



Insider Share-Pledging, Implicit Guarantees and Financing Constraints: Based on CSMAR Database

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Abstract. Financing constraint has always been an important factor hindering the healthy development of China's real economy. Share pledging is the common financing method in the current mainland capital market, and the implicit guarantees affect the difficulty of financing. This paper is to investigate the impact of share pledging caused by major stockholders to the financing constraints. Taking a-share listed companies in Shanghai and Shenzhen stock exchanges from 2005 to 2020 as samples, we select ordered logistic regression with five indicators to measure the degree of financing constraints, and examine the relationship between equity pledging and financing constraints based on multiple regression model. The results suggest that equity pledging is correlated with the company's financial constraint. Besides, the implicit government guarantees significantly alleviate this impact. We further contribute to the literature on financing constraints and equity pledging by discussing the choice of business strategy during the period of insider equity pledging.

Keywords: Equity pledge · financial constraints · implicit government guarantee

1 Introduction

Financing constraint is the difference, which is caused by asymmetric information, between the internal financing cost and the external financing cost [4]. Prior research mainly focuses on the separation of ownership and management rights [12], with the relatively dispersed western capital market as the research background, and analyzes the influence factors of financial constraints such as corporate size, financial status, and investor optimism. However, there are few studies that directly analyze the influencing factors of financing constraints from the perspective of separation of control rights and cash flow rights. The stock pledging provides further research space for studying the financial behavior [2], motives of embezzlement and economic consequences of controlling shareholders. Therefore, does stock mortgage loans really ease the financing constraints of the enterprise? At the same time, under different implicit guarantees, is the impact of equity pledge on financing constraints consistent?

The date of share-pledging from 2005 to 2020 is taken as samples in this paper, and the share pledging dummy and share pledging rate are selected to reflect the situation

of stock-backed loans. The ordinary least square (OLS) method is used to explore the relationship between equity pledging and financial constraints. Our results show that share-pledging and financing constraints are positively correlated. At the same time, we group the companies based on the nature of property rights and find that the implicit government guarantees alleviate the impact.

Our study makes the following contributions to the research literature. First, different from the existing literatures on financing constraints, this article examines the influencing factors of financing constraints from the perspective of equity pledging, which helps to enrich the research on the influencing factors of financing constraints. Second, this article uses equity pledging data in China's capital market as samples to study the impact of share-pledging on financing constraints, enriching existing research on the economic consequences of equity pledging. Third, our research helps guide the choice of the selecting of financial channels by warning that equity pledging cannot long-term ease the financing constraints of enterprises, but deepen financing constraints.

2 Theoretical Framework and Hypothesis Development

Equity pledging has become an ideal choice for small and medium enterprises financing due to its advantages such as non-diluted control rights, low loan costs, and short time [10]. However, once the stock price drops to the pre-warning line after the controlling shareholder's equity is pledged, it will face the pressure of margin call. If there are no excess assets or stocks to make up for the gap, the previously pledged stocks are likely to be forcibly sold by the pledgee, triggering a battle for corporate control of enterprise. In order to prevent the transfer of control rights, controlling shareholders may conduct a series of stock price manipulation behaviors, such as earnings management [6, 16] and information disclosure [1, 11]. Therefore, the pledge risk caused by the decline in stock prices reduces the quality of information disclosure, increases the degree of information asymmetry, and deepens the second type of agency conflict [12].

In a completely frictionless capital market, companies can raise sufficient funds from outside according to their own capital needs [13], without having to consider the issue of capital liquidity. However, due to the existence of factors such as information asymmetry and agency problems, the external financing and internal financing cannot be perfectly replaced, and the company faces different degrees of financing constraints [4].

The impacts of agency issues on corporate financing constraints mainly stem from the corporate ownership structure. The ownership structure of Chinese companies is characterized by a relatively high proportion of state-owned shares and concentration of non-state-owned shares, which is different from the shareholding structure of western companies [3]. Therefore, the second type of agency problem is more prominent and common [9], and there is the possibility that the controlling shareholder and the management may jointly seek private gains. For example, after controlling shareholders use a pyramidal ownership structure to separate their control rights and cash flow rights, incidents of controlling shareholders' encroachment on the interests of small and medium shareholders have become more frequent [9]. Prior research finds controlling shareholders infringe on the company's advantageous resources through capital appropriation [2], related transactions, and equity pledging [5].

