

Controlling Shareholders' Equity Pledge, Inside Pledge Supervision, and Merger and Acquisition Decisions

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Abstract: *In recent years, the pledge of stock rights is increasingly favored by shareholders. In this context, this paper studies the relationship between equity pledge and mergers and acquisitions under inside pledge supervision. Using the annual data of listed companies from 2007 to 2021, we find that inside pledge can inhibit the relationship between equity pledge and mergers and acquisitions. In addition, our endogeneity test is also robust.*

Keywords: *Equity pledge; M&A; Inside Pledge*

1. Introduction

Equity pledge has become a popular financing method in the world. Insiders use their own shares as collateral and obtain loan funds from financial institutions (brokers, banks and insurance companies, etc.) to supplement the lack of cash flow in their hands. This phenomenon has attracted more and more attention and research from the public, regulators and global academic circles. Compared with other countries markets, China's equity pledge transactions are more common and relatively large in scale. In addition, China has implemented stricter disclosure regulations on equity pledge, requiring listed companies to disclose more details to the market in time, which provides a good database for our research on equity pledge.

Equity pledge market is a part of a multi-level capital market. Before 2013, this market was usually dominated by commercial banks. However, since May 2013, the Measures for Stock Pledged Repurchase Trading and Registration and Settlement (Trial) jointly promulgated by Shanghai Stock Exchange and Shenzhen Stock Exchange have made securities companies gradually become the main participants in this market. Compared with commercial banks, securities companies' equity pledge trading procedures are more convenient and faster, which greatly promotes the development of equity pledge market in China. Although in listed companies, the liquidity of stocks as pledge objects is far higher than that of fixed assets as we know, in fact, the risk of stocks in many listed companies is higher than that of fixed assets. In recent years, the sharp fluctuation in the capital market has led to the frequent occurrence of equity pledge risk events, and caused many pledgees (fund lenders) to suffer losses, and set aside a large amount of impairment reserves for share pledge loans. The main reason for these securities companies to accrue credit impairment losses may be due to the equity pledge stepping on the thunder. In order to resolve risks, the brokerage industry is gradually reducing the scale of equity pledge. Based on this, this paper examines the impact of the pledge behavior between the main pledgee (that is, securities companies and banks and insurance companies other than securities companies) and the main pledgor (that is, the controlling shareholder of listed companies) on the M&A decision of listed companies. Whether the risk matching between the pledgee and the pledgor represents the equilibrium of the China stock pledge market is particularly important, because the major risk mismatch between the pledgee and the pledgor may damage the sustainability and stability of the market, and then lead to the risk of stock collapse or systemic financial risk. Finally, we put forward the research hypothesis based on the above characteristics.

M&A has always been regarded as an important way for enterprises to expand and develop (Havila, & Salmi, 2000). M&A can add value to enterprises and make them gain synergy (Ficery et al., 2007). In addition, in order to gain a greater competitive advantage in the market, enterprises can also choose to acquire competitors to increase their competitiveness in the market (Coyne, 1986). Companies that implement mergers and acquisitions become a clear growth signal (Waldman & Javidan, 2009). The news of mergers and acquisitions of listed companies as acquirers has a significant boost to their short-term

share prices (Tao et al., 2017). The reason is that, on the one hand, M&A is one of the important ways for the company to achieve exogenous growth, which will help the company to expand its asset scale, rapidly increase its sales revenue and profits, and then bring about market value growth for the company. On the other hand, it is difficult for small and medium-sized investors to judge the economic nature of M&A transactions of listed companies, and it is difficult to identify potential opportunistic behaviors of controlling shareholders or managers, such as interest transfer or hollowing out (Murray et al., 2017), and they can only respond positively to M&A news habitually or in conformity. Considering that the controlling shareholder of pledged shares is most concerned about raising the stock price to avoid additional margin or the transfer of control that may be caused by forced sale of shares, we believe that the behavior of controlling shareholders to obtain funds through pledged shares may encourage enterprises to actively seek value-added investment opportunities and actively participate in M&A activities. Therefore, the influence of controlling shareholder's equity pledge on M&A decision is an empirical problem worth studying.

