROF	−0.535***	−0.526***	−0.489***	−0.446***	−0.442***	−0.402***
	(−2.71)	(−2.94)	(−2.73)	(−2.90)	(−2.97)	(−2.73)
Q	−0.053***	−0.056***	−0.060***	−0.025**	−0.027**	−0.030**
	(−3.95)	(−3.63)	(−3.72)	(−2.43)	(−2.33)	(−2.51)
TANG	0.119***	0.166***	0.160***	0.120***	0.144***	0.137***
	(2.65)	(3.63)	(3.47)	(3.06)	(3.62)	(3.44)
Adj. R^2	0.28	0.40	0.40	0.22	0.26	0.27
N	303	303	303	303	303	303

(2), (3), (5) and (6) increases the explanatory power of the models compared with Models (1) and (4). This finding reflects the influential role played by the government ownership in accessing debt for these regulated industries, supporting the prediction of supply side theory.

We distinguish the impact of government ownership held through parent SOEs to test the second hypothesis, and present the results in Table 6. Models (2) and (4) show that the impact of parent SOEs on long-term and total debt is non-linear. Below an ownership level of 18.7% (20.8%), parent SOEs positively influence the long-term (total) debt. It suggests that although Chinese listed firms can benefit from government ownership

Table 6
Impact of ownership by parent SOEs on leverage. This table presents the OLS regression results on the impact of ownership by parent SOEs on leverage. The sample includes only those firms in which the government is the largest shareholder. All variables are defined in Table 1. Parent SOEs^2 is the squared term of Parent SOEs. The sample period is 2007–2012. Industry and year dummies are included in all regressions. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

	(1) TD	(2) TD	(3) LD	(4) LD
Parent SOEs	−0.03**	0.10**	−0.03***	0.06**
	(−2.54)	(2.41)	(−3.48)	(2.29)
Parent SOEs^2		−0.24***		−0.16***
		(−3.27)		(−3.46)
SIZE	0.04***	0.04***	0.03***	0.03***
	(14.29)	(14.77)	(18.49)	(18.75)
LIQ	−0.05***	−0.05***	−0.00	0.00
	(−16.37)	(−16.34)	(−0.40)	(−0.39)
PROF	−0.37***	−0.36***	−0.11***	−0.11***
	(−7.24)	(−7.13)	(−3.67)	(−3.53)
Q	−0.01***	−0.01***	−0.00***	−0.00***
	(−5.54)	(−5.50)	(−3.01)	(−2.96)
TANG	0.16***	0.17***	0.11***	0.11***
	(9.01)	(9.07)	(7.98)	(8.02)
Adj. R^2	0.36	0.36	0.35	0.35
N	3285	3285	3285	3285

Table 7
Impact of ownership on leverage when the government is *not* the largest shareholder. This table presents the OLS regression results on the impact of ownership on leverage. The sample includes only those firms in which the government is *not* the largest shareholder. All variables are defined in Table 1. LARG^2 is the squared term of LARG. The sample period is 2007–2012. Industry and year dummies are included in all regressions. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

	(1) TD	(2) TD	(3) TD	(4) LD	(5) LD	(6) LD
GOV	−0.08	−0.06	−0.07	−0.04	−0.02	−0.02
	(−1.36)	(−1.03)	(−1.15)	(−0.98)	(−0.64)	(−0.47)
LARG		0.07***	0.20**		0.05***	−0.07
		(3.25)	(2.41)		(3.06)	(−1.10)
LARG^2			−0.17			0.16*
			(−1.63)			(1.94)
SIZE	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
	(8.3)	(7.81)	(7.97)	(12.76)	(12.18)	(11.9)
LIQ	−0.04***	−0.03***	−0.04***	0.01***	0.01***	0.01***
	(−9.35)	(−9.27)	(−9.33)	(2.73)	(2.78)	(2.88)
PROF	−0.13**	−0.16***	−0.16***	−0.05*	−0.07**	−0.06**
	(−2.44)	(−2.84)	(−2.95)	(−1.74)	(−2.27)	(−2.06)
Q	−0.01***	−0.01***	−0.01***	−0.00***	−0.00**	−0.00**
	(−4.83)	(−4.50)	(−4.41)	(−2.72)	(−2.28)	(−2.42)
TANG	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***
	(3.01)	(3.11)	(3.12)	(5.04)	(5.12)	(5.13)
Adj. R^2	0.20	0.21	0.21	0.24	0.24	0.24
N	1790	1790	1790	1790	1790	1790

