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ARTICLE

The contestability of multiple large shareholders and bank debt: evidence from China

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Abstract

Purpose – This paper explores the role of multiple large shareholders to provide evidence of their influence on a firm's bank debt.

Theoretical framework – We introduce agency theory to support our study.

Design/methodology/approach – Empirical research (including the FE model, PSM method, and IV method) is used in our study. Moreover, this paper selects the non-financial A-share companies listed in the Shanghai and Shenzhen stock markets from 2007 to 2022 as the sample.

Findings – We find that bank debt is positively and significantly related to tunneling, and negatively and significantly related to Tobin's Q. Moreover, it is found that multiple large shareholders' contestability reduces firms' bank debt. Furthermore, we document that the influence of multiple large shareholders on bank debt would be reduced in state-owned firms.

Practical & social implications of research – Our findings contribute to the literature by highlighting the role of multiple large shareholders, who can reduce the agency cost of a firm's bank debt.

Originality/value – This study contributes to the literature in several important ways. First, it adds to the research on the governance role of multiple large shareholders. Second, this paper offers the first attempt to examine the impact of the contestability of multiple large shareholders on bank debt, and we find a negative relationship between them.

Keywords: Multiple large shareholders, contestability, bank debt, China.

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1 Introduction

The ownership structure is concentrated in the Chinese setting. Many scholars have turned their attention to multiple large shareholders to mitigate the manager-shareholder and shareholder-shareholder conflicts (Laeven & Levine, 2008; Li et al., 2024; Maury & Pajuste, 2005). The important point is that multiple large shareholders can effectively mitigate the self-interest of controlling shareholders and managers (Boateng & Huang, 2017; Yan & Li, 2023). In fact, besides the conflicts mentioned above, the shareholder-debtholder conflict still plays an important role in corporate governance. To our surprise, little research has been done from the perspective of debtholders (Boateng & Huang, 2017; Zhu, 2017), especially considering bank debt, which is the dominant source of firms' external financing, operating flexibility, and real investment activities (Qian & Yeung, 2015).

According to agency theory, bank debt can regulate corporate behavior through its restrictive contracts and loan interest variance (ÁlvarezzN.CIT & GonzzN.CITE <En), thus playing an active role in corporate governance (Boubaker et al., 2017). However, information asymmetry exists widely inside and outside the firm, and loan allocation is inefficient. Bank debt may be the way for large shareholders to pursue self-interest (Qian & Yeung, 2015). Therefore, this paper attempts to complement the existing findings on the relationship between multiple large shareholders and bank debt.

Specifically, this paper studies the relationship between multiple large shareholders and the bank debt of Chinese listed companies. The characteristics of China's economic and financial system provide an important and favorable setting to test our propositions: (1) Chinese listed companies have a high ownership concentration (Claessens et al., 2000), and the legal protection of minority shareholders is still weak, similar to other developing countries (Cao et al., 2023; Gong et al., 2021; Jiang et al., 2010), so controlling shareholders can fully manage the company based on their own power, and they will enjoy self-interest alone without sharing with multiple large shareholders, and multiple large shareholders are more inclined to play an active role to protect their own interests (Ya et al., 2023); (2) Chinese companies are still limited to bank financing, although firms promise to protect the rights of equity investors (Qian & Yeung, 2015), due to the suitability of financing channels and the dominance of banks in external corporate financing (Allen et al., 2005). More importantly, state-owned banks occupy the dominant position in Chinese banks. Therefore, it is important for us to focus on corporate bank debt. In general, we focus our attention on the impact of multiple large shareholders on bank debt, thereby complementing existing studies in this area.

In addition, prior research has shown that multiple large shareholders have competing governance effects. Specifically, multiple large shareholders can mitigate the agency problem, playing an active role in corporate governance (Attig et al., 2008; Boateng & Huang, 2017; Maury & Pajuste, 2005), and they can collude with insiders to pursue their own private interests by playing a passive role in corporate governance (Cai et al., 2016). The main reason for these can be addressed by the ways to measure the governance ability of multiple large shareholders. Unlike previous research that uses cash flow rights to measure it, this paper introduces the variable of control rights, which is relative voting power and the formation of ownership structure balance (Attig et al., 2008), which triggers corporate control competition and encourages efficient monitoring, thus reducing the free rider problem caused by widely dispersed corporate ownership (Attig et al., 2013; Boateng & Huang, 2017). In the study, the expression "multiple large shareholders" will be used to express the control contest of minority multiple large shareholders.

To analyze the relationship between multiple large shareholders and bank debt, this paper uses a sample of 15056 firm-year observations covering 941 Chinese listed firms from 2007 to 2022. Using the contestability of large shareholders to measure the governance effect of multiple large shareholders and using the ratio of bank debt to total assets to measure bank debt, we confirm that multiple large shareholders are negatively associated with bank debt. Furthermore, we document that the impact of multiple large shareholders on bank debt is more pronounced in non-state-owned firms. This supports the view that multiple large shareholders play an active role, while bank financing plays a passive role. This finding is robust to potential endogeneity and to a series sensitivity tests.

This study contributes to the literature in several important ways. First, it adds to the research on the governance role of multiple large shareholders. By studying the impact of multiple large shareholders on bank debt, this paper extends previous work on multiple large shareholders that focuses on firm value, cost of

capital, and cash flows (Attig et al., 2008; Laeven & Levine, 2008; Maury & Pajuste, 2005). As a result, this paper complements prior research by Denis and Mihov (2003) and Lin et al. (2013), who found that ownership structure plays an important role in corporate financial decisions, and provides new evidence on the mechanism by which ownership structure influences corporate financial decisions. Second, given the negative governance effect of bank debt, this paper provides the first attempt to examine the impact of the contestability of multiple large shareholders on bank debt, and we find a negative relationship between them. This result is contrary to the findings of Boubaker et al. (2017), who showed a positive relationship between multiple large shareholders and bank debt in terms of the effective role of bank debt in the French context. The present paper provides new evidence on the relationship between multiple large shareholders and bank debt.

The rest of this paper is organized as follows. Section 2 introduces the related literature and develops the hypotheses. Section 3 details the model design, sample selection, and data collection. Section 4 covers the empirical evidence. Section 5 presents the robustness tests. Section 6 provides our conclusions.

2 Literature review and hypothesis development

The research on multiple large shareholders stems from analyses of how to mitigate tunneling behavior by controlling shareholders (Boateng & Huang, 2017; Maury & Pajuste, 2005), and these findings show that multiple large shareholders have competing governance effects. On one hand, multiple large shareholders have a natural information advantage over other investors because they are more aware of the actions of controlling shareholders (Boubaker & Sami, 2011), and multiple large shareholders have certain motivations and abilities to participate in corporate governance and decision-making to protect their own interests (Yan et al., 2023). Thus, some scholars believe that multiple large shareholders play an important monitoring role in restricting tunneling behavior (Attig et al., 2013; Boateng & Huang, 2017). However, other scholars think that the excessive monitoring by multiple large shareholders has a negative impact on firm decision-making, which reduces firm performance. Worse, multiple large shareholders could collude with controlling shareholders to entrench firm interests, which aggravates agency problems (Cai et al., 2016).