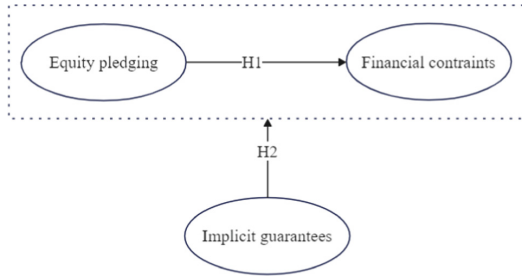


Fig. 1. Research framework of this study

In summary, the controlling shareholders pledge shares and give up the cash flow generated by the equity, deepening the degree of separation between shareholder control and cash flow rights. The decreases in cash income have strengthened speculation, leading to the decline in the quality of information disclosure and information asymmetry, which influence the financial constraints. Therefore, we propose the following hypothesis:

H1: Conditional on other control variables, equity pledging and financing constraints are positively correlated.

Prior research suggests that there are implicit government guarantees for financing due to a government's "too-big-to-fail" (TBTF) policy. Jin et al. regard state-owned enterprises (SOEs) as implicitly guaranteed firms by central or local governments [7]. State-owned enterprises receive much more protection from the Chinese government compared with non-state-owned enterprises [14]. Equity transfer or auction of state-owned enterprises are strictly restricted in China, which makes it less enforceability to make forced share sale by pledgees when there is a margin call triggered by stock price slump and the pledgers cannot restore the minimum collateral requirement [15]. Therefore, our second testable hypothesis takes on the following forms:

H2: Conditional on the share pledging, the financial constraints are smaller for firms with implicit government guarantees.

The model (Fig. 1) presented the research framework of this study.

3 Data Model and Research Design

3.1 Sample Selection and Data Sources

This article takes a-share listed companies in Shanghai and Shenzhen stock exchanges from 2005 to 2020 as samples. The full sample excludes financial companies such as banks, insurance companies, and capital market services companies, as well as companies that lack industry information in the sample, and finally 11,058 firm-year observations are included. In order to reduce the impact of extreme outliers, this paper has carried out a 1% tailing treatment for all continuous variables.

3.2 Model Design and Variables Definition

This paper uses the Ordinary Least Square (OLS) method and the following Eq. (1) to test whether and how insider equity pledging affects financial constraints. Furthermore, we divide the sample into two sub-samples based on nature of sample firm measured by ultimate controller's property rights to examine the impact of implicit guarantees from the government.

$$KZ_{i,t+1} = a_0 + a_1 Plddum_{i,t} + Pldrate_{i,t} + \Sigma Controls + \varepsilon_{i,t} \quad (1)$$

We use the *KZ* index to measure the financing constraints of listed companies, and refer to Kaplan & Zingales to construct the *KZ* index according to the following steps [8]: (1) Sort five sub-indexes, such as Tobin's *Q* ($Q_{i,t}$), the ratio of cash and cash equivalents to total assets of the previous period ($C_{i,t}/A_{i,t-1}$), the ratio of net cash flow from operating activities to total assets of the previous period ($CF_{i,t}/A_{i,t-1}$), asset-liability ratio ($LEV_{i,t}$) and the ratio of cash dividends to total assets of the previous period ($DIV_{i,t}/A_{i,t-1}$). If $C_{i,t}/A_{i,t-1}$, $CF_{i,t}/A_{i,t-1}$ and $DIV_{i,t}/A_{i,t-1}$ are less than their median, then assign kz_2 , kz_3 and kz_5 to 1, respectively, and 0 otherwise. If $Q_{i,t}$ and $LEV_{i,t}$ are more than their median, then assign kz_1 and kz_4 to 1, and 0 otherwise. (2) Calculate *KZ* index. *KZ* is equal to the sum of kz_1 , kz_2 , kz_3 , kz_4 and kz_5 . We use ordered logistic regression (OLR) to run Eq. (2), and get the estimation of *KZ* index. The value of the *KZ* index means the degree of financing constraints. According to the results of table 1, the calculation equation of *KZ* index is shown in Eq. (3).