through better access to financing and a lower cost of borrowing, when the shareholding of parent SOEs exceeds 18.7% (20.8%), signaling that it has become a controlling shareholder, firms use less long-term debt (total debt). This indicates that firms use more equity financing when they are controlled by their parent SOEs. The result is consistent with the argument that listed firms are used by their parent SOEs to raise equity capital from the stock market. Hypothesis 2 is partially supported.

Table 7 reports the impact of government and non-government ownership when the government is *not* the largest shareholder. The results for all of the regression models show that government ownership has no significant impact on leverage. Hypothesis 3 is supported. We also find a positive impact of concentrated ownership when the largest shareholder is a non-government entity. Models (2) and (5) show a linear positive impact of ownership concentration on long-term and total debt. We do not find a very significant non-linear effect in Models (3) and (6). The positive linear impact of non-government ownership on leverage supports the arguments for disciplinary debt use and indicates a reluctance to dilute ownership among large non-government shareholders.

5.3. Robustness tests

The results in Table 7 describing the impact of government ownership when the government is not the largest shareholder may be driven by firms that have no government ownership at all. We therefore perform an analysis excluding these firms without any government ownership. Panel A of Table 8 shows that when the government is not the largest shareholder, government ownership of these firms ranges from 0.1% to 26.9%, with an average of 7%, which is a non-trivial shareholding. The regression results presented in Panel B confirm the insignificant impact of government ownership reported in Table 7.

The Reform was initiated in 2005 and completed at the end of 2007. Our sample may contain some firms that did not convert government shares to tradable shares as part of the Reform. We therefore exclude observations from 2007 from the sample and re-run the tests. The results, reported in Table 9, are consistent with the major results presented in Tables 4 and 6.

Table 8
Robustness test of the impact of ownership on leverage when the government is *not* the largest shareholder. This table presents the robustness test of the major results presented in Table 7; we exclude the firms without any government ownership. Panel A shows the summary statistics of this sub-sample, and Panel B shows the OLS regression results. The results are based on the pooled sub-sample for the 2007 to 2012 period (724 firm-year observations). Industry and year dummies are included in all regressions. All variables are defined in Table 1. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

Panel A: Summary statistics

Variables	Mean	St. Dev.	Minimum	Maximum
TD	0.220	0.150	0.000	0.718
LD	0.066	0.096	0.000	0.494
LARG	0.292	0.138	0.037	0.894
GOV	0.070	0.063	0.001	0.269
SIZE (mill. RMB)	21.373	1.123	18.284	25.121
LIQ	1.536	1.079	0.138	9.686
PROF	0.050	0.096	−1.094	0.545
Q	2.199	1.730	0.477	21.896
TANG	0.224	0.175	0.000	0.823

Panel B: Regression results

	(1) TD	(2) TD	(3) TD	(4) LD	(5) LD	(6) LD
GOV	−0.015	−0.003	−0.005	0.018	0.022	0.020
	(−0.19)	(−0.03)	(−0.07)	(0.37)	(0.44)	(0.39)
LARG		0.113***	0.147		0.033	0.064
		(2.82)	(1.01)		(1.27)	(0.64)
LARG^2			−0.048			−0.043
			(−0.26)			(−0.33)
SIZE	0.015**	0.012**	0.012**	0.027***	0.026***	0.026***
	(2.54)	(2.03)	(2.01)	(7.66)	(7.45)	(7.12)
LIQ	−0.043***	−0.043***	−0.043***	0.002	0.002	0.002
	(−7.06)	(−6.98)	(−6.99)	(0.65)	(0.66)	(0.65)
PROF	−0.005	−0.038	−0.040	−0.082**	−0.092**	−0.094**
	(−0.06)	(−0.48)	(−0.50)	(−1.97)	(−2.17)	(−2.13)
Q	−0.012**	−0.010**	−0.010**	−0.003	−0.002	−0.002
	(−2.57)	(−2.20)	(−2.18)	(−0.93)	(−0.73)	(−0.69)
TANG	0.154***	0.152***	0.152***	0.124***	0.123***	0.124***
	(3.63)	(3.56)	(3.56)	(4.48)	(4.45)	(4.45)
Adj. R^2	0.19	0.20	0.20	0.25	0.25	0.25
N	724	724	724	724	724	724