In response to these studies, we found that one of the main reasons for the differences in the research results lies in the different measurement indicators of the governance effect under multiple large shareholders. Many studies conduct the examination using only the dummy variable of other shareholders' cash flow rights and whether their shareholdings are greater than 5% (or 10%). This method certainly confirms the governance effect of the absolute number of other shareholders' holdings, but it neglects the fact that the ratio of their holdings to the controlling shareholder's holdings is a more important factor in forming a control rights contest for a firm's key decisions. Bennedsen and Wolfenzon (2000) point out that multiple large shareholders can monitor the controlling shareholders by competing for control (contestability). Attig et al. (2013) show that the massive ownership structure of multiple large shareholders leads to bargaining power, which reduces the free rider problem caused by widely dispersed corporate ownership and makes monitoring necessary to protect their interests. Boateng and Huang (2017) show that when the total stake of multiple large shareholders is comparable to the stake of the controlling shareholder, control contestability is increased, which triggers corporate control competition and encourages efficient monitoring. Attig et al. (2009), Laeven and Levine (2008), and Maury and Pajuste (2005) show that the presence of other multiple large shareholders with relatively significant voting power is associated with a valuable corporate governance role. Consequently, we introduce contestability to measure the governance role of multiple large shareholders.

In addition, we believe that multiple large shareholders play a positive and effective role for the following reasons. First, multiple large shareholders can reduce the free rider problem caused by ownership decentralization and improve the control rights of multiple large shareholders, thereby reducing the self-interest of controlling shareholders (Pagano & Röell, 1998). Second, it is difficult for multiple large shareholders to form an alliance of interests or the cost of building an alliance is too high, which promotes a more effective role for multiple large shareholders (Attig et al., 2013, 2008). Third, multiple large shareholders would support an active effective role due to the high existing costs of selling a large block of shares, such as price effects, transaction costs, tax timing and rebalancing costs (Boateng & Huang,

2017). Furthermore, multiple large shareholders tend to play a positive effective role in the Chinese setting. Because of the ownership concentration of Chinese listed firms (Claessens et al., 2000), the weak interest protection mechanism of minority shareholders, and the limited role of the takeover market and independent directors in restricting tunneling behavior (Jiang et al., 2010), controlling shareholders can fully influence the company. Controlling shareholders would not share their private benefits with other shareholders, so multiple large shareholders could only serve as active supervisors to protect their own interests. Therefore, we adopt the perspective that multiple large shareholders play a positive effective role.

Agency theory predicts that the extent of losses in firm value caused by the entrenchment of multiple large shareholders lies not only in the effect of the mechanism of restriction on expropriation, but also in the volume of total assets that can be easily transferred (Frésard & Salva, 2010). Prior research on transferred assets mainly focuses on cost of capital, cash flow, and corporate debt (Attig et al., 2009; Ben-Nasr et al., 2015). Denis and Mihov (2003) and Lin et al. (2013) showed that ownership structure plays an important role in influencing bank debt, but except for Boubaker et al. (2017), few scholars have studied the relationship between multiple large shareholders and bank debt. Hence, this paper fills a gap in the Chinese setting by examining the black box of the relationship between multiple large shareholders and bank debt.

The present research has pointed out that bank debt has a competing governance role. The reasons for this active role are as follows. First, compared with other lenders, banks have relative information superiority, which enables them to closely monitor insiders and detect expropriation. Moreover, due to the large amount of bank debt, free-riding behavior is much rarer, which allows banks to play an active role (Boubaker et al., 2017). Furthermore, compared to other lenders, banks are superior in monitoring corporate borrowing behavior through restrictive covenants (Park, 2000), which increases management pressure on firms' internal controllers to avoid moral hazard. However, bank debt may play a passive role especially in the Chinese context. In the Chinese market, state-owned banks are the dominant component, and the low efficiency of bank financing is the main cause of corporate governance failure (Qian & Yeung, 2015). A company could obtain bank debt through non-essential factors such as political connections (Deng et al., 2019), which pays little attention to the firm's capital cost, meaning that the bank does not care about the interests of minority shareholders. Moreover, the legal protection of minority shareholders is still weak and information asymmetry is widespread in the capital market (Jiang et al., 2010). Banks know relatively little about firms' essential information and there is limited governance. Furthermore, with the concentrated ownership structure in Chinese listed firms, controlling shareholders have perfect influence on corporate operations, resulting in widespread tunneling. In conclusion, it is believed that bank debt may be a way for controlling shareholders to enjoy their self-interest.

According to the above discussion, we propose the following hypothesis.

H1: The contestability of multiple large shareholders will negatively affect a firm's bank debt.

To shed further light on the governance role of multiple large shareholders, we investigate the effect of firm identity (state and non-state firm) on the relationship between the governance role of multiple large shareholders and bank debt. Prior work shows that different types of firms have different governance incentives and are associated with different agency problems (Anderson & Reeb, 2003; Yu & Tsai, 2018).

In the context of potential agency problems and a higher risk of expropriation among Chinese listed firms, multiple large shareholders tend to play an efficient monitoring role that is motivated by their ownership concentration and selfish interests. Moreover, given the risk of expropriation by the controlling shareholder, non-controlling multiple large shareholders are less likely to collude with the controlling shareholder to extract private benefits from minority shareholders because of the high cost of forming such a coalition. In addition, prior theory and evidence prove that non-state-owned enterprises have more serious agency problems (Cheng et al., 2013). It may be the case that the controlling shareholder would obtain excessive control rights to fully control the company given the pyramid structure (Cai et al., 2012), and the controlling shareholder would more easily extract minority shareholders' interests because a massive presence in the firm's management is usually held by family members (Burkart et al., 2003). Thus, we speculate that multiple large shareholders would challenge the control of non-state firms to a greater extent than state firms, implying a depth-effect use of excess bank debt.

According to the above analyses, we propose the following hypothesis.

H2: The influence of multiple large shareholders on a firm's bank debt is more pronounced in non-state firms, which face more serious principal-principal agency problems.

3 Data and methods

3.1 Data

The data in this paper are from the A-shares of non-financial companies listed on the Shanghai and Shenzhen stock exchanges, which were collected from the China Stock Market and Accounting Research (CSMAR) database (https://data.csmar.com/). Specifically, we use the data period from 2007 to 2022 because the reform of non-tradable shares of Chinese listed firms began in 2005 and basically ended in 2006. Moreover, we choose firms listed before December 31st, 2006 to avoid the impact of data changes in the first year of listing on the results. Furthermore, we winsorize the main continuous variables at the 1% and 99% levels. In total, 941 firms from each year and 15056 firm-year observations are confirmed as the final sample in this paper.