$$KZ_{i,t} = \beta_0 + \beta_1 Q_{i,t} + \beta_2 C_{i,t}/A_{i,t-1} + \beta_3 CF_{i,t}/A_{i,t-1} + \beta_4 LEV_{i,t} + \beta_5 DIV_{i,t}/A_{i,t-1} + \mu_{i,t} \quad (2)$$

$$KZ_{i,t} = 0.8318Q_{i,t} - 10.8859C_{i,t}/A_{i,t-1} - 15.9672CF_{i,t}/A_{i,t-1} + 5.8027 LEV_{i,t} - 7.4971 DIV_{i,t}/A_{i,t-1} + \mu_{i,t} \quad (3)$$

We select the equity pledge dummy variable (*Plddum*) and the equity pledge rate (*Pldrate*) to reflect the situation of stock-backed loans. We also add several firm-specific control variables to capture their effects on financial constraints, as in previous studies [12]. *Size* is the natural logarithm of total assets. *Lev* reflects the firm's leverage, measured as total debt over total assets. *Growth* indicates the firm's development, measured by the increase in equity divided by the total assets. *Return on assets (ROA)* is the firm's profitability, measured by net income divided by total assets. *Oper* is the firm's receivable turnover, measured by operating income divided by average accounts receivable balance. *Mhld* is the shares owned by directors divided by the total shares. *Indep* is the ratio of the number of independent directors of board to the total number of directors on the

Table 1. The OLR results of *KZ* index estimation model

	$Q_{i,t}$	$C_{i,t}/A_{i,t-1}$	$CF_{i,t}/A_{i,t-1}$	$LEV_{i,t}$	$DIV_{i,t}/A_{i,t-1}$	Adj_R2	N
$KZ_{i,t}$	0.8318 (42.80)	-10.8859 (-50.90)	-15.9672 (-50.76)	5.8027 (49.52)	-7.4971 (-42.55)	0.3446	11,058

Table 2. Variable Definitions

Variable	Definitions
KZ	Following Kaplan & Zingales(1997)8, construct KZ Index.
Plddum	Equal to one if shareholders pledge during fiscal-year.
Pldrate	Cumulative number of pledged shares divided by total number of shares.
Size	Natural logarithm of total assets.
Lev	Total debt over total assets.
Growth	Increase in net assets divided by total net assets.
ROA	Net income divided by total assets.
Oper	Operating income divided by average accounts receivable balance.
Mhld	Shares owned by directors divided by the total shares.
Indep	The number of independent directors divided by the total number of directors.
Dual	Equal to one if the CEO and chairman are the same person.
Ind/Year	The dummy variable of industry/year.

board. Dual is an indicator variable that equals one if the chief executive officer (CEO) and chairman are the same person. To control for industrial and macroeconomic factors that might influence financing constraints, we control for industry-year fixed effects. The definitions and measurements of independent variables, dependent variables and control variables are shown in Table 2.

4 Empirical Results and Discussion

Table 3 is the descriptive statistics of the main variables. It can be seen from the table that the average value of Plddum is 0.281, which means that about 28.1% firms exist the behaviors of insider share-pledging. The average of KZ is 0.706, which means that listed companies are facing severe financing constraints. Other variables are consistent with our expectations.

4.1 Regression Analysis of the Relationship Between the Equity Pledging and Financing Constraints

The column (1) and (2) of Table 4 report the regression results of H1. In column (1), the coefficient of $Plddum_{i,t}$ is significant and positive at 1% level, which suggests that companies with insider share-pledging are more prone to encounter financing shortages compared to counterparts. The results hold after change $Plddum_{i,t}$ to $Pldrate_{i,t}$, and the coefficient of $Pldrate_{i,t}$ is significant and positive at 1% level. Therefore, the results support H1 that companies with higher equity-pledging rates face stronger financing constraints. When managers have pledged their stocks, they are more inclined to aggressive business strategies and invest in high-yield, high-risk projects. This series of actions stimulate the second type of agency conflict and worsen financing constraints.

