Equity Pledge, Commercial Credit and Financial Asset Allocation

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ABSTRACT
Since the split share structure reform in 2005, the behavior of equity pledge of listed companies in China has been increasing, which has a profound impact on the operation of listed companies. Based on the data of A-share listed companies from 2014 to 2021, and from the perspective of control right transfer risk, this paper proves that the equity pledge of controlling shareholders significantly inhibits the financial asset allocation of listed companies, and that a higher level of commercial credit and a lower degree of product market competition can weaken this inhibition. The above results above discuss the difference of economic consequences of controlling shareholder's equity pledge in different situations. Further research shows that listed companies after pledge tend to reduce the holding of trading financial assets and derivative financial assets.

Keywords: *Controlling Shareholder, Equity Pledge, Financial Asset Allocation, Commercial Credit*

1. INTRODUCTION

Equity pledge refers to the mortgage financing conducted by equity holders of a company to banks, securities companies and other financial institutions with their shares as the subject matter. The pledged funds may be invested in individual shareholders or listed companies. Since the split share structure reform in 2005, equity pledge of listed companies in China has been increasing. According to the statistical data of CSMAR database, as of December 31, 2021, a total of 892 A-share listed companies in China have pledged their controlling shareholders' equity, with an average equity pledge ratio of 16.46%, and a total of 307 companies' pledge ratio is higher than the average value.

Equity pledge seems to be a personal financing behavior of shareholders, but its potential risk has a far-reaching impact on the operating decisions of listed companies. The pledge contract endows the pledgee with the right to liquidate the pledged shares of the critical line. To avoid equity freezing, shareholders often take measures to maintain the stock price and corporate performance; If equity is forcibly frozen and the controlling shareholder changes position, it will also affect the stable operation of the listed company. Therefore, after the pledge of controlling shareholders' equity, especially when the pledge rate is high, the risk of control right transfer is relatively high; Under pressure, listed companies often take measures to stabilize stock prices and coporate performance(Xie et al., 2016; Li et al., 2017)[35][17], placing stable operation in an important position.

In recent years, a large number of domestic non-financial companies have actively invested in financial assets, forming a phenomenon of "entity enterprise financialization". Yanghe held a balance of 12.1 billion yuan of trust products at the end of 2020; Yunnan Baiyao, which is obsessed with stock speculation, made a profit of 2.341 billion yuan in 2020, but lost more than 1.5 billion yuan in the third quarter of 2021. Financial assets have two-sided characteristics, which are greatly affected by systematic risks and market interest rate fluctuations. Although it is possible to bring speculative gains, it is bound to be accompanied by high risks. Holding a large number of financial assets not only consumes a large amount of cash resources, but may cause "crowding out" effect on the main business, and may also have an uncontrollable impact on accounting profits and stock prices. After the equity pledge, will the listed company be forced to make more conservative investment decisions under the pressure of control transfer, so as to reduce the holding of financial assets? Under different commercial credit levels and product market competition environment, does this negative correlation change?

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In order to answer the above questions, this paper intends to start from the perspective of control right transfer risk, select the data of A-share listed companies from 2014 to 2021, and explore the relationship between controlling shareholders' equity pledge and financial asset allocation. The possible contributions are as follows: first, it enriches the differences in the impact of controlling shareholders' equity pledge on the allocation of financial assets in different situations (commercial credit level, product market competition, equity nature, etc.), and has an in-depth discussion on the economic consequences of equity pledge. Second, at present, there are few literatures that link the controlling shareholders' equity pledge with the level of commercial credit, product market competition and other industrial environmental factors. The article enriches the literature related to the two. Third, in the robustness test, the change proportion of equity pledge is used as the dependent variable, which can better capture the real-time change direction of pledge, which is innovative.

2. THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

2.1 Controlling Shareholder's Equity Pledge and Financial Asset Allocation

Financial assets are greatly affected by systematic risks and market interest rate fluctuations. Although it is possible to bring speculative gains, it is bound to be accompanied by strong uncertainty. Researchers have proved that virtual investment will inhibit physical investment to varying degrees, and corporate financialization will also inhibit operational businesses, resulting in a "Crowding out effect" (Demir, 2009; SEO et al., 2012; Luo et al., 2016; Liu et al., 2016)[3][29][22][20]. Enterprises' allocation of financial assets is nothing more than preventive savings and market arbitrage (Hu et al., 2017) [12]. Qi et al. (2018) have shown that the allocation of financial assets motivated by arbitrage is significantly negatively correlated with enterprise value [27]. Du et al. (2021) proved that when the pledge rate is high, listed companies will deliberately reduce their holdings of financial assets in order to avoid risks [5].

After the pledge of controlling shareholders' equity, especially when the pledge rate is high, the risk of control right transfer is relatively high. Under pressure, the controlling shareholders often take measures to stabilize the investment plan and the company's performance[35][17] (Xie et al., 2016; Li et al., 2017), and may tend to make more conservative decisions to reduce the overall risk level of the enterprise (John et al., 2008; he Wei et al., 2018; Dou et al., 2019)[16][10][4]. Controlling shareholders in East Asian countries are good at using pyramid hierarchy to enhance the control of the company (La Porta et al., 1999; Claessens et al., 2000; Almeida et al., 2006)[26][2][1]. Under the current company system in China, the controlling shareholders have an absolute impact on the company's investment plan in the general direction. Therefore, the controlling shareholders after pledge may take advantage of their special position to affect the investment plan of the listed company and reduce the holding of high-risk financial assets to maintain their control position.

The pledge of controlling shareholders' equity may also have an impact on managers' behavior. On the one hand, equity pledge weakens the risk preference of managers and increases the uncertainty of managers' compensation (Xu et al., 2021)[36]. On the other hand, performance and stock price are important indicators for the evaluation of managers' reputation. Managers' market reputation is an important external governance mechanism that can replace explicit contracts to a certain extent (Fama, 1980; Holmstrom et al., 1982) [7][11]; Therefore, managers have the motivation to pursue stable performance, build good reputation and pursue higher career goals (Yuan et al., 2008)[39]. In case of control transfer events, managers' career and personal reputation will be affected. Negative media reports have a strong constraint on managers who pay attention to reputation (Zheng et al., 2011)[44].

To sum up, after the pledge of the controlling shareholder's equity, if the company still allocates financial assets in a high level, it may have an uncontrollable impact on accounting profits and stock prices. At this time, the controlling shareholders and managers will try their best to avoid the control right transfer event in order to safeguard their own interests, and this impact may be transmitted to the whole company.

Therefore, hypothesis 1 is proposed.

Hypothesis 1: Equity pledge by controlling shareholders significantly inhibits financial asset allocation of listed companies.

2.2 Commercial Credit

Commercial credit refers to the credit limit generated when an enterprise gives customers the option of deferred payment when selling products and services. The high commercial credit reflects the good expectation of the supply chain partners for the development prospect of the enterprise.

Domestic and foreign scholars have carried out extensive research on the causes and economic consequences of commercial credit. At present, the main views include alternative financing theory and buyer's market theory. The former advocates that commercial credit is an alternative financing method for commercial bank financing, which eases the financing constraints of enterprises to a certain extent (Petersen et al., 1997; Shi et al., 2010; Rao et al., 2013)[25][30][28]; The latter

claims that commercial credit is related to the buyer's bargaining power, good credit and cooperative relationship, which is the result of the buyer's strong market (Fabbri et al., 2010; Mariassunta et al., 2011)[6][23].