In addition, to more accurately measure the governance effect of multiple large shareholders, we establish the information base with the CSMAR database and annual reports of Chinese listed firms, manually collect the related information of multiple large shareholders and corporate control chain from annual reports, and re-divide the controlling shareholders and multiple large shareholders. Other financial data and corporate governance data are also taken from the CSMAR database (Supplementary Data 1 – Database)

3.2 Variables

3.2.1 *Bank debt*

Following Lin et al. (2013) and Boubaker et al. (2017), we measure bank debt using the ratio of bank debt to total assets (*bank_debt1*). Specifically, we calculate bank debt as the sum of short-term loans, long-term loans and long-term loans maturing in one year. Moreover, we employ the ratio of bank debt to total debt (*bank_debt2*), the ratio of short-term loans plus long-term loans maturing in one year to total assets *(bank_debt3),* and the ratio of long-term loans to total assets *(bank_debt4)* to perform robustness tests.

3.2.2 *Multiple large shareholder variables*

Similar to Boateng and Huang (2017), we use proxy measures for the contestability of multiple large shareholders and controlling shareholders, and *Contest* refers to a set of ownership and control variables. Specifically, following Liu and Tian (2012), we use the sum of ownership percentages along with the control chains to measure cash flow rights, and the minimum ownership percentages along with control chains to measure control rights. Hence, considering the influence of multiple large shareholders on a firm's bank debt, we denote *CF_Rights1* as the cash flow rights of the controlling shareholder, *CF_Rights2* as the cash flow rights of the second and third largest shareholders, *CF_Rights3* as the cash flow rights of the second to fifth largest shareholders, and *CN_Rights1* as the control rights of the controlling shareholder. Consequently, we obtain four proxy measures of contestability: (1) *CF_Contest1*, calculated as the ratio of *CF_Rights2* to *CF_Rights1*; (2) *CF_Contest2*, calculated as the ratio of *CF_Rights3* to *CF_Rights1*; (3) *CN_Contest1*, calculated as the ratio of *CF_Rights2* to *CN_Rights1*; and (4) *CN_Contest2*, calculated as the ratio of *CF_Rights3* to *CN_Rights1*.

3.2.3 *Other variables*

As discussed above, bank debt has competing governance roles in emerging markets, namely the positive role and the passive role. To explore the role of bank debt in the Chinese market, we introduce two other variables that are widely used in the baseline analyses: *Tunneling and Tobin's Q*. Specifically, we employ the ratio of the total amount of related party transactions to total assets (*Tunneling*) to measure the agency problem (Johnson et al., 2000), and introduce the market value (*Tobin's Q*) to measure firm performance (Yan et al., 2023). If Bank debt can alleviate tunneling and increase Tobin's Q, we conclude that it plays a positive role in corporate governance, otherwise we conclude that it plays a passive role.

3.2.4 *Control variables*

Following the relevant literature (Boateng & Huang, 2017; Boubaker et al., 2017), we use some variables as control variables because they would affect the influence of multiple large shareholders on bank debt,

including (1) the natural logarithm of total assets (*Size*); (2) the ratio of tangible assets to total assets (*TA*); (3) the percentage of non-tradable shares owned by the state (*NT_share*); (4) *Gov*, a dummy variable that equals 1 if the top owner of a listed firm is the state or a state-owned enterprise, and 0 otherwise; (5) the firm's sales growth as measured by the percentage change in sales over the past year (*Growth*); (6) return on equity (*ROE*); and (7) the natural logarithm of the firm's listing years (*Age*).

3.3 Methods

To explore the influence of multiple large shareholders on bank debt, we construct the following regression model:

$$Bank\_debt_{i,t} = \beta_0 + \beta_1 Contest_{i,t} + \beta_2 Controls + Fixed\ Effects + \varepsilon_{i,t} \quad (1)$$

where *Contest* includes *CF_Contest1*, *CF_Contest2*, *CN_Contest1*, and *CN_Contest2*, *Controls* is the set of control variables mentioned above, and ε is the error term. β_1 is our key index; when β_1 is positive, it means that the contestability of multiple large shareholders will positively influence a firm's bank debt, and when β_1 is negative, the contestability of multiple large shareholders will negatively influence a firm's bank debt. In addition, the term *Fixed Effects* reflects the set of industry and year in our regression model to reduce the estimation bias.

4 Presentation and analysis of results

4.1 Summary statistics and correlations

Table 1 reports the summary statistics of our sample, which includes 941 listed firms for the years 2007 to 2022 and 15056 firm-year observations. The average bank debt for our sample is 20.830%, which shows that bank financing occupies a dominant position in external financing. Importantly, we find that *CF_Contest1* is 30.038%, *CF_*Contest2 is 39.414%, *CN_Contest1* is 29.294%, and *CN_Contest2* is 38.478%, which means that multiple large shareholders are sufficiently powerful to influence the actions of the controlling shareholder. In addition, we also note that *Gov* is 64%, indicating that more than half of the listed firms in our sample are state-owned.

Table 2 shows the correlation matrix for the important variables used in the regressions. The correlations between our independent variables are less than 0.5, which suggests that we do not need to worry about the problem of multicollinearity in our regressions.

4.2 Baseline tests

Before testing the main hypothesis, we conduct some baseline tests to detect the governance role of multiple

Table 1
Summary statistics

	Obs.	Mean	std	5th percentile	25th percentile	Median	75th percentile	95th percentile
Bank_debt1	15056	20.830	15.962	0	7.001	19.080	31.995	50.075
CF_Contest1	15056	30.038	32.934	2.154	6.921	15.932	42.601	101.973
CN_Contest1	15056	29.294	31.826	2.162	6.962	15.956	41.289	99.540
CF_Contest2	15056	39.414	41.544	3.384	10.273	22.906	54.433	127.727
CN_Contest2	15056	38.478	40.111	3.410	10.349	22.962	52.900	121.990
Size	15056	22.473	1.349	20.394	21.543	22.379	23.339	24.824
TA	15056	0.938	0.078	0.780	0.926	0.964	0.984	1.000
NT_share	15056	7.774	16.012	0	0	0	4.274	48.575
Gov	15056	0.640	0.480	0	0	1	1	1
Growth	15056	0.183	0.617	-0.342	-0.052	0.085	0.242	0.848
ROE	15056	5.614	15.169	-17.083	2.079	6.398	11.907	24.632
AGE	15056	2.785	0.371	2.079	2.565	2.833	3.045	3.258

Bank_debt1 is the ratio of bank debt to total assets; *CF_Contest1* is calculated as the ratio of *CF_Rights2* to *CF_Rights1*, *CN_Contest1* is calculated as the ratio of *CF_Rights2* to *CN_Rights1*, *CF_Contest2* is calculated as the ratio of *CF_Rights3* to *CF_Rights1*, *CN_Contest2* is calculated as the ratio of *CF_Rights*3 to *CN_Rights*; *Size* is the proxy of the natural logarithm of total assets; *TA* is the ratio of tangible assets to total assets; *NT_share* is the percentage of non-tradable state owner shares; *GOV* is a dummy variable which equals to 1 if the top owner of a listed firm is the State or a state-owned enterprise, and 0 if otherwise; *Growth* is the percentage change in sales over past year; *ROE* is the return on equity; *Age* is the proxy of the natural logarithm of the firm's listing years.