We also run fixed effect regressions and find no significant effect of government ownership. This result is mainly driven by the lack of significant chronological variation in government ownership in the post-Reform period. The results in Table 10 show that the mean and median government shareholdings remain at around 44% throughout the post-Reform period. That government-owned shares are now tradable creates an incentive for the government to follow share price movements and monitor the performance of managers, just like any other shareholder. This incentive is expected to be stronger for firms with high government holdings than for firms with low government holdings. We expect firms with high government ownership to use more debt to discipline their managers. This effect can exist across firms and within a firm over time. However, the stability of government shareholding over our sample period only shows this effect across firms.

We create a time-averaged sample and run the analysis again. The results (not reported) are qualitatively similar to those obtained from the pooled sample. The Reform converted non-tradable shares into tradable shares, but these shares could only be traded after a 36-month delay. Therefore, we perform an additional analysis using observations from 2012, the year when all of the shares become freely tradable on the market. The results (not reported) are similar to the major results reported above.

Table 9

Impact of government ownership and parent SOEs ownership on leverage: 2008–2012 period. This table presents the OLS regression results on the impact of government ownership and parent SOEs ownership on leverage, for the 2008–2012 period. The sample includes only those firms in which the government is the largest shareholder. All variables are defined in Table 1. Industry and year dummies are included in all regressions. ***, ** and * refer to significance levels at 1%, 5% and 10%, respectively. Figures reported in parentheses are t-statistics.

Panel A: Impact of government ownership					Panel B: Impact of parent SOEs ownership				
	(1) TD	(2) TD	(3) LD	(4) LD		(1) TD	(2) TD	(3) LD	(4) LD
GOV	−0.094***	0.269***	−0.036***	0.145***	Parent SOEs	−0.03**	0.10**	−0.03***	0.08**
	(−5.14)	(3.20)	(−2.81)	(2.73)		(−2.30)	(2.17)	(−3.18)	(2.49)
GOV^2		−0.413***		−0.206***	Parent SOEs^2		−0.24***		−0.19***
		(−4.37)		(−3.38)			(−2.97)		(−3.62)
SIZE	0.041***	0.043***	0.032***	0.034***	SIZE	0.04***	0.04***	0.03***	0.03***
	(13.82)	(14.68)	(16.19)	(16.54)		(13.2)	(13.66)	(16.32)	(16.62)
LIQ	−0.052***	−0.052***	−0.003	−0.002	LIQ	−0.05***	−0.05***	0	0
	(−15.29)	(−15.18)	(−0.98)	(−0.91)		(−15.10)	(−15.06)	(−0.94)	(−0.92)
PROF	−0.419***	−0.419***	−0.136***	−0.136***	PROF	−0.44***	−0.43***	−0.14***	−0.14***
	(−7.22)	(−7.22)	(−3.72)	(−3.72)		(−7.54)	(−7.46)	(−3.94)	(−3.84)
Q	−0.015***	−0.014***	−0.005**	−0.004**	Q	−0.01***	−0.01***	−0.00**	−0.00**
	(−4.88)	(−4.71)	(−2.38)	(−2.24)		(−4.75)	(−4.68)	(−2.17)	(−2.06)
TANG	0.169***	0.173***	0.107***	0.109***	TANG	0.17***	0.17***	0.11***	0.11***
	(8.13)	(8.34)	(6.96)	(7.11)		(8.22)	(8.3)	(7.09)	(7.16)
Adj. R^2	0.38	0.38	0.35	0.35	Adj. R^2	0.37	0.37	0.35	0.35
N	2621	2621	2621	2621	N	2621	2621	2621	2621

Table 10

Descriptive statistics of government ownership over time for firms in which the government is the largest shareholder. This table presents the descriptive statistics of government ownership per year for firms in which the government is the largest shareholder.