From the perspective of alternative financing, this paper regards commercial credit as a substitute for bank financing, so suppliers prefer to lend to customers with strong solvency, good operating conditions and high quality of internal control (Tan et al, 2006; Zheng et al., 2013)[31][43]. Pan et al. (2018) have shown that suppliers can perceive the risk of declining solvency, thereby reducing the commercial credit financing given to customers with controlling shareholders' equity pledge [30]. The high commercial credit reflects the supplier's good expectation of the customer's development prospects and the stability of the cooperative relationship. After the pledge event, if the supplier still gives the pledged company a high level of commercial credit, it indicates that the pledge event has not affected the business relationship between the company and its partners; On the contrary, if the commercial credit level is low at this time, it may indicate that the pledge company has low credit in the supply chain, weak cooperation relationship and increased operational uncertainty. At this time, in order to stabilize the stock price and performance, the pledge company is more likely to adopt conservative investment strategies.

To sum up, hypothesis 2 is proposed: When other conditions are the same, the lower the commercial credit level is, the more significant the restraining effect of equity pledge by controlling shareholders on financial asset allocation of listed companies is.

2.3 Product Market Competition

Product market competition is a kind of market competition mechanism and an indispensable part of the external governance mechanism of the company. There is an elimination mechanism in the product market, and the heavy competitive pressure helps listed companies maintain vigilance and growth. When facing different financing constraints, companies show different strategic measures according to the degree of product market competition (Han et al., 2011; Girroud et al., 2011)[9][8], and their financial decisions are largely determined by the characteristics of the product market (Wanzenried, 2000; Liu et al., 2003; Jiang et al., 2008)[32][21][14]; The more competitive the product market is, the more conservative the listed companies tend to make financial decisions, which are reflected in cash holding levels, R&D decisions and capital structure decisions. Zhu et al. (2002) showed that when the product market competition is expected to be fierce in the future, listed companies will reduce the debt ratio and adopt conservative financial behavior[45]. When in a highly competitive product market, listed companies tend to hold a higher level of cash to resist the risk of market plunder (Han et al., 2011; Yang, 2016)[9][37].

In the highly competitive product market, listed companies face higher liquidity risks (Irvine et al., 2009; Zhang et al., 2017)[13][40]. After the pledge, financial assets with strong uncertainty may bring risks and fluctuations to the operation of listed companies. The controlling shareholders and managers may be more urgent to reduce financial asset allocation and invest more funds in their main businesses to maintain market share and share price stability. On the contrary, when the product market competition is low, On the contrary, when the product market competition is low, the industry position of listed companies is stable and the expected income is stable. At this time, the pressure of control transfer may be relatively small.

To sum up, hypothesis 3 is proposed: When other conditions are the same, the more intense the competition in the product market is, the more significant the restraining effect of equity pledge by controlling shareholders on the allocation of financial assets of listed companies is.

3. RESEARCH DESIGN

3.1 Sample Selection and Data Sources

This paper selects the data of China's A-share listed companies from 2014 to 2021 as the research sample. The original data are processed as follows: (1) Exclude the samples of financial industry and insurance industry; (2) Eliminate samples with abnormal operation and missing key indicators; (3) At the level of 1% above and 1% below, continuous variables are winsorized; (4) All the regressions were modified by White heteroscedasticity to ensure the robustness of the results. A total of 27621 annual sample observations were finally obtained.

The research data is mainly from CSMAR database, and the data processing software is mainly Microsoft Excel 2016 and Stata 15.1.

3.2 Definition of Variables

1. Explained variable: Financial Asset Allocation. Drawing on the practices of Hu et al. (2017)[12], Du et al. (2021)[5], the investment allocation of financial assets of listed companies is defined as the proportion of financial assets in total assets. Financial Asset Allocation = (Trading financial assets + Derivative financial assets + Net loans and advances issued + Net financial assets available for sale + Net held to maturity investment) / Total assets.

2. Explanatory variable: controlling shareholders' equity pledge. With reference to the research of Zheng et al. (2014)[42], Li et al. (2015)[19], the Equity Pledge =

the number of shares of the company pledged by the controlling shareholder at the end of the period / the total number of shares of the company held by the controlling shareholder.

3. Adjustment variables:

(1) Commercial credit is set as (Accounts payable + Notes payable + Advances received) / total assets by referring to the research of Zhang et al. (2012) [41], Pan et al. (2018)[24].