Taking the A-share listed companies in China from 2007 to 2021 as samples, this paper investigates the influence of the financing behavior of the controlling shareholder on the M&A decision. Our research results show that under the pressure of recovering the deposit, when the controlling shareholder is forced to sell its shares, the company is more likely to conduct mergers and acquisitions. In addition, when faced with greater pressure, the controlling shareholder's motivation to use mergers and acquisitions to raise the stock price becomes stronger. Our research results have significant statistical and economic significance. Moreover, in order to ensure the robustness of the final result, we pass extra tests to eliminate potential endogenous problems. First, we matched the experimental group and the control group one-to-one, and then made a logistic regression for the samples after PSM. Our results have not changed. Secondly, in 2018, we used the exogenous policy as a shock to test our results. The result of Difference in Difference, DID) still proves that our result is robust.

Our thesis has made at least three contributions to the literature. First of all, we link the personal behavior of insiders with the decision-making behavior of enterprises. Our research supplements the relationship between the individual equity pledge behavior of the controlling shareholder and the M&A decision of the company, and contributes to the research of this paper. Second, as far as we know, we are the first scholar to study inside pledge in this kind of context. Thirdly, the paper studies the influence of the mechanism of Inside pledge on the controlling shareholder's decision on M&A.

The rest of this paper is structured as follows: Section 2 is theoretical analysis and research hypothesis; Section 3 is research design; Section 4 is the analysis of empirical results; Section 5 mainly discusses the endogeneity of the model; the sixth section is the summary of this paper.

2. Literature review and hypothesis development

In China, M&A may be an effective way to maintain prices in the short term. On the one hand, the development of China stock market in the past 20 years is still immature. In such an incomplete and efficient market, over-optimistic news in the market will generate upward noise demand for the shares of the acquirer company, creating an optimistic atmosphere for the market. Controlling shareholders, investment bankers, accountants, other intermediaries and stakeholders who participate in these transactions will have strong motivation to create an optimistic atmosphere for the market. For example, the controlling shareholder of a listed company may intentionally create a hot topic of M&A in the market to cater to market speculation, and claim that M&A can promote enterprise transformation and growth, reduce enterprise costs and achieve synergy.

In reality, as we said before, the controlling shareholder has the ability to influence the M&A decision of listed companies by using his own control power. In China's capital market, the ownership structure of listed companies is usually highly concentrated. The ownership structure of centralized ownership provides the controlling shareholder with the ability and opportunity to transfer company resources at the expense of external shareholders (Fan and Wong, 2002). Deep-rooted controlling shareholders can use their effective control over the company to engage in related party transactions, which enables them to obtain benefits from private control (Morck, 1996). In addition, China Securities Regulatory Commission issued a series of policies to encourage mergers and acquisitions, optimizing the approval procedures, improving market efficiency, and providing more opportunities for controlling shareholders to participate in M&A decisions. Therefore, under the double pressure of recovering margin and losing control of listed companies, some controlling shareholders may take risks to use mergers and acquisitions to reduce the risk of stock price decline.

In addition, signals are an important channel to spread information to the capital market and reduce the degree of information asymmetry (Khlifi, 2022), especially in the regulatory environment with high degree of information asymmetry and low transparency (Boone & White, 2015). M&A is a positive development signal conveyed by enterprises to investors, and investors generally pay more attention to fast-growing companies and respond positively to listed companies with acquisition announcements (Matsusaka, 1993). Therefore, M&A is not an abuse of capital, but an important means for enterprises to tap opportunities, enhance market competitiveness and help enterprises grow strongly in the future. As investors in the market generally have a positive attitude towards M&A, companies with the pledge of controlling shareholders may be more interested in launching M&A, in order to send a signal to the market that enterprises have growth opportunities and future value enhancement to boost the stock price.

To sum up, during the pledge period, the controlling shareholders have the motivation to avoid the risk of their own control transfer and boost the stock price by implementing mergers and acquisitions. Therefore, based on the control theory and signal theory, this study puts forward the first hypothesis:

H1: Other things being equal, compared with the listed companies without the pledge of controlling shareholders' shares, the listed companies with the pledge of controlling shareholders' shares are more likely to have mergers and acquisitions.