Table 2
Correlation coefficients between variables

	1	2	3	4	5	6	7	8	9	10	11	12
1 Bank_debt1	1											
2 CF_Contest2	-0.017	1										
3 CN_Contest2	-0.017	0.973	1									
4 CF_Contest3	-0.030	0.981	0.953	1								
5 CN_Contest3	-0.031	0.954	0.981	0.971	1							
6 Size	0.222	-0.125	-0.124	-0.116	-0.115	1						
7 TA	-0.006	-0.099	-0.094	-0.104	-0.098	0.025	1					
8 NT_share	0.059	-0.079	-0.081	-0.089	-0.090	0.018	0.022	1				
9 Gov	0.073	-0.174	-0.172	-0.187	-0.185	0.171	0.044	0.312	1			
10 Growth	0.002	0.011	0.007	0.016	0.012	0.030	-0.043	0.125	-0.019	1		
11 ROE	-0.178	-0.041	-0.040	-0.033	-0.032	0.148	0.041	0.061	0.003	0.184	1	
12 AGE	-0.099	0.009	0.009	0.010	0.010	0.251	-0.060	-0.299	-0.005	-0.044	-0.103	1

The number in bold indicates statistical significance at the 10% level.

large shareholders and bank financing in our sample. Specifically, we employ the ratio of the total amount of related party transactions to total assets (*Tunneling*, models 1 to 2, 5 to 8) to measure the self-interest pursuit of controlling shareholders, and introduce the market value (*Tobin's Q*, models 3 to 4, 9 to 12) to measure the firms' performance, which are the dependent variables. We use bank debt to measure the firms' bank financing and use contestability to measure multiple large shareholders, which are the independent variables.

The results of the baseline tests are shown in Table 3. Models 1 to 2 indicate that the regression coefficient of *bank_debt1* is significantly positively related to *Tunneling*, regardless of whether the relevant control variables are included. Accordingly, it is shown that bank debt is the way for controlling shareholders to enjoy self-interest, which is consistent with Qian and Yeung (2015). Models 3 to 4 indicate that the regression coefficient of *bank_debt1* is significantly negatively related to *Tobin's Q*, regardless of whether the relevant control variables are included. Accordingly, it is shown that bank financing plays a passive governance role, and the results are consistent with Qian and Yeung (2015). Consequently, bank debt plays a negative role in the Chinese setting.

In models 5 to 8, we find that the contestability proxies of multiple large shareholders (*CF_Contest1*: β= -0.018, ρ<0.05; *CN_Contest1*: β= -0.022, ρ<0.01; *CF_Contest2*: β= -0.011, ρ<0.10; *CN_Contest2*: β= -0.014, ρ<0.05) are negatively and significantly related to *Tunneling*, suggesting that multiple large shareholders can moderate the self-interest pursuit of controlling shareholders, which is consistent with Boateng and Huang (2017). Importantly, the coefficients of *Contestability* (model 5: β=0.090, ρ<0.01; model 6: β= 0.105, ρ<0.01; model 7: β= 0.057, ρ<0.05; model 8: β= 0.068, ρ<0.01) are positive and significant, indicating that multiple large shareholders can mitigate controlling shareholders' tunneling by moderating their bank financing, which is in line with our prediction.

In models 9 to 12, we find that the contestability proxies of multiple large shareholders (*CF_Contest1*: β=0.005, ρ<0.01; *CN_Contest1*: β=0.004, ρ<0.01; *CF_Contest2*: β= 0.004, ρ<0.01; *CN_Contest2*: β= 0.004, ρ<0.01) are positively and significantly related to *Tobin's Q*, suggesting that the contestability of multiple large shareholders can enhance firm performance, and the results support the view that multiple large shareholders play an important monitoring role (Attig et al., 2013; Yan et al., 2023). Importantly, the coefficients of *Contesttbank_debt1* (model 9: β= -0.009, ρ< 0.01; model 10: β= -0.009, ρ< 0.01; model 11: β= -0.007, ρ<0.01; model 12: β= -0.007, ρ<0.01) are negative and significant, indicating that multiple large shareholders can reduce bank financing and thus enhance firm performance, which is in line with our prediction.

4.3 The influence of multiple large shareholders on bank debt

Table 4 reports our main results for the influence of multiple large shareholders on bank debt, using a fixed effects (*FE*) model to fit the panel data sample. Following the Hausman test, we employ the *FE* results to explore the influence of multiple large shareholders on bank debt. Specifically, we find that all four proxy

Table 3
The results of baseline tests

Variable	Tunneling		Tobin's Q	
	(1)	(2)	(3)	(4)
Bank_debt1	0.074***	0.087***	-0.018***	-0.009***
	(6.496)	(7.360)	(-21.258)	(-10.658)
Size		-0.876***		-0.659***
		(-3.764)		(-39.413)
TA		-10.393***		0.170
		(-4.534)		(1.031)
NT_share		-0.006		0.003***
		(-0.668)		(5.168)
Gov		2.182***		-0.158***
		(4.452)		(-4.476)
Growth		0.231		0.053***
		(1.209)		(3.857)
ROE		0.016*		0.007***
		(1.862)		(10.681)
AGE		-25.419***		0.322***
		(-15.692)		(2.765)
constant	-3.882	78.683***	4.390***	17.378***
	(-1.592)	(11.340)	(23.955)	(34.867)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Adjusted R2	0.213	0.230	0.257	0.335

Variable	Tunneling				Tobin's Q			
	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CF_Contest1	-0.018**				0.005***			
	(-2.359)				(8.642)			
CN_Contest1		-0.022***				0.004***		
		(-2.853)				(7.928)		
CF_Contest2			-0.011*				0.004***	
			(-1.754)				(9.662)	
CN_Contest2				-0.014**				0.004***
				(-2.249)				(8.942)
Bank_debt1	0.058***	0.054***	0.064***	0.060***	-0.006***	-0.006***	-0.005***	-0.006***
	(3.909)	(3.652)	(4.229)	(3.981)	(-5.470)	(-5.557)	(-5.111)	(-5.221)
Contest×Bank_debt1	0.090***	0.105***	0.057**	0.068***	-0.009***	-0.009***	-0.007***	-0.007***
	(3.259)	(3.687)	(2.546)	(2.949)	(-4.584)	(-4.501)	(-4.604)	(-4.517)
Size	-0.854***	-0.852***	-0.861***	-0.859***	-0.662***	-0.661***	-0.663***	-0.662***
	(-3.671)	(-3.662)	(-3.702)	(-3.693)	(-39.702)	(-39.644)	(-39.813)	(-39.737)
TA	-10.731***	-10.785***	-10.634***	-10.701***	0.299*	0.278*	0.323**	0.298*
	(-4.665)	(-4.692)	(-4.621)	(-4.653)	(1.817)	(1.684)	(1.964)	(1.810)
NT_share	-0.007	-0.007	-0.007	-0.007	0.004***	0.004***	0.004***	0.004***
	(-0.706)	(-0.712)	(-0.694)	(-0.700)	(5.363)	(5.381)	(5.386)	(5.405)
Gov	2.144***	2.130***	2.157***	2.142***	-0.152***	-0.152***	-0.149***	-0.149***
	(4.374)	(4.345)	(4.400)	(4.370)	(-4.327)	(-4.314)	(-4.260)	(-4.244)
Growth	0.226	0.226	0.227	0.227	0.053***	0.053***	0.052***	0.052***
	(1.184)	(1.184)	(1.187)	(1.188)	(3.869)	(3.877)	(3.803)	(3.830)
ROE	0.016*	0.017*	0.016*	0.016*	0.007***	0.007***	0.007***	0.007***
	(1.886)	(1.909)	(1.865)	(1.885)	(10.712)	(10.691)	(10.720)	(10.703)
AGE	-25.435***	-25.470***	-25.408***	-25.442***	0.371***	0.363***	0.380***	0.370***
	(-15.684)	(-15.711)	(-15.665)	(-15.690)	(3.197)	(3.124)	(3.274)	(3.189)
constant	79.400***	79.661***	79.210***	79.476***	17.002***	17.050***	16.960***	17.009***
	(11.406)	(11.447)	(11.379)	(11.421)	(34.088)	(34.172)	(34.039)	(34.125)
Year-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056	15056	15056	15056	15056
Adjusted R2	0.230	0.230	0.230	0.230	0.380	0.379	0.380	0.380