(2) For product market competition, based on the research of Jiang et al. (2007) [15], Yi et al. (2010) [38], the agent variable of product market competition is set as Herfindahl Hirschman index, and the formula is as follows:

$$HHI = sum\left[\left(\frac{X_i}{X}\right)^2\right] \quad (1)$$

Where, X_i is the main business income of the company in that year, and X is the total main business income of the industry of the company in that year. When the number of enterprises in the industry is fixed, the lower the HHI is, the more intense the product market competition is, and the greater the degree of interaction between enterprise behavior is; On the contrary, the higher the HHI, the less competitive the product market.

4. Control variables

Control variables that may affect the regression results are incorporated into the model, as shown in Table 1. At the same time, the year and industry dummy variables are controlled.

Table 1: Variable Definition.

Variable name	Variable symbol	Variable definition
Allocation of financial assets	FIN	(Trading financial assets + Derivative financial assets + Net loans and advances issued + Net financial assets available for sale + Net held to maturity investment) / Total assets.
Equity pledge rate	PLG	Number of shares pledged by controlling shareholders at the end of the period/Total number of shares held
Commercial credit	CREDIT	(Accounts payable + Notes payable + Accounts advanced)/ Total assets
Product market competition	HHI	Herfindahl Hirschman index
Nature of equity	SOE	If the equity is a state-owned enterprise, take 1; otherwise, take 0
Management shareholding	STOCK	The natural logarithm of the number of shares held by chairman at the end of the period plus 1
Management compensation	PAY	The natural logarithm of the total compensation of chairman during the period plus 1
Board size	BOARD	Number of directors in the current period
Independent directors	INDE	Number of independent directors in the current period
Equity concentration	TOP10	Total shareholding ratio of top ten shareholders at the end of the period (%)
Financial leverage	LEV	Total liabilities / Total assets at the end of the period (%)
Enterprise size	SIZE	Natural logarithm of total assets at the end of the period
Profitability	ROE	Current net profit / average net assets at the end of the period (%)
Cash flow	CASH	Net cash flow from current operating activities/net profit for current period (%)
Industry	INDUSTRY	Industry dummy
Year	YEAR	Year dummy

3.3 Research Model

To test the relationship between the controlling shareholder's equity pledge and the financial asset allocation, model (2) is constructed:

$$FIN_{i,t} = \beta_0 + \beta_1 PLG\_R_{i,t} + \beta_2 \sum CV_{i,t} + \varepsilon_{i,t} \quad (2)$$

In order to test the moderating effect of commercial credit on the correlation between controlling shareholders' equity pledge and financial asset allocation, model (3) is constructed:

$$FIN_{i,t} = \beta_0 + \beta_1 PLG\_R_{i,t} + \beta_2 CREDIT_{i,t} + \beta_3 CREDIT_{i,t} \times PLG\_R_{i,t} + \beta_4 \sum CV_{i,t} + \varepsilon_{i,t} \quad (3)$$

In order to test the moderating effect of product market competition on the correlation between controlling shareholders' equity pledge and financial asset allocation, model (4) is constructed.

$$FIN_{i,t} = \beta_0 + \beta_1 PLG\_R_{i,t} + \beta_2 HII_{i,t} + \beta_3 PLG\_R_{i,t} \times HII_{i,t} + \beta_4 \sum CV_{i,t} + \varepsilon_{i,t} \quad (4)$$

All models use robust to correct the heteroscedasticity problem.

4. EMPIRICAL RESULTS AND ANALYSIS

4.1 Descriptive Statistics

Table 2 reports the descriptive statistical results for all variables. It can be seen from Table 2 that the Mean of the PLG is about 4.382%, and the Std. Dev. is 12.887, indicating that there is a large difference in the pledge proportion among the samples. The Mean of FIN is about 2.772%. It is a common phenomenon in China's listed companies to allocate certain financial assets.