Table 3. Sample Descriptive Statistics

Variable	Obs	Mean	Median	Sd.	Min	Max
KZ	11,058	0.706	0.830	2.807	-6.034	6.974
Plddum	11,058	0.281	0	0.449	0	1
Pldrate	11,058	5.899	0	12.365	0	60.390
Size	11,058	22.321	22.180	1.325	19.570	26.181
Lev	11,058	0.462	0.461	0.194	0.072	0.864
Growth	11,058	0.144	0.094	0.234	-0.285	1.325
ROA	11,058	0.047	0.038	0.045	-0.092	0.198
Oper	11,058	21.022	7.774	27.891	2.349	99.887
Mhld	11,058	0.039	0	0.116	0	0.606
Indep	11,058	0.369	0.333	0.052	0.286	0.571
Dual	11,058	0.796	1	0.403	0	1

Table 4. Pledging and Financial Constraints

	KZ			
	(1)	(2)	(3)	(4)
Plddum	0.405 *** (10.37)		0.323 *** (4.88)	0.370 *** (6.62)
Pldrate		0.013 *** (9.46)		
Size	-0.268 *** (-16.09)	-0.266 *** (-15.90)	-0.206 *** (-9.36)	-0.323 *** (-12.08)
Lev	8.508 *** (73.70)	8.536 *** (74.01)	8.515 *** (55.15)	8.573 *** (49.10)
Growth	0.364 *** (4.80)	0.351 *** (4.61)	0.338 *** (2.98)	0.303 *** (2.92)
ROA	-19.418 *** (-45.15)	-19.605 *** (-45.70)	-19.653 *** (-32.15)	-19.119 *** (-31.17)
Oper	-0.008 *** (-11.62)	-0.008 *** (-11.48)	-0.006 *** (-7.57)	-0.010 *** (-9.52)
Mhld	-0.871 *** (-5.40)	-0.775 *** (-4.82)	1.273 (1.09)	-1.133 *** (-6.17)
Indep	0.682 ** (2.08)	0.691 ** (2.10)	0.522 (1.24)	0.559 (1.07)

(continued)

Table 4. (continued)

	KZ			
	(1)	(2)	(3)	(4)
Dual	-0.051 (-1.20)	-0.054 (-1.27)	-0.085 (-1.35)	0.009 (0.14)
Cons	3.286 *** (8.66)	3.283 *** (8.64)	2.063 *** (4.23)	4.356 *** (7.02)
Ind/Year	Control	Control	Control	Control
Obs	11,058	11,058	6,175	4,883
F-value	417.71	416.61	243.27	194.18
Adj_R2	0.6128	0.6122	0.6167	0.6187
Empirical p-value				0.060

Note: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$

4.2 The Impact of Implicit Government Guarantees

We divide the sample into two sub-samples based on the nature of property right to examine the impact of implicit guarantees from the government. We then conduct the empirical examines specified by Eq. (1) for the two subsamples and report the results in the column (3) and (4) of Table 4.

Column (3) and (4) of TABLE IV present the effects of share pledging on the financing constraints using the sample with high and low level of implicit government guarantees respectively. Both column (3) and (4) show that equity pledging has a positive effect on the financing constraints with statistical significance at least at the 1% level. We further conduct the between-group coefficient test to compare the difference between the two groups. And the empirical p-value equals to 0.060, which is significant at the level of 10%. Therefore, the results in column (3) and (4) lend supports to H2. In conclusion, implicit guarantees from the government weaken the impact of share pledging on the financing constraints.

5 Conclusions

Although the influencing factors of financing constraints have been studied by prior research, few research pay attention to the impact of stock-backed loans on financial constraints. This paper takes the companies with equity pledging in China during the period 2005–2020 as the research object, and empirically tests the relationship between equity pledging and financial constraints.

The results show that equity pledging and financial constraints are positively correlated. On one hand, when the equity pledge rate is high, managers are more inclined to radical business strategies, and invest in high-yield and high-risk projects. On the other hand, due to the downward pressure on stock prices, managements incline to conduct a series of stock price manipulation behaviors. Both of them deepen information asymmetry, which impact the financial constraints.

Moreover, further analysis finds that implicit guarantees negatively regulate the relationship between equity pledging and financing constraints. The following two reasons are contributed to this phenomenon. Some companies are “too big to fail” for the local economy and labor markets, so they are more likely to get support from local government, especially in China’s capital market. And, equity transfer or auction of state-owned enterprises are strictly restricted in China, which weakens the impact of equity pledges on financing constraints.

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