Controlling Shareholder’s Share Pledge, Earnings Management and Audit Decision—Based on Regression Method in Statistics

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Abstract. This article uses 2009-2019 Shanghai and Shenzhen A-share listed companies as a sample to study the impact of listed companies’ equity pledge behaviour on auditors’ decision-making. The empirical results show that if there is a pledge of large shareholder equity, the audit pricing will be higher than when it does not exist. At the same time, the greater the proportion of pledged equity is, the higher the audit pricing accordingly is. The study finds that the equity pledge behaviour would make auditors more likely to issue non-standard audit opinions. The state-owned nature has a positive regulating effect on the relationship between equity pledge and audit opinion. But it has a negative regulating effect on the relationship between equity pledge and audit pricing. In the study of the mechanism of action, it is found that the equity pledge affects the auditor’s decision-making by affecting the level of earnings management. The research in this article provides a reference for listed companies, auditor firms and regulatory authorities.

1. Introduction
Equity pledge refers to the pledge established by the pledgee with the equity held by it as the object of pledge[1]. This is a means of external financing by the controlling shareholder. In recent years, equity pledge financing has attracted the attention of investors and regulators[2].

For the supply side, banks and other financial institutions are willing to accept equity as the object of pledge. For the demand side, the approval process for equity pledge is much simplified compared to the traditional loan approval process, and the liquidity is stronger[3]. Under the equity pledge, the true control has not been transferred. The major shareholders can convert the equity they own into cash inflows without changing the voting rights, so as to obtain financing quickly. However, in addition to providing convenient financing channels, equity pledges also increase the risk of control transfer. In the equity pledge, the value of the stock held by the major shareholder is the value of the pledge. When the stock falls to the warning line, the major shareholders will face the problem of making up for the pledge value gap caused by the decline in the value of the pledge. When the stock cannot be filled in time or the stock value falls below the closing line, the major shareholders will face the risk of being forced to close the position. Creditors have the right to dispose of the pledged subject matter, resulting in the transfer of control of the controlling shareholder. After the majority shareholder implements the behaviour of the controlling shareholder, the increased risk of control transfer will increase the motivation for information manipulation[4].
This article will carry out research design and analysis along the logic of "large shareholder equity pledge behaviour-transfer of control rights risk-earnings management activities-auditor decision". The innovation of this article is reflected in the following two aspects. Firstly, this article uses two variables: audit opinion and audit pricing to measure the auditor's decision-making to investigate whether the equity pledge behaviour will make the auditor more cautious to issue fewer standards opinion. Due to the increase in audit risk and the increase in audit workload, the audit firm respond to the audit risk by increasing auditor fees. Secondly, this paper analyzes the path and mechanism of the impact of the pledge behaviour of large shareholders on auditors' decision-making. The article studies whether the company will face the increased risk of equity transfer through earnings management, and what strategies the auditors have adopted.

2. Test Results and Discussions

2.1. Research hypothesis

The risks faced by auditors are related to a specific business and run through the audit business. These risks generally include two types of risks: business risks and audit risks. Among them, business risks are composed of customer business risks and audit business risks. Customer business risk refers to the risk of poor customer performance or continued operating losses. Audit risk refers to the possibility of major misstatement or omission in the client’s financial report, but the auditor issued an inappropriate audit opinion after the audit. Due to the special functions of auditors, an important objective of audit work is to provide reasonable assurance for the financial reports of the audited company.