Table 2: Descriptive Statistics of key variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
FIN	27621	3.452	7.754	0.000	85.877
PLG	27621	4.881	13.034	0.000	100.000
CREDIT	27621	15.336	21.754	0.000	3041.464
HHI	27621	0.184	0.181	0.000	1.000

4.2 Correlation Analysis

Table 3 reports the results of Pearson correlation analysis of key variables, FIN and PLG is significantly negatively correlated at the level of 1%, which preliminarily supports Hypothesis. Most of the other variables have significant correlation, and the correlation coefficient is low.

Table 3: Correlation analysis of key variables.

	FIN	PLG	CREDIT	HHI	SOE	TOP10	BOARD
FIN	1.000						
PLG	-0.044***	1.000					
CREDIT	-0.079***	-0.018***	1.000				
HHI	-0.014**	0.002	0.014**	1.000			

4.3 Regression Results

4.3.1 Test of the controlling shareholders' equity pledge and financial asset allocation

Table 4 reports the regression results of model (2). When financial asset allocation FIN is used as the explained variable, the coefficient of explanatory variable PLG is significantly negative at the level of 1%, and the coefficient is -0.024. It shows that the controlling shareholders' equity pledge has a significant negative effect on the financial asset allocation of listed companies, that is, the higher the proportion of controlling shareholders' equity pledge, the investment allocation of listed companies to financial assets is restrained. Hypothesis 1 is proved.

Table 4: Test of controlling shareholders' equity pledge and financial asset allocation.

FIN	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
PLG	-0.024	0.003	-9.050	0.000	-0.029	-0.019	***
SOE	-0.675	0.104	-6.500	0.000	-0.878	-0.471	***

STOCK	-0.020	0.006	-3.160	0.002	-0.033	-0.008	***
PAY	0.201	0.067	3.010	0.003	0.070	0.332	***
BOARD	-0.089	0.035	-2.540	0.011	-0.158	-0.020	**
INDE	-0.102	0.101	-1.010	0.313	-0.300	0.096	
TOP10	-0.002	0.003	-0.700	0.483	-0.008	0.004	
LEV	-0.082	0.002	-32.750	0.000	-0.087	-0.077	***
SIZE	0.210	0.043	4.930	0.000	0.126	0.293	***
ROE	0.072	0.237	0.300	0.762	-0.392	0.536	
CASH	0.000	0.000	-3.230	0.001	0.000	0.000	***
YEAR	Control						
INDUSTRY	Control						
Constant	-0.367	0.953	-0.390	0.700	-2.236	1.501	

Mean dependent var	3.341	SD dependent var	7.058
R-squared	0.090	Number of obs	27621.000
F-test	53.298	Prob > F	0.000
Akaike crit. (AIC)	183814.113	Bayesian crit. (BIC)	184110.261

*** p<.01, ** p<.05, * p<.1

4.3.2 Test of the Moderating Effect of commercial credit

In order to test Hypothesis 2, the moderating variable business credit is introduced into the main regression. Table 5, Model (1) reports the results. According to Model (1), the coefficient of the interactive item CREDIT×PLG is 0.056, which is significantly positive at the level of 1%, indicating that commercial credit has a positive regulating effect on the negative correlation between controlling shareholders' equity pledge and financial asset allocation, that is, when the commercial credit is high, the inhibitory effect of controlling shareholders' equity pledge on financial asset allocation is weakened. Hypothesis 2 is proved.

Table 5: Test of the moderating effect and the further research.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Model1	Model2	Model3	Model4	Model5	Model6	Model7
VARIABLES	FIN	FIN	TRAD	DERI	LOAN	AVAI	HOLD
PLG_R	-0.0147***	-0.0176***	-0.0154***	3.27e-05	-0.000721	-1.47e-06	-0.000201
	(0.00196)	(0.00188)	(0.00344)	(0.00109)	(0.00124)	(0.00337)	(0.000624)
CREDIT	-0.118***						
	(0.0270)						
CREDIT×PLG	0.0555***						
	(0.00124)						
HII		-10.44***					
		(0.346)					
HHI×PLG		2.772***					
		(0.125)					
Control Vars	Control						
YEAR	Control						
INDUSTRY	Control						
Constant	6.345***	6.726***	-21.42***	-8.138***	-7.649***	-20.42***	-2.286***
	(0.795)	(0.624)	(1.094)	(0.552)	(0.557)	(1.009)	(0.275)