The p-value of the t-statistic of each coefficient is shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4
The influence of MLS on bank debt

variable	Dependent: Bank_debt			
	(1)	(2)	(3)	(4)
CF_Contest1	-0.021***			
	(-5.618)			
CN_Contest1		-0.022***		
		(-5.808)		
CF_Contest2			-0.023***	
			(-7.713)	
CN_Contest2				-0.024***
				(-7.858)
Size	4.509***	4.505***	4.514***	4.509***
	(27.969)	(27.947)	(28.030)	(28.001)
TA	-6.306***	-6.275***	-6.608***	-6.537***
	(-3.855)	(-3.838)	(-4.042)	(-4.001)
NT_share	-0.049***	-0.050***	-0.049***	-0.050***
	(-7.366)	(-7.405)	(-7.392)	(-7.437)
Gov	-0.151	-0.150	-0.177	-0.179
	(-0.432)	(-0.431)	(-0.508)	(-0.512)
Growth	0.277**	0.276**	0.286**	0.283**
	(2.037)	(2.029)	(2.099)	(2.080)
ROE	-0.160***	-0.160***	-0.160***	-0.160***
	(-26.541)	(-26.553)	(-26.492)	(-26.510)
AGE	0.321	0.338	0.178	0.212
	(0.278)	(0.293)	(0.154)	(0.183)
constant	-67.635***	-67.639***	-66.820***	-66.895***
	(-13.739)	(-13.744)	(-13.589)	(-13.609)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Adjusted R2	0.184	0.185	0.181	0.182
F-value	60.29***	60.36***	60.96***	61.04***
Hausman test	96.87***	96.05***	79.60***	79.28***

The *p*-value of the *t*-statistic of each coefficient is shown in parentheses. *** and ** indicate statistical significance at the 1% and 5%, level, respectively.

measures of contestability (*CF_Contest1*: β= -0.021, ρ<0.01; *CN_Contest1*: β= -0.022, ρ<0.01; *CF_Contest2*: β= -0.023, ρ<0.01; *CN_Contest2*: β= -0.024, ρ<0.01) are negatively and significantly related to bank debt, thereby providing strong support for our hypothesis, which means that contestability leads to a power balance between multiple large shareholders and controlling shareholders, and provides an efficient monitoring role by limiting firms' bank debt. Moreover, according to the results of model 1, a one standard deviation increase in *CF_Contest1* would reduce *bank_debt1* by 3.32%. Thus, these findings provide important evidence that the contestability of multiple large shareholders negatively influences a firm's bank debt, and our hypothesis is supported.

For the control variables, the results show positive and significant coefficients of the variables *Size* and *Growth,* which suggests that firms with a large size and better growth prospects will rely more on bank financing, and the findings are consistent with the views of Myers (1977). The coefficients of *TA* are significant and negative, which may reflect the fact that tangible assets usually cost a lot and have a long cycle, so for listed firms that can easily achieve equity financing and bond financing, they may try to minimize their reliance on bank borrowings because they generally have a relatively short cycle and the operational pressure of repaying the principal and interest. The coefficients of *NT_share* are also significant and negative, and

the reason may be that controlling shareholders have perfect control over the firm and would not share their private interests with others. The coefficients of *ROE* are significant and negative, which is consistent with the view that firms with more attractive investment opportunities tend to rely less on bank debt financing (Boubaker et al., 2017).

4.4 Endogeneity

Our main results have provided some interesting insights into corporate governance from the perspective of bank debt, but they are still suspect due to some problems. One important and critical concern with our empirical study is the endogeneity issue. Specifically, our research is likely to suffer from reverse causality between multiple large shareholders and bank debt, and the empirical results may be biased due to the presence of omitted variables. Hence, we apply propensity score matching (PSM) and instrumental variable (IV) regressions to address the endogeneity issue.

4.4.1 *Propensity score matching*

The first approach to address the endogeneity issue is based on a propensity score matching procedure. Specifically, we use the PSM method to construct a sample of all firms with multiple large shareholders (at the 5% threshold) and a matched set of firms with other types of shareholders. This technique allows us to study different impacts of the control sample that are restricted to large shareholders and the sample of multiple large shareholders. The matched sample is identified based on the industry class, the year, and the nearest neighbor matching technique, which consists of choosing the firm without multiple large shareholders that is closest in terms of the probability of being owned by multiple large shareholders (that is, its propensity score). This probability is calculated by using a probit model, where the dependent variable is *MLS_dummy*, which is a dummy for multiple large shareholders that equals 1 if more than one large shareholder holds more than 5% of the shares; otherwise, it is 0. The independent variables include *Size*, *TA*, *NT_share, Gov, Growth*, *ROE*, *AGE*, and industry and year dummy variables, which are shown to be determinant in the previous research on large shareholders. The results of the PSM procedure suggest a sample of 8194 firm-year observations, equally distributed between firms with multiple large shareholders and others.

Table 5 presents the results of the PSM. The coefficients of *CF_Contest1* (β= -0.024, ρ<0.01), *CN_Contest1* (β= -0.023, ρ<0.01), *CF_Contest2* (β= -0.026, ρ<0.01), and *CN_Contest2* (β= -0.025, ρ<0.01) are negative and significant, suggesting that the contestability of multiple large shareholders reduces bank debt. These results are consistent with our main results in Table 4, providing strong evidence that our main results are robust.

4.4.2 *Instrumental variable regressions*

Another approach to addressing the endogeneity issue is the instrumental variable approach. Specifically, following Laeven and Levine (2008), Mishra (2011), and Paligorova and Xu (2012), we use a two-stage instrumental variable approach with the average industry-year values for the variables *CF_Contest1*, *CF_Contest2*, *CN_Contest1*, and *CN_Contest2* as the instruments for *CF_Contest1*, *CF_Contest2*, *CN_Contest1*, and *CN_Contest2*, respectively. These instrumental variables capture the natural tendency of multiple large shareholders to be present in firms that are involved in similar types of activities. The distinct feature of these instruments is that they are correlated with the ownership structure of an individual firm, but it is unlikely that the change in bank debt will affect the average ownership structure of the entire industry.