Before 2013, this market was usually dominated by commercial banks. However, since May 2013, the Measures for Stock Pledged Repurchase Trading and Registration and Settlement (Trial) jointly promulgated by Shanghai Stock Exchange and Shenzhen Stock Exchange have made securities companies gradually become the main participants in this market. Compared with commercial banks, securities companies' equity pledge trading procedures are more convenient, faster and safety, which greatly promotes the development of equity pledge market in China.

Based on this, this study proposes hypothesis H2:

H2: Other things being equal, inside pledge supervision will reduce the possibility of mergers and acquisitions.

3. Research Design

3.1. Sample selection and data source

Our initial sample includes all the annual observations of China A-share listed companies from 2007 to 2021. Our sample started in 2007 because the new accounting standards were implemented in 2007 and the share-trading reform has been basically completed. Therefore, excluding the data before 2007 can reduce the impact of the new accounting standards and the share-trading reform on the results of this paper. According to the previous literature, we selected samples according to the following principles: (1) We excluded all the samples of listed companies in the financial industry; (2) We excluded all listed companies with ST and ST* in front of their names and listed companies that have been delisted; (3) We eliminated the samples with missing core variables and control variables; (4) There are cases in which individual companies release the pledge in a short time after the pledge of equity. In order to prevent these samples from interfering with the results, we have excluded the samples with the pledge interval of less than one year; (5) According to the disclosure of listed companies, there are still some listed companies without controlling shareholders in China. Therefore, we excluded the samples of listed companies without controlling shareholders. After screening, 37711 samples were finally obtained.

In this paper, the data of equity pledge comes from the straight flush iFinD financial database, the data of M&A and gambling agreement comes from the China Financial Database (CSMAR), and the data of other control variables come from CSMAR database and Oriental Fortune Choice financial database. In addition, in order to eliminate the influence of outliers, all continuous variables are winsorize at the level of 1% and 99%. And according to the "Guidelines for Industry Classification of Listed Companies" notified by the CSRC in 2012, the industry dummy variables are set to control in the model.

3.2. Variable definition and model construction

Explained variable: M&A, whether the listed company made a merger decision in that year.

Explanatory variable: Whether the controlling shareholder has the behavior of obtaining funds by pledging the equity in that year, this paper uses two methods to measure the status of the Pledge of the controlling shareholders' shares in listed companies: (1) Whether the controlling shareholders of listed

companies have pledged shares to obtain funds in the current year (Pledge), if the controlling shareholders have pledged shares to obtain loans, the value of Pledge is 1, otherwise it is 0; (2) Pledge_ratio of the controlling shareholder of the listed company in the current year is measured by the ratio of the total number of shares pledged by the controlling shareholder in the current year to the total number of shares held by the controlling shareholder.

Control variables: According to the existing literature (Li and Li, 2022) We control the following variables: enterprise Age (age), ShareholdingRatio of controlling shareholders, return on assets (ROA), the sum of the shareholding ratios of the top ten circulating shareholders (Top10), asset-liability ratio (Leverage), Cash ratio (cash), free cash flow of enterprises (FCF), and book-to-book ratio (PB). In addition, we also control the industry fixed effect and year fixed effect in regression.

In order to test the relationship between the controlling shareholder's acquisition of funds by pledge of shares and the M&A decision of listed companies, this paper constructs a multiple linear regression model as follows:

$$\mathbf{H1:} \text{M\&A}_{i,t} = \beta_0 + \beta_1 \text{Pledge}_{i,t} + \Sigma \beta * \text{Control}_{i,t} + \text{Year} + \text{Industry} + \varepsilon_{i,t} \quad (1)$$

In order to test the relationship between the behavior of controlling shareholders to obtain funds through pledge of equity and the integration time of enterprises, we construct a multiple linear regression model as follows:

$$\mathbf{H2:} \text{M\&A}_{i,t} = \beta_0 + \beta_1 \text{Pledge}_{i,t} + \beta_2 \text{InsidePledge}_{i,t} + \beta_3 \text{InsidePledge}_{i,t} * \text{Pledge}_{i,t} + \Sigma \beta * \text{Control}_{i,t} + \text{Year} + \text{Industry} + \varepsilon_{i,t} \quad (2)$$

In the above model, i represents the sample company and t represents the year.