If the large shareholder pledges the equity, the value of the equity has an important impact on the large shareholder both before and after the pledge. Before the equity pledge, the value of the pledged subject matter is affected by the stock and the financing amount is determined. When the pledge action occurs, the decline in the value of equity will increase the likelihood that the stock price will fall below the closing line, making the transfer of control risk. Therefore, equity pledge will enhance the company's motivation to manipulate earnings. At the same time, the existence of equity pledges will also exacerbate the business risks of enterprises, which is a factor that auditors need to consider when formulating audit plans. On the one hand, major shareholders may obtain funds through equity pledges and then carry out related party transactions to empty the company; on the other hand, if the debt cannot be repaid at maturity, then the pledged equity may be frozen or forced to auction. Therefore, the risk of transfer of control rights is greatly increased, affecting the company's stable operation. Generally speaking, the audit will consider both audit costs and audit risks in pricing. There is equity pledge and the higher the proportion, the higher the risk of the enterprise. Correspondingly, auditors need to invest more and bear more risks, thereby increasing audit pricing. Based on the above analysis, this article proposes the following assumptions.

H1a: There is a positive correlation between the pledge of shareholder equity and audit pricing.
H1b: When the proportion of equity pledge is higher, the audit pricing will increase accordingly.
H1c: The equity pledge affects the audit pricing by affecting the level of earnings management.

Auditors face companies with higher risks. One way is to increase audit pricing to compensate for higher audit costs and audit risks. Another way is to be more cautious in expressing audit opinions, which is expressed as less published. The standard has no reservations. Based on this, the following assumptions are made.

H2a: Companies with pledges of shareholder equity are more likely to be issued with non-standard audit opinions.
H2b: The higher the equity pledge ratio, the greater the probability that a non-standard audit opinion will be issued.

The essential reason for the emergence of equity pledge is due to the existence of financing constraints, due to government policy tilts and more financing channels, my country's state-owned enterprises have stronger financing capabilities than non-state-owned enterprises. At the same time, state-owned enterprises and non-state-owned enterprises face different levels of risk after equity pledges.
First, from the macro environment, state-owned enterprises have a more relaxed financing environment, and financial institutions such as banks are more willing to lend to state-owned enterprises with political advantages. Second, the motivation for earnings management is also different. Due to government intervention and support, state-owned listed companies. The operational risks faced are relatively small, so it is less likely to carry out earnings management to manipulate information. Based on the important role of the nature of property rights, the following hypotheses are proposed.

2.2. Research design
In order to better discover the relationship between the controlling shareholder's equity pledge, earnings management and audit decision, the following model is designed.

(1) Sample selection and data source
This article selects the 2009-2019 Shanghai and Shenzhen A-share listed companies as the initial sample. The equity pledge and financial data used in this article come from CSMAR database and RESSET database, and some missing values are supplemented manually. After excluding the financial industry and ST companies, 14788 (15513) company annual data were finally obtained. To reduce the impact of outliers, we performed winsorizing process on continuous variables at 1% and 99%.

(2) Definition and description of variables
Based on the existing research[5][6], this paper forms the definition and description table of research variables as shown in Table 1.

(a) Explained variable
This article measures auditor decision-making from two levels, including audit pricing (LNAFEE) and audit opinion (OPINION). Among them, audit pricing uses natural logarithm measurement of current domestic audit fees. Audit opinion sets dummy variables. If the current auditor issues is The standard unreserved opinion takes the value, otherwise it takes the value 0.

(b) Explanatory variables
The explanatory variables in this article are determined based on the pledge behaviour of the top ten shareholders at the end of the year. First, use dummy variables to measure whether there is a pledge of equity at the end of the year. If it exists, the value is 1; otherwise, it is 0. Second, the ratio of the total number of shares pledged by the top ten shareholders to the total number of shares at the end of the year is used to measure the degree of equity pledge.

(c) Control variables
In order to accurately study the impact of equity pledge on auditors' decision-making, this article refers to the research that introduces factors that have an important impact on audit pricing and audit opinions as control variables, including company size (SIZE), equity concentration (EC), and assets Rate of return (ROA), ratio of independent directors (IDP), asset-liability ratio (LEV), current ratio (CR), and introduce annual variables and industry variables. See Table 1 for specific variable definitions.