Table 6 reports the results of the instrumental variable regressions. The results include first-stage (Part A) and second-stage (Part B) regressions. In the first-stage regression, we use each of the instruments along with all the exogenous variables to explain the contestability of multiple large shareholders. The instrumental variable coefficients of the proxy measures of contestability (*IV-CF_Contest1*: β= 0.810, ρ<0.01; *IV-CN_Contest1*: β= 0.835, ρ<0.01; *IV-CF_Contest2*: β= 0.790, ρ<0.01; *IV-CN_Contest2*: β= 0.818, ρ<0.01) are significant, which means that our instrumental variables are valid.

In the second-stage regression, we use the fitted value of our contestability variables from the first-stage regression as the test variable, and these results are shown in Panel B of Table 6. We find that the coefficients of contestability (*CF_Contest1*: β= -0.079, ρ<0.01; *CN_Contest1*: β= -0.055, ρ<0.10; *CF_Contest2*: β= -0.073, ρ<0.01; *CN_Contest2*: β= -0.053, ρ<0.05) are negative and significant, meaning that the contestability of multiple large shareholders is associated with lower bank debt. These findings reinforce our main results.

Table 5
Propensity score matching regression

variable	Probit	Results using PSM sample			
	(1)	(2)	(3)	(4)	(5)
CF_Contest1		-0.024***			
		(-4.858)			
CN_Contest1			-0.023***		
			(-4.680)		
CF_Contest2				-0.026***	
				(-6.759)	
CN_Contest2					-0.025***
					(-6.448)
Size	-0.040***	4.618***	4.615***	4.623***	4.619***
	(-2.691)	(20.133)	(20.114)	(20.191)	(20.163)
TA	-2.333***	-0.953	-0.914	-1.350	-1.267
	(-10.030)	(-0.425)	(-0.408)	(-0.603)	(-0.566)
NT_share	0.003**	-0.034***	-0.035***	-0.034***	-0.034***
	(2.163)	(-3.531)	(-3.574)	(-3.513)	(-3.570)
Gov	-0.516***	0.246	0.260	0.190	0.212
	(-13.201)	(0.499)	(0.526)	(0.385)	(0.431)
Growth	0.097***	0.032	0.031	0.047	0.043
	(3.414)	(0.167)	(0.161)	(0.249)	(0.227)
ROE	0.001	-0.136***	-0.136***	-0.136***	-0.136***
	(0.153)	(-16.853)	(-16.858)	(-16.832)	(-16.840)
AGE	-0.252***	-0.259	-0.234	-0.432	-0.392
	(-3.142)	(-0.155)	(-0.141)	(-0.260)	(-0.236)
constant		-74.158***	-74.258***	-73.013***	-73.213***
		(-10.387)	(-10.399)	(-10.246)	(-10.271)
Year-FE	Yes	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes	Yes
Sample size	15056	8194	8194	8194	8194
Wald $\chi 2$	707.97***				
Pseudo- R2	0.035				
Adjusted R2		0.145	0.146	0.143	0.144
F-value		24.04***	24.00***	24.65***	24.54***

The p-value of the t-statistic of each coefficient is shown in parentheses. *** indicate statistical significance at the 1% level.

4.5 The influence of the identity of the controlling shareholder

To shed further light on the governance role of multiple large shareholders, we investigate the effect of firm identity (state-owned and non-state-owned) on the relationship between multiple large shareholders and bank debt. Previous work shows that different types of firms have different governance incentives and are associated with different agency problems (Anderson & Reeb, 2003). To explore the extent to which the identity of the controlling shareholder alters inferences about the role of multiple large shareholders in reducing the discretionary use of bank debt, we re-estimate Equation (1) based on the presence of each type of controlling shareholder. The results are shown in Table 7.

The coefficients of contestability (*CF_Contest1*: β= -0.031, ρ<0.01; *CN_Contest1*: β= -0.032, ρ<0.01; *CF_Contest2*: β= -0.031, ρ<0.01; *CN_Contest2*: β= -0.032, ρ<0.01) and the coefficients of *GOV* (model 1: β= -0.920, ρ<0.05; model 2: β= -0.846, ρ<0.05; model 3: β= -1.011, ρ<0.05; Model 4: β= -0.950, ρ<0.05) are negative and significant, suggesting that the significant negative relationship between multiple large shareholders and bank financing still exists whether in state-owned firms or non-state-owned firms. More importantly, the coefficients of contestability (model 1: β= 0.020, ρ<0.01; model 2: β= 0.018, ρ<0.01; model 3: β= 0.017, ρ<0.01;

Table 6
Instrumental variable regression

	Dependent variable: Bank_debt1			
	(1)	(2)	(3)	(4)
Panel A: First-stage regressions				
IV- CF_Contest1	0.810***			
	(15.021)			
IV- CN_Contest1		0.835***		
		(15.760)		
IV- CF_Contest2			0.790***	
			(14.973)	
IV- CN_Contest2				0.818***
				(15.691)
Wald χ2	708***	686***	764***	722***
Panel B: Second-stage regressions				
CF_Contest1	-0.079***			
	(-2.665)			
CN_Contest1		-0.055*		
		(-1.883)		
CF_Contest2			-0.073***	
			(-3.034)	
CN_Contest2				-0.053**
				(-2.304)
Size	4.279***	4.300***	4.289***	4.302***
	(29.157)	(29.397)	(29.431)	(29.640)
TA	-8.998***	-7.948***	-9.563***	-8.425***
	(-4.751)	(-4.368)	(-4.958)	(-4.577)
NT_share	-0.051***	-0.051***	-0.051***	-0.051***
	(-7.502)	(-7.473)	(-7.543)	(-7.537)
Gov	-0.258	-0.183	-0.362	-0.271
	(-0.768)	(-0.552)	(-1.058)	(-0.800)
Growth	0.336**	0.325**	0.361***	0.341**
	(2.433)	(2.373)	(2.603)	(2.481)
ROE	-0.169***	-0.169***	-0.167***	-0.168***
	(-27.719)	(-27.948)	(-27.401)	(-27.735)
AGE	-0.298	-0.011	-0.449	-0.142
	(-0.304)	(-0.012)	(-0.456)	(-0.146)
constant	-54.042***	-57.291***	-52.865***	-56.073***
	(-9.890)	(-10.848)	(-9.695)	(-10.668)
Year-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Wald χ2	2461.73***	2489.72***	2461.17***	2490.99***
Adjusted R2	0.181	0.202	0.174	0.195

The p-value of the t-statistic of each coefficient is shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

model 4: $\beta = 0.016$, $\rho < 0.01$) are positive and significant, indicating that the governance effect of multiple large shareholders would be reduced in state-owned firms. The reason may be that (1) state-owned firms in the Chinese setting have a special market position, and their decision-making is always affected by many non-market factors (Zhang & Li, 2022); (2) the average ownership concentration of Chinese state-owned firms is higher than that of non-state-owned firms, and the controller has strong controlling power over the firm and pursues diversified goals. Therefore, the governance effect of multiple large shareholders in state-owned firms is limited, and our hypothesis is supported (Supplementary Data 2 – Stata script)