Year	No. of firms	Mean	Median	Std. Dev.	Min	Max
2008	664	0.432	0.446	0.147	0.082	0.814
2009	647	0.434	0.447	0.153	0.089	0.814
2010	642	0.434	0.437	0.153	0.079	0.814
2011	640	0.432	0.430	0.158	0.079	0.814
2012	692	0.442	0.448	0.166	0.036	0.814

6. Conclusions

We examine the impact of government ownership on the new institutional context in the period after the implementation of China's Split-Share Structure Reform of 2005. The Reform has reshaped the government's position in the ownership structure of Chinese listed firms. Analyzing a large sample of firms listed on the Shanghai and Shenzhen Stock Exchanges in the 2007–2012 period, we find that government ownership has a variable impact on the capital structure of two groups of firms. For firms in which the government is the largest shareholder, government ownership is non-linearly associated with borrowing. Yet caution should be exercised in identifying the underlying mechanism. In contrast, ownership by parent SOEs negatively influences leverage, and the negative effect occurs when the parent SOEs own a high proportion of shares, revealing the role played by parent SOEs in firms' choice of equity financing.

When the government is *not* the largest shareholder, government ownership has no impact on a firm's capital structure. Instead, we observe that non-government ownership concentration increases the use of leverage. This finding demonstrates that large shareholders use debt to discipline managers and retain control.

Our study shows a positive result of China's privatization process. In the post-Reform period, government ownership declines and has little impact on firms' leverage decisions, although the government continues to hold an average of 7% of outstanding shares. This is an appealing outcome for the Chinese regulators who are trying to cede government control and let the firms operate according to capital market principles.

However, for firms heavily owned by the government, the government still plays a significant role in their financing policies. Particular attention should be given to the role of a firm's parent SOE. If a firm's dominant shareholder is a parent SOE, the firm uses more equity financing. Is this beneficial to the firm, or simply a tactic to tunnel resources? Future research can examine this type of firm to see how the impact of a parent SOE is reflected in firm performance.

Our study documents a significant impact of government ownership, which can be driven by several forces, such as the incentive and capital supply effects. Due to the limitations of our sample period, we cannot identify the precise effect at work. The Reform introduced the incentive to discipline managers via debt use. Future studies could test the force of this incentive effect by comparing the government impact before and after the Reform. The capital supply effect refers to the better access to credit by SOEs. Our sample period overlaps with the period when China introduced an economic stimulus plan to fight the 2008 economic slowdown. Ample and cheaper credit was injected into the economy, and SOEs experienced a larger increase in borrowing than private firms (Cong et al., 2017). Future research using a more stable period can separate the impact of the economic stimulus plan from the usual supply effect.

References

Allen, F., Qian, J., Qian, M., 2005. Law, finance, and economic growth in China. J. Financ. Econ. 77, 57–116.

Ayyagari, M., Demirgüç-Kunt, A., Maksimovic, V., 2010. Formal versus informal finance: evidence from China. Rev. Financ. Stud. 23, 3048–3097.

Baker, M., 2009. Capital market-driven corporate finance. Ann. Rev. Financ. Econ. 1, 181–205.

Beltratti, A., Bortolotti, B., Caccavaio, M., 2012. The stock market reaction to the 2005 split share structure reform in China. Pacific-Basin Financ. J. 20, 543–560.

Bhabra, H., Liu, T., Tirtiroglu, D., 2008. Capital structure choice in a nascent market: evidence from listed firms in China. Financ. Manage. 37, 341–364.

Booth, L., Aivazian, V., Demirguc-Kunt, A., Maksimovic, V., 2001. Capital structures in developing countries. J. Financ. 56, 87–130.

Bradford, W., Chen, C., Zhu, S., 2013. Cash dividend policy, corporate pyramids, and ownership structure: evidence from China. Int. Rev. Econ. Financ. 27, 445–464.

Chakraborty, I., 2010. Capital structure in an emerging stock market: the case of India. Res. Int. Bus. Financ. 24, 295–314.

Céspedes, J., González, M., Molina, C.A., 2010. Ownership and capital structure in Latin America. J. Bus. Res. 63, 248–254.