Observations	27,621	27,621	27,621	27,621	27,621	27,621	27,621
R-squared	0.504	0.490	0.133	0.036	0.044	0.306	0.016

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.3.3 Test of the Moderating Effect of product market competition

In order to test Hypothesis 3, the moderating variable product market competition is introduced into the main regression. Table 5, Model (2) reports the results. According to Table 5, the coefficient of the interaction item HHI×PLG is 2.772, which is significantly positive at the level of 1%. The lower the HII is, the more competitive the product market is. Combined with this definition, the product market competition has a negative regulatory effect on the negative correlation between the controlling shareholders' equity pledge and the financial asset allocation of listed companies, that is, when the product market competition is fierce, the restraining effect of the controlling shareholders' equity pledge on the financial asset allocation is strengthened. The above results support hypothesis 3.

4.4 Further Research

In order to further explore the influence of equity pledge by controlling shareholders on financial asset allocation, we refer to the practice of Du et al. (2021)[5], Financial assets are subdivided into trading financial assets (TRAD), derivative financial assets (DERI), net loans and advances (LOAN), net financial assets available for sale (AVAI), and net hold-to-maturity investments (HOLD). And they were used as explained variables for regression. The natural logarithm is taken after plus 1, the regression results are shown in Table 5, Model (3)-Model (7).

As shown in Table 5, equity pledge by controlling shareholders significantly weakens the allocation of transactional financial assets, while it has no significant impact on other subdivided financial assets. It shows that after the pledge, the listed company has significantly weakened the financial assets with high risk and liquidity.

4.5 Robustness Check

In order to test the reliability of the results, the following robustness measures are taken:

(1) The explanatory variable equity pledge proportion is replaced by the equity pledge change proportion. The change proportion of equity pledge is sorted out according to the relevant announcements of controlling shareholders' equity pledge issued by the listed company, which is the ratio of the number of equity pledge changes disclosed in the announcement to the number of equity pledge before the change. If there is no equity pledge at the beginning of the period, the change proportion is 100%; If all equity is pledged, the change ratio is -100%. When the same company has multiple related announcements in the same year, the last announcement data will be taken. The reasons are as follows: Taking the ending equity pledge proportion can show the actual situation of the ending equity pledge of the listed company, but it is inevitable to miss the immediate impact of the change in the current pledge quantity. The change proportion of equity pledge can better capture the real-time change direction and proportion of pledge. The regression results are significant, consistent with the previous conclusions.

(2) Change the sample range. Manufacturing companies account for a large proportion of A-share listed companies and have distinct operating characteristics. Of the 27,621 sample observations collected in this paper, about 18,047 are manufacturing observations. In order to ensure the robustness of the results, the observed values of the manufacturing industry are removed and re regressed. The regression results are significant and consistent with the previous conclusions.

5. CONCLUSIONS

From the perspective of control right transfer risk of equity pledge, this paper takes the data of A-share listed companies from 2014 to 2021 as a sample to investigate the relationship between controlling shareholders' equity pledge and financial asset allocation of listed companies, and explore the differences of this relationship in different situations. The results show that: (1) The controlling shareholders' equity pledge significantly inhibits the allocation of financial assets of listed companies, that is, listed companies will significantly reduce the holding of financial assets under a high proportion of equity pledge. (2) Higher commercial credit level and lower product market competition play a regulatory role, which can weaken the restraining effect of controlling shareholders' equity pledge on the allocation of financial assets. (3) Further research found that after equity pledge, compared with other financial assets, financial assets with higher risks and liquidity such as transactional financial assets were significantly reduced.

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