Select accrued earnings management (_NDA) as the intermediary variable, refer to the modified Jones model to calculate the abnormal accrued profit, and then take its absolute value to obtain the required variable. The specific model is calculated as follows:

\[
\frac{T A_{i,t} \cdot A_{i,t-1}}{} = \beta_0 \times 1 + \beta_1 \times \left( \frac{\Delta R E V_{i,t} - \Delta R E C_{i,t}}{A_{i,t-1}} \right) + \beta_2 \times \frac{P P E_{i,t} \cdot A_{i,t-1}}{A_{i,t-1}} + \epsilon_{i,t} \tag{1}
\]

\[
\frac{N D A_{i,t} \cdot A_{i,t-1}}{} = \beta_0 \times 1 + \beta_1 \times \left( \frac{\Delta R E V_{i,t} - \Delta R E C_{i,t}}{A_{i,t-1}} \right) + \beta_2 \times \frac{P P E_{i,t} \cdot A_{i,t-1}}{A_{i,t-1}} \tag{2}
\]

\[
\frac{D A_{i,t} \cdot A_{i,t-1}}{} = \frac{T A_{i,t} \cdot A_{i,t-1}}{A_{i,t-1}} - \frac{N D A_{i,t} \cdot A_{i,t-1}}{A_{i,t-1}} \tag{3}
\]
Table 1 Variable definition and description

| Variable nature | Variable symbol | Variable name | Variable definition |
|-----------------|-----------------|---------------|---------------------|
| Explained variable | LNAFEE | audit pricing | The current domestic audit fee is taken as natural logarithm |
| Explained variable | OPINION | Audit Opinion | The current auditor issued a standard unqualified opinion of 1, otherwise 0 |
| Explained variable | PD | Large shareholder equity pledge | The company’s top ten shareholders at the end of the year have a share equity pledge behavior of 1, otherwise 0 |
| Explanatory variable | PPD | The proportion of PPD | The number of shares pledged by the majority shareholder to the total number of shares |
| Control variable | SIZE | Company size | Natural logarithm of total assets at the end of the period |
| Control variable | EC | share concentration | The largest shareholder's shareholding ratio |
| Control variable | ROA | Return on Assets | Ratio of net profit to total assets at the end of the period |
| Control variable | IDP | Proportion of Independent Directors | Ratio of the number of independent directors to the number of board members |
| Control variable | LEV | gearing ratio | The ratio of total liabilities to total assets at the end of the period |
| Control variable | CR | Current ratio | Ratio of current assets to current liabilities |
| Control variable | Year | Year Variable | Annual Dummy Variable |
| Control variable | IND | industry variables | Industry classification standards issued by the 2012 China Securities Regulatory Commission |
| Intermediary variable | _NDA | accrued earnings management | uses the Jones model to calculate the absolute value of manipulated accrued profits |

(3) Models

a. Benchmark model

To study the impact of large equity pledges on audit costs, the following model is constructed[7]:

\[
LNAFEE = \beta_0 + \beta_1 PD + \beta_2 CONTROL + year + IND + \varepsilon
\]  \hspace{1cm} (4)

\[
LNAFEE = \beta_0 + \beta_1 PPD + \beta_2 CONTROL + year + IND + \varepsilon
\]  \hspace{1cm} (5)

In order to study the impact of the pledge of large shareholders on the audit opinion, the following model is constructed:

\[
OPINION = \beta_0 + \beta_1 PD + \beta_2 CONTROL + year + IND + \varepsilon
\]  \hspace{1cm} (6)

\[
OPINION = \beta_0 + \beta_1 PPD + \beta_2 CONTROL + year + IND + \varepsilon
\]  \hspace{1cm} (7)

Among them, CONTROL represents the control variable shown in Table 1. According to the different characteristics of the dependent variable, this paper uses different regression methods. In models (4) and (5), OLS regression is used, and models (6) and (7) use Logit regression. In regression analysis, industry effects and Year effect.

b. The intermediary role of accrued earnings management
In order to verify whether the pledge of large shareholders’ equity affects the auditor's decision-making through earnings manipulation, this paper draws on previous research methods and establishes the following model, in which PD** takes PPD and PD respectively for regression.