4. Empirical results

Table 1: Equity Pledge and M&A decision

VARIABLES	(1) logistic	(2) APE
Pledge	0.72*** (0.034)	0.13*** (0.0059)
Age	0.040*** (0.015)	0.0070*** (0.0027)
ROA	-0.042*** (0.015)	-0.0074*** (0.0026)
Leverage	0.12*** (0.018)	0.022*** (0.0031)
Cash	-0.12*** (0.014)	-0.021*** (0.0024)
FCF	0.039*** (0.014)	0.0069*** (0.0024)
Pb	0.058*** (0.016)	0.010*** (0.0028)
Size	0.071*** (0.015)	0.013*** (0.0027)
ShareholdingRatio	-0.29*** (0.013)	-0.050*** (0.0023)
Top10	0.21*** (0.014)	0.037*** (0.0025)
Constant	0.96*** (0.12)	
Observations	37,707	37,707
Industry FE	yes	yes
year FE	yes	yes

Robust standard errors in parentheses

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

In Table 1, we give the regression results of the controlling shareholder's equity pledge behavior and enterprise merger and acquisition decision. Pledge, the core explanatory variable we are concerned about (whether the controlling shareholder has the behavior of obtaining funds by pledging equity in the current year), has significantly positive coefficients in columns (1) and (2) of Table 1 at the level of 1%. Column (1) in Table 1 is the logistic regression result, because the coefficient of logistic regression is not convenient to explain, so we use the Average Partial Effect (APE) model to explain it in column (2). In column (2), Pledge's coefficient is positive and significant at the level of 1%, which indicates that the behavior of controlling shareholders to obtain financing through pledge of shares has a positive effect on the possibility of enterprises to implement M&A decisions, and the listed companies with the pledge of controlling shareholders' shares in that year are 12.6% more likely to implement M&A than those without the pledge of controlling shareholders' shares, which is very close to the results obtained by our univariate difference analysis. Generally speaking, the results in Table 1 support our hypothesis H1.

In the regression results in Table 2, we tested the external supervision mechanism of inside pledge. Column (1) is the coefficient of logistic regression. Because the logistic regression coefficient is not convenient for us to explain, we reported the results of mean bias effect (APE) in column (2). In column (2), the coefficient we are concerned about is the InsidePledge * Pledge, and the coefficient of the InsidePledge is significantly negative, which shows that the inside Pledge has a negative regulatory effect on the relationship between the controlling shareholder's equity pledge behavior (Pledge) and the M&A decision. Generally speaking, the inside pledge reduces the information asymmetry in the market because of its own regulatory function and to a certain extent. When the controlling shareholder conducts mergers and acquisitions through equity pledge financing, it does not want to expose too much internal information to the inside pledge institution in advance. Therefore, the inside pledge has a negative regulatory effect on the influence between the controlling shareholder's equity pledge and mergers and acquisitions.

Table 2: Inside Pledge supervision mechanism

VARIABLES	(1) logistic	(2) APE
InsidePledge	0.87*** (0.059)	0.15*** (0.010)
InsidePledge * Pledge	-0.44*** (0.084)	-0.077*** (0.015)
Pledge	0.61*** (0.044)	0.11*** (0.0075)
Age	0.046*** (0.015)	0.0081*** (0.0026)
ROA	-0.043*** (0.015)	-0.0075*** (0.0026)
Leverage	0.14*** (0.018)	0.024*** (0.0031)
Cash	-0.10*** (0.014)	-0.018*** (0.0024)
FCF	0.040*** (0.014)	0.0069*** (0.0024)
Pb	0.051*** (0.016)	0.0090*** (0.0027)
Size	0.076*** (0.015)	0.013*** (0.0027)
Shareholding Ratio	-0.28*** (0.013)	-0.049*** (0.0023)
Top10	0.23*** (0.015)	0.040*** (0.0025)
Constant	0.99*** (0.12)	
Observations	37,707	37,707
Industry FE	yes	yes
year FE	yes	yes