Table 7
The influence of identity of control shareholder over the relationship between MLS and bank debt

	Dependent variable: Bank_debt1			
	(1)	(2)	(3)	(4)
CF_Contest1	-0.031***			
	(-6.263)			
CN_Contest1		-0.032***		
		(-6.181)		
CF_Contest2			-0.031***	
			(-7.971)	
CN_Contest2				-0.032***
				(-7.886)
Gov	-0.920**	-0.846**	-1.011**	-0.950**
	(-2.154)	(-1.972)	(-2.349)	(-2.195)
Contest×Gov	0.020***	0.018***	0.017***	0.016***
	(3.124)	(2.784)	(3.302)	(3.006)
Size	4.483***	4.482***	4.485***	4.483***
	(27.781)	(27.774)	(27.818)	(27.806)
TA	-6.399***	-6.349***	-6.690***	-6.600***
	(-3.913)	(-3.884)	(-4.094)	(-4.041)
NT_share	-0.049***	-0.050***	-0.049***	-0.050***
	(-7.388)	(-7.426)	(-7.401)	(-7.448)
Growth	0.274**	0.272**	0.281**	0.278**
	(2.011)	(2.001)	(2.062)	(2.041)
ROE	-0.160***	-0.160***	-0.160***	-0.160***
	(-26.548)	(-26.564)	(-26.521)	(-26.539)
AGE	0.412	0.417	0.269	0.294
	(0.357)	(0.361)	(0.233)	(0.255)
constant	-66.604***	-66.700***	-65.697***	-65.864***
	(-13.504)	(-13.525)	(-13.333)	(-13.370)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Adjusted R2	0.188	0.188	0.185	0.185
F-value	54.26***	54.27***	55.07***	55.08***

The *p*-value of the *t*-statistic of each coefficient is shown in parentheses. *** and **, indicate statistical significance at the 1% and 5% level, respectively.

5 Robustness tests

In this section, we perform a series of sensitivity tests to check the robustness of our main findings that multiple large shareholder contestability leads to lower bank debt. The sensitivity tests include the use of alternative dependent variables, alternative variables related to multiple large shareholders, and alternative sample compositions.

5.1 Alternative dependent variables

We examine whether different dependent variables have different effects on our main results, and the findings are shown in Table 8. Specifically, we use *bank_debt2* as the dependent variable for models 1 to 4, *bank_debt3* for models 5 to 8, and *bank_debt4* for models 9 to 12. The results of Table 8 show that all of the coefficients of the contestability variables are negative and significant, which supports the robustness of our main results.

5.2 Alternative variables related to multiple large shareholders

Following Ren et al. (2022) and Zhou and Li (2021), we examine whether alternative variables have different effects on our main results, and the findings are shown in Table 9. The independent variables include (1) *MLS_dummy*, which is a dummy for multiple large

Table 8
Alternative dependent variables

variable	Bank_debt2			
	(1)	(2)	(3)	(4)
CF_Contest1	-0.032***			
	(-5.371)			
CN_Contest1		-0.032***		
		(-5.350)		
CF_Contest2			-0.030***	
			(-6.368)	
CN_Contest2				-0.030***
				(-6.330)
Size	4.837***	4.832***	4.845***	4.838***
	(18.874)	(18.852)	(18.911)	(18.885)
TA	-18.822***	-18.740***	-19.081***	-18.959***
	(-7.238)	(-7.209)	(-7.338)	(-7.295)
NT_share	-0.039***	-0.040***	-0.040***	-0.040***
	(-3.710)	(-3.744)	(-3.718)	(-3.751)
Gov	0.109	0.110	0.077	0.077
	(0.197)	(0.199)	(0.139)	(0.138)
Growth	-0.260	-0.261	-0.250	-0.253
	(-1.200)	(-1.208)	(-1.153)	(-1.170)
ROE	-0.125***	-0.125***	-0.125***	-0.125***
	(-13.061)	(-13.071)	(-13.009)	(-13.023)
AGE	-1.969	-1.925	-2.086	-2.027
	(-1.072)	(-1.048)	(-1.136)	(-1.104)
constant	-38.991***	-39.125***	-38.400***	-38.597***
	(-4.982)	(-5.001)	(-4.909)	(-4.936)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Adjusted R2	0.124	0.125	0.123	0.124
F-value	40.37***	40.36***	40.69***	40.67***

variable	Bank_debt3				Bank_debt4			
	(6)	(7)	(6)	(7)	(6)	(7)	(6)	(7)
CF_Contest1	-0.010***				-0.010***			
	(-3.212)				(-4.221)			
CN_Contest1		-0.012***				-0.010***		
		(-3.551)				(-4.049)		
CF_Contest2			-0.014***				-0.009***	
			(-5.278)				(-4.904)	
CN_Contest2				-0.015***				-0.009***
				(-5.562)				(-4.734)
Size	1.774***	1.772***	1.777***	1.774***	2.678***	2.676***	2.680***	2.678***
	(12.588)	(12.574)	(12.617)	(12.597)	(26.366)	(26.348)	(26.394)	(26.374)
TA	-1.181	-1.188	-1.428	-1.404	-5.180***	-5.144***	-5.253***	-5.205***
	(-0.826)	(-0.831)	(-0.999)	(-0.983)	(-5.026)	(-4.992)	(-5.096)	(-5.052)
NT_share	-0.048***	-0.049***	-0.048***	-0.049***	-0.001	-0.001	-0.001	-0.001
	(-8.267)	(-8.294)	(-8.294)	(-8.328)	(-0.190)	(-0.213)	(-0.193)	(-0.217)
Gov	0.219	0.219	0.202	0.201	-0.385*	-0.385*	-0.395*	-0.395*
	(0.720)	(0.719)	(0.664)	(0.659)	(-1.753)	(-1.750)	(-1.797)	(-1.796)
Growth	0.077	0.077	0.082	0.081	0.204**	0.203**	0.207**	0.205**
	(0.648)	(0.644)	(0.692)	(0.680)	(2.372)	(2.365)	(2.408)	(2.394)
ROE	-0.136***	-0.136***	-0.136***	-0.136***	-0.028***	-0.028***	-0.027***	-0.028***
	(-25.839)	(-25.846)	(-25.799)	(-25.811)	(-7.269)	(-7.278)	(-7.228)	(-7.240)
AGE	0.092	0.089	-0.028	-0.017	0.320	0.340	0.288	0.311
	(0.091)	(0.088)	(-0.028)	(-0.017)	(0.440)	(0.467)	(0.396)	(0.428)
constant	-21.109***	-21.030***	-20.392***	-20.375***	-45.346***	-45.427***	-45.188***	-45.282***
	(-4.906)	(-4.889)	(-4.743)	(-4.741)	(-14.621)	(-14.650)	(-14.575)	(-14.608)
Year-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056	15056	15056	15056	15056
Adjusted R2	0.107	0.107	0.104	0.103	0.332	0.332	0.331	0.332
F-value	40.50***	40.57***	40.98***	41.06***	31.99***	31.96***	32.16***	32.12***