\[
LNAFEE = \alpha_0 + \alpha_1 PD^* + \alpha_2 CONTROL + \text{year} + \text{IND} + \epsilon
\]  
(8)

\[
NDA = \beta_0 + \beta_1 PD^* + \beta_2 CONTROL + \text{year} + \text{IND} + \epsilon
\]  
(9)

\[
LNAFEE = \lambda_0 + \lambda_1 PD^* + \lambda_2 NDA + \gamma_3 CONTROL + \text{year} + \text{IND} + \epsilon
\]  
(10)

2.3. Regression analysis

Based on the results presented above, the analysis is made as below:

1. The regression analysis of the equity pledge of major shareholders to the audit valuation.

According to the regression results in Table 3, it can be seen whether there is a positive correlation between the pledge behavior of large shareholders and audit pricing at a 1% significance level. It can also be said that when the company pledges large shareholders, the corresponding audit fees will increase, so it is assumed that H1a is verified. In the process of analyzing the relationship between equity pledge ratio and audit pricing, the article found that the two have a positive correlation at a 1% significance level. In other words, when the company has more equity pledges, the auditor will charge a higher audit fee. Suppose that H1b is verified. In terms of control variables, the regression results found that the larger the company size, the higher the debt level, and the higher the proportion of independent directors, the higher the corresponding audit pricing. However, audit pricing has a significantly negative correlation with equity concentration and liquidity.

2. Regression analysis of audit opinion on equity pledge of major shareholders

According to the last two columns of Table 2, the regression results show that at the significance level of 1%, whether the company's shareholder pledge behavior at the end of the year is significantly related to the audit opinion, and at the same time the equity pledge ratio and the audit opinion are also significantly positively correlated, assuming H2a and H2b are verified. In the regression results of the control variables, it is found that the company's profit level, company size, liquidity level, equity concentration and the audit opinion are significantly positively correlated, but the debt level and the audit opinion are negatively correlated at a 1% significance level.

|                  | OLS   | OLS   | Logit  | Logit  |
|------------------|-------|-------|--------|--------|
|                  | _LNAFEE | _LNAFEE | _OPINION | _OPINION |
| _ROA             | -0.083 | -0.094 | 9.694*** | 9.674*** |
|                  | (0.067) | (0.067) | (0.971) | (0.970) |
| _SIZE            | 0.394*** | 0.393*** | 0.691*** | 0.685*** |
|                  | (0.004) | (0.004) | (0.063) | (0.063) |
| _CR              | -0.000 | -0.000 | 0.030*** | 0.031*** |
|                  | (0.000) | (0.000) | (0.011) | (0.011) |
| _LEV             | 0.000** | 0.000** | -0.002** | -0.002** |
|                  | (0.000) | (0.000) | (0.001) | (0.001) |
| _IDP             | 0.243*** | 0.239*** | 0.364 | 0.344 |
|                  | (0.075) | (0.075) | (0.972) | (0.971) |
| _EC              | -0.076*** | -0.051* | 2.261*** | 2.392*** |
|                  | (0.029) | (0.029) | (0.402) | (0.405) |
| _PPD             | 0.241*** |       | 0.882* |        |
|                  | (0.036) |       | (0.519) |        |
| _PD              |       | 0.051*** |       | 0.275*** |
Note: * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

(3) Whether the equity pledge affects the audit decision through earnings manipulation.

This article selects the absolute value of operability accrual earnings management to measure the company's earnings management level. The greater the NDA is, the higher the company's earnings management risk is. Table 3 shows the regression results. According to the analysis of the results, it can be found that whether there is equity pledge behaviour is significantly related to earnings management risk at the level of 10%. Among them, the results in the first column and the results in the fourth column represent the total effect of equity pledge ratio and whether there is equity pledge behaviour on audit valuation. The results in the second and fifth columns illustrate the equity pledge ratio and the existence of equity pledge behaviour on earnings management risk. The results in the third and sixth columns show the level of impact of earnings management risk on audit valuation under the control of the equity pledge ratio and the direct effect of equity pledge behaviour on audit valuation. As a result, it was found that the earnings management risk played an obvious intermediary role in the existence of property rights pledge and audit valuation. In other words, the existence of property rights pledge will increase the risk of the company's earnings manipulation, which will increase the audit valuation. Suppose H1c is verified.