Robust standard errors in parentheses

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

5. Robustness test

Empirical studies using multiple regression always suffer from the bias of setting wrong function forms and produce biased estimates. Our research results depend on the correct setting of regression model, so the wrong setting of multiple regression function may bring biased estimation. Tendency score matching (PSM) is a powerful method to alleviate the problems of biased estimation and self-selection of samples caused by incorrect setting of function forms. Therefore, we use the method of propensity score matching to solve the potential endogenous problems that may exist. According to the control variables in Table 3, we make a one-to-one match between the treatment group (listed companies whose controlling shareholders obtained funds by pledging stocks in that year) and the control group (listed companies whose controlling shareholders did not obtain funds by pledging stocks in that year). To sum up, the coefficients of the results before and after matching are positive and significant, which indirectly proves that our hypothesis is correct. In a fiscal year, it is more likely that the controlling shareholder will obtain funds by pledging shares than the listed company that does not have such financing behavior to implement M&A decision. In Table 3, we removed the samples that were not matched after PSM, and regressed the model (1) by Logistic regression. The coefficient of Logistic regression is in column (1) of Table 3. Because the coefficient of Logistic regression is not convenient for us to explain, we use APE (Average Partial Effect) model to explain in column (2). In column (1) and column (2), we found that the coefficient sign and significance of the variable Pledge (whether the controlling shareholder had the behavior of obtaining financing funds by pledging equity in that year) did not change, and it was positively significant at the level of 1%. Furthermore, the listed companies that had the behavior of controlling shareholders pledging their shares to obtain funds in those years were 10% more likely to have mergers and acquisitions than those that did not, which was basically consistent with the conclusions in our tables 2, which alleviated people's worries about possible endogenous problems.

Table 3: The logistic regression after PSM

VARIABLES	(1) logistic	(2) APE
Pledge	0.68*** (0.044)	0.10*** (0.0065)
Age	-0.051** (0.025)	-0.0076** (0.0037)
ROA	-0.059** (0.024)	-0.0088** (0.0036)
Leverage	0.20*** (0.030)	0.029*** (0.0045)
Cash	-0.029 (0.031)	-0.0043 (0.0046)
FCF	0.043* (0.026)	0.0065* (0.0038)
Pb	0.040 (0.027)	0.0059 (0.0041)
Size	0.16*** (0.037)	0.024*** (0.0055)
ShareholdingRatio	-0.33*** (0.023)	-0.049*** (0.0034)
Top10	0.14*** (0.024)	0.021*** (0.0036)
Constant	0.82*** (0.21)	
Observations	16,292	16,292
Industry FE	yes	yes
year FE	yes	yes

Robust standard errors in parentheses

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

6. Conclusions

Insider trading in stocks is common all over the world. Although the stock pledge of the controlling shareholder in the market often involves scandals, there is still an incomplete understanding of the

economic consequences of the pledge and whether and how the personal pledge behavior affects the company's decision-making. In this paper, we fill this gap by observing the relationship between the behavior of controlling shareholders pledging their shares to obtain financing funds and the decision-making of mergers and acquisitions. We put forward a hypothesis of pressure under margin recovery, that is, controlling shareholders can use their own control advantages to initiate mergers and acquisitions, so as to alleviate the pressure of margin recovery and prevent the risk of control transfer when they pledge their shares. We find that when the proportion of shares pledged by the controlling shareholders is high, in order to prevent the risk of the transfer of their own control rights, the company is more likely to start the merger and acquisition plan. When the company has recently experienced a sharp decline in its share price and the controlling shareholder is faced with a notice to recover the deposit, it is more likely for the controlling shareholder to implement the M&A decision. In addition, our endogenous tests are also very robust.

The limitation of this study is that it mainly focuses on domestic mergers and acquisitions, but does not consider cross-border mergers and acquisitions. The main reason is that the sample of cross-border mergers and acquisitions is too small. In the future, we will continue to expand the discussion on the issue of equity pledge, including the different influences in time series before, during and after equity pledge.

Generally speaking, our findings are consistent with the control theory of capital structure, that is, the controlling shareholder reduces the pressure brought by the notice of margin call through merger and acquisition decision, and its main purpose is to maintain that he still enjoys the right to vote in listed companies. External regulatory policies have strengthened this relationship. This paper is helpful to deepen the understanding of market investors and regulators on the economic consequences of controlling shareholders' equity pledge. We provide an important policy basis for the governance of equity pledge. In the future, we should deepen the policy supervision on the equity pledge of controlling shareholders to prevent the self-interested behavior of controlling shareholders.

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