The *p*-value of the *t*-statistic of each coefficient is shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9
Alternative multiple large shareholders related variables

Variable	Dependent: Bank_debt1			
	(1)	(2)	(3)	(4)
MLS_dummy	-0.706***			
	(-3.189)			
CF1		-0.085***		
		(-5.597)		
CF2			-0.107***	
			(-8.268)	
Shapely				0.184*
				(1.680)
Size	4.532***	4.570***	4.615***	4.485***
	(28.069)	(28.289)	(28.576)	(27.658)
TA	-6.012***	-6.387***	-6.836***	-5.767***
	(-3.672)	(-3.902)	(-4.179)	(-3.527)
NT_share	-0.048***	-0.048***	-0.047***	-0.050***
	(-7.222)	(-7.154)	(-7.056)	(-7.414)
Gov	-0.158	-0.170	-0.219	-0.121
	(-0.452)	(-0.487)	(-0.628)	(-0.345)
Growth	0.282**	0.298**	0.321**	0.267*
	(2.067)	(2.185)	(2.361)	(1.959)
ROE	-0.160***	-0.160***	-0.158***	-0.161***
	(-26.492)	(-26.429)	(-26.268)	(-26.586)
AGE	0.471	0.057	-0.305	0.726
	(0.407)	(0.050)	(-0.263)	(0.628)
constant	-69.198***	-68.279***	-67.497***	-70.543***
	(-14.079)	(-13.893)	(-13.752)	(-14.330)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
Sample size	15056	15056	15056	15056
Adjusted R2	0.188	0.185	0.182	0.189
F-value	54.71***	55.31***	56.36***	54.50***

The *p*-value of the *t*-statistic of each coefficient is shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

shareholders that equals one if more than one large shareholder holds more than 5% of the shares, and zero otherwise; (2) *CF1*, which is the cash flow of the second and third largest shareholders; (3) *CF2*, which is the cash flow of the second to fifth largest shareholder; and (4) *Shapley*, which is equal to the Shapley value in the voting games of the three largest shareholders, where the three shareholders are treated as individual players and other shareholders are considered as the ocean (Basu et al., 2016). In these four variables, a higher value of *MLS_dummy*, *CF1* and *CF2* indicates higher contestability of the controlling shareholder's power due to multiple large shareholders; meanwhile, a higher value of *Shapley* means lower contestability. From Table 9, we can see that the coefficients of *MLS_dummy* (β= -0.706, ρ<0.01), *CF1* (β= -0.085, ρ<0.01) and *CF2* (β= -0.107, ρ<0.01) are negative and significant, the coefficients of *Shapley* (β= 0.184, ρ<0.10) are positive and significant, and the findings suggest that higher contestability of multiple large shareholders leads to lower bank debt, which reinforces the robustness of our main results.

5.3 Alternative sample compositions

We check the robustness of our results by focusing only on industrial firms (based on SIC codes), and the results are reported in Table 10. We find that the coefficients of contestability (*CF_Contest1:* β= -0.010, ρ<0.05; *CN_Contest1:* β= -0.014, ρ<0.01; *CF_Contest2:* β= -0.015, ρ<0.01; *CN_Contest2:* β= -0.018, ρ<0.01) are negatively and significantly related to bank debt, thereby providing strong support for our main results.

Table 10
Alternative sample compositions

	Dependent: Bank_debt1			
	(1)	(2)	(3)	(4)
CF_Contest1	-0.010**			
	(-2.038)			
CN_Contest1		-0.014***		
		(-2.804)		
CF_Contest2			-0.015***	
			(-3.618)	
CN_Contest2				-0.018***
				(-4.340)
Size	3.673***	3.671***	3.670***	3.667***
	(16.084)	(16.080)	(16.083)	(16.074)
TA	-1.950	-2.071	-2.173	-2.289
	(-0.795)	(-0.845)	(-0.887)	(-0.935)
NT_share	-0.056***	-0.057***	-0.056***	-0.057***
	(-6.014)	(-6.044)	(-6.020)	(-6.061)
Gov	-1.067**	-1.067**	-1.077**	-1.077**
	(-2.337)	(-2.338)	(-2.363)	(-2.363)
Growth	-0.362*	-0.364*	-0.352*	-0.355*
	(-1.788)	(-1.797)	(-1.740)	(-1.752)
ROE	-0.156***	-0.156***	-0.156***	-0.156***
	(-20.437)	(-20.457)	(-20.424)	(-20.451)
AGE	-0.659	-0.731	-0.842	-0.913
	(-0.400)	(-0.444)	(-0.512)	(-0.555)
constant	-48.565***	-48.104***	-47.600***	-47.123***
	(-7.505)	(-7.434)	(-7.357)	(-7.285)
Year-FE	Yes	Yes	Yes	Yes
Sample size	8231	8231	8231	8231
Adjusted R2	0.165	0.165	0.163	0.164
F-value	55.07***	55.25***	55.52***	55.81***

The *p*-value of the *t*-statistic of each coefficient is shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

6 Conclusions

This study explores the relationship between multiple large shareholders and bank debt based on the shareholder-debtholder conflict. Using a sample of Chinese listed firms for the years 2007 to 2022, we examine the effect of multiple large shareholders on bank financing and find that the contestability of multiple large shareholders reduces bank debt. The findings imply that multiple large shareholders play an important monitoring role, but that bank financing plays negative role in the Chinese setting. Our findings are confirmed to be robust to endogeneity issues using a propensity score matching approach and instrumental variable analysis. Furthermore, we detect the effect of controlling shareholder identity on the relationship between multiple large shareholders and bank financing, and we find that multiple large shareholders play a more important monitoring role in reducing the agency costs of bank debt in non-state-owned firms than in state-owned firms. In addition, we also employ a series of sensitivity tests to check robustness, including the use of alternative independent variables, alternative variables related to multiple large shareholders, and an alternative sample composition. All the robustness tests confirm our main results that multiple large shareholders can negatively influence a firm's bank debt.

This paper reinforces the positive role of multiple large shareholders and focuses on the influence of bank financing. First, enhancing the contestability of large shareholders is a reliable way to mitigate the self-interest of controlling shareholders. Second, the governance effect of multiple large shareholders in state-owned firms is

currently limited, and how to promote this governance mechanism is an important issue in state-owned firms. Third, the findings show that bank financing actually plays a negative role in Chinese contestability, and how to mitigate its negative role should be considered in policy-making and corporate practice.

The main limitation of this study is the lack of data to detect the influence of the identity of multiple large shareholders, whether they are institutional investors or not. We believe that the different identities have a different influence on the role of multiple large shareholders. Another important issue arising from this paper is that we were not able to analyze the enthusiasm of multiple large shareholders as to whether they played an active governance role or not. We argue that an active multiple large shareholder will have more influence on decision-making than an inactive one.

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SUPPLEMENTARY MATERIAL

Supplementary Data 1 – Database
Supplementary Data 2 – Stata script
Supplementary material to this article can be found online at https://doi.org/10.7910/DVN/ZFISTF

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