Table 3 Analysis of the impact mechanism of earnings management risk

|                | _LNAFEE | _NDA | _LNAFEE | _LNAFEE | _NDA | _LNAFEE |
|----------------|---------|------|---------|---------|------|---------|
| _ROA           | -0.083  | 0.089*** | -0.097  | -0.094  | 0.088*** | -0.108  |
|                | (0.067) | (0.032) | (0.066) | (0.067) | (0.032) | (0.066) |
| _SIZE          | 0.394*** | -0.017*** | 0.397*** | 0.393*** | -0.017*** | 0.396*** |
|                | (0.004) | (0.001) | (0.004) | (0.004) | (0.001) | (0.004) |
| _CR            | -0.000  | 0.000 | -0.000  | -0.000  | 0.000 | -0.000  |
|                | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| _LEV           | 0.000** | -0.000*** | 0.000**  | 0.000**  | -0.000*** | 0.000**  |
|                | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| _IDP           | 0.243*** | 0.039** | 0.236*** | 0.239*** | 0.040** | 0.232*** |
|                | (0.075) | (0.020) | (0.075) | (0.075) | (0.020) | (0.075) |
| _EC            | -0.076*** | -0.011 | -0.074*** | -0.051* | -0.013* | -0.049* |
|                | (0.029) | (0.007) | (0.029) | (0.029) | (0.008) | (0.029) |
| _PPD           | 0.241*** | -0.004  | 0.242*** | -0.004*  | 0.052*** | 0.167*** |
|                | (0.036) | (0.012) | (0.036) | (0.009) | (0.002) | (0.009) |
| _PD            | 0.165*** | 0.051*** | -0.004*  | 0.052*** | 0.167*** | 0.167*** |
|                | (0.030) | (0.030) | (0.030) | (0.030) | (0.030) | (0.030) |
|   | _cons | 4.778*** | 0.429*** | 4.706*** | 4.793*** | 0.431*** | 4.720*** |
|---|-------|----------|----------|----------|----------|----------|----------|
|   |       | (0.092)  | (0.025)  | (0.093)  | (0.092)  | (0.025)  | (0.093)  |
| N | 13997 | 14707    | 13997    | 13997    | 14707    | 13997    |
| ar2 | 0.547 | 0.221    | 0.548    | 0.547    | 0.221    | 0.548    |
| industry | yes | yes | yes | yes | yes | yes |
| year | yes | yes | yes | yes | yes | yes |

Note: * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

3. Conclusion

Based on the results and discussions presented above, the conclusions are obtained as below:

(1) This article takes the 2009-2019 Shanghai and Shenzhen A-share listed companies as a research sample, and studies the impact of equity pledges on auditors' decision-making from the perspective of auditors' decision. The higher the audit pricing will be; in analyzing the audit opinions, it is found that the equity pledge will make the auditor more likely to issue non-standard audit opinions. The state-owned nature has a positive adjustment effect on the relationship between equity pledge and audit opinion, and a negative adjustment effect on the relationship between equity pledge and audit pricing.

(2) Therefore, from the perspective of the regulator, the regulator should pay close attention to the entire process of the equity pledge of the listed company, and promptly discover the behaviour of hollowing out the company. Starting from the listed company itself, the disclosure of the equity pledge behaviour should be increased to make the company information more transparent At the same time, strengthen internal control, minimize the negative impact of equity pledge on the company, and on the premise of ensuring the stable operation of the enterprise, use equity pledge as a reasonable and effective financing method to give full play to the positive role of equity pledge.

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