Chan, K.H., Mo, P.L.L., Zhou, A.Y., 2013. Government ownership, corporate governance and tax aggressiveness: evidence from China. Account. Financ. 53, 1029–1051.

Chen, J., 2004. Determinants of capital structure of Chinese-listed companies. J. Bus. Res. 57, 1341–1351.

CSRC, 2008. China Capital Markets Development Report. China Finance Publisher, Beijing.

Cong, L., Gao, H., Ponticelli, J. Yang, X., 2017. Credit Allocation Under Economic Stimulus: Evidence from China. Chicago Booth Research Paper No. 17–19.

Delios, A., Zhou, N., Xu, W., 2008. Ownership structure and the diversification and performance of publicly-listed companies in China. Bus. Horiz. 51, 473–483.

Dewenter, K., Malatesta, P., 2001. State-owned and privately owned firms: an empirical analysis of profitability, leverage, and labor intensity. Am. Econ. Rev. 91, 320–334.

Faulkender, M., Petersen, M., 2006. Does the source of capital affect capital structure? Rev. Financ. Stud. 19, 45–79.

Firth, M., Lin, C., Zou, H., 2010. Friend or foe? The role of state and mutual fund ownership in the split share structure reform in China. J. Financ. Quant. Anal. 45, 685–706.

Hope, O., 2013. Large shareholders and accounting research. China J. Account. Res. 6, 3–20.

Hou, W., Kuo, J., Lee, E., 2012. The impact of state ownership on share price informativeness: the case of the Split Share Structure Reform in China. Br. Account. Rev. 44, 248–261.

Huang, G., Song, F., 2006. The determinants of capital structure: evidence from China. China Econ. Rev. 17, 14–36.

Li, H., Meng, L., Wang, Q., Zhou, L., 2008. Political connections, financing and firm performance: evidence from Chinese private firms. J. Dev. Econ. 87, 283–299.

Li, K., Wang, T., Cheung, Y., Jiang, P., 2011. Privatization and risk sharing: evidence from the Split Share Structure Reform in China. Rev. Financ. Stud. 24, 2499–2525.

Li, K., Yue, H., Zhao, L., 2009. Ownership, institutions, and capital structure: evidence from China. J. Compar. Econ. 37, 471–490.

Li, O.Z., Su, X., Yang, Z., 2012. State control, access to capital and firm performance. China J. Account. Res. 5, 101–125.

Liao, L., Liu, B., Wang, H., 2014. China's secondary privatization: perspectives from the Split-Share Structure Reform. J. Financ. Econ. 113, 500–518.

Liao, J., Young, M., 2012. The impact of residual government ownership in privatized firms: new evidence from China. Emerg. Market. Rev. 13, 338–351.

Lin, C., Ma, Y., Malatesta, P., Xuan, Y., 2011. Ownership structure and the cost of corporate borrowing. J. Financ. Econ. 100, 1–23.

Liu, Q., Tian, G., Wang, X., 2011. The effect of ownership structure on leverage decision: new evidence from Chinese listed firms. J. Asia Pacific Econ. 16, 254–276.

Megginson, W., Ullah, B., Wei, Z., 2014. State ownership, soft-budget constraints, and cash holdings: evidence from China's privatized firms. J. Bank. Financ. 48, 276–291.

Pessarossi, P., Weill, L., 2013. Choice of corporate debt in China: the role of state ownership. China Econ. Rev. 26, 1–16.

Rajan, R., Zingales, L., 1995. What do we know about capital structure? Some evidence from international data. J. Financ. 50, 1421–1460.

Sun, Q., Tong, W., 2003. China share issue privatization: the extent of its success. J. Financ. Econ. 70, 183–222.

Ying, Q., Wang, L., 2013. Propping by controlling shareholders, wealth transfer and firm performance: evidence from Chinese listed companies. China J. Account. Res. 6, 133–147.

Yu, M., 2013. State ownership and firm performance: empirical evidence from Chinese listed companies. China J. Account. Res. 6, 75–87.

Zou, H., Xiao, J., 2006. The financing behaviour of listed Chinese firms. Br. Account. Rev. 38, 239–258.