CONTROLLING SHAREHOLDERS' EQUITY PLEDGE, INSTITUTIONAL INVESTORS' HOLDING AND REAL EARNINGS MANAGEMENT

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ABSTRACT. *In recent years, equity pledge has become the main way for shareholders to finance because of its low threshold and fast speed. When controlling shareholders conduct earnings management to better implement equity pledge, the supervision of institutional investors can have an impact on the economic behavior of listed companies. Based on China's A-share listed companies from 2015 to 2020 as research samples, the controlling shareholder equity pledge, institutional investors holding as the visual angle, respectively, the two and the relationship between the real earnings management, the study found that the controlling shareholder equity pledge will improve the level of real earnings management, and institutional investors holding is negatively related to the real earnings management level. This study enriches the theoretical research on institutional investors' shareholding and earnings management, and provides suggestions for enterprises to control the real earnings management level.*
Keywords: Controlling shareholders' equity pledge, Institutional investor, Real earnings management, Entrusted agency, Investor supervision

1. **Introduction.** The pledgor and the pledgee are the trading parties of equity pledge. For the pledgee, due to the high availability of stock price information, it is convenient to measure equity value and saves a lot of time for negotiation, so the two parties can quickly reach a consensus on financing terms. For the pledgor, it can not only obtain funds to meet the urgent need, but also ensure that their rights as shareholders will not be affected. Controlling shareholders pledge equity only to meet personal needs, which may impact on the overall development of the company moral hazard. China's legal system for the protection of investors' rights and interests and the healthy development of the capital market is not perfect, leading to a lot of legal risks [1]. Long-term holding institutional investors are playing an increasingly important role in the economic behavior and decision-making process of enterprises, which is conducive to reducing the opportunistic behavior of controlling shareholders and the long-term development of the company. Yin et al. studied the relationship between institutional investors' field investigation and earnings management and found that the more and deeper the field investigation by institutional investors, the less hidden real earnings management behavior of listed companies. Similar empirical cases provide empirical evidence for the "effective supervision" view [2]. Help investors to identify and attract attention to some economic behaviors of shareholders of listed companies, so as to avoid damaging the long-term interests of the company and thus losing investment value. Therefore, the research of this paper not only has certain theoretical significance, but also has practical significance for the future development of enterprises.

This paper takes Shanghai and Shenzhen A-share listed companies from 2015 to 2020 as research samples and verifies the relationship between controlling shareholders' equity pledge, institutional investors' shareholding and real earnings management through empirical analysis. It is found that the equity pledge of controlling shareholders is positively correlated with real earnings management, while the shareholding of institutional investors is negatively correlated with real earnings management. The structure of this paper is as follows. First, this paper reviews the literature and existing research on equity pledge, institutional investors, earnings management, and puts forward the hypotheses to be studied on this basis. Then, model design and variable definition are carried out, followed by analysis based on empirical analysis results. Finally, this paper draws conclusions and gives corresponding suggestions.

2. **Literature Review and Research Hypothesis.** Earnings status is one of the most important criteria for external investors, creditors and other stakeholders to understand listed companies, and earnings quality is also the focus of the regulatory authorities. Schipper defined "real earnings management" for the first time, and believed that real earnings management is the behavior to achieve a specific purpose, which is carried out by changing the time of investment and financing, and the final result is earnings adjustment [3]. Xie and Liao believed that after the implementation of pledge, the controlling shareholders will strive to create a good image, enhance confidence for investors and pledgee, and improve external evaluation of the listed company [4]. Li and Xing studied the relationship between the equity pledge and information disclosure. They found that listed companies would disclose more positive news, information or positive aspects of text information, which shows the development of the company and the optimistic forecasts, especially after implementing equity pledge [5].

In the course of daily operations, the listed companies already had a certain degree of real earnings management before the pledge, and the level of real earnings management after the pledge of equity further increased when the company incurred losses. It is common for shareholders to turn losses into profits through earnings management [6]. The study found that as the proportion of pledges increases, shareholders are more motivated to implement capital manipulation in various ways. Although the stock price can be raised in the short term, risks still exist in the long term [7]. After equity pledge, the controlling shareholder conducts earnings adjustment, and all kinds of behaviors of modifying and beautifying statements make information asymmetry more serious and lead to greater agency problems. Sun and Liu studied equity pledge, employee stock ownership plan and shareholder self-interest behavior, and found that after pledge, shareholder self-interest behavior motivation increases and shareholder is more likely to implement employee stock ownership plan for earnings management [8]. After the pledge, they will realize the performance commitment through earnings management to prevent the stock price from falling. Based on this analysis, this paper proposes the following hypothesis.

H1: The higher the equity pledge ratio of controlling shareholders is, the higher the positive real earnings management level is.

Brickley et al. first focused on the heterogeneity of institutional investors and proposed to classify them into pressure-resistant and pressure-sensitive types [9]. For example, funds, QFII, securities brokers and social security funds are pressure-resistant institutional investors. These institutional investors are able to resist the pressure exerted by shareholders or management of invested companies more firmly. Andrei and Hasler believed that institutional investors can be divided into long-term holding and short-term holding, and only institutional investors with long holding and high shareholding ratio can master more information, have more ability and have stronger motivation to supervise and participate in corporate governance [10]. Bushee found that the higher the ownership of institutional investors, the more they can restrain the earnings management behavior

of shareholders or management of listed companies, which is not conducive to long-term development [11]. Wang and Wen studied from the perspective of corporate governance and found that institutional investors can improve corporate performance by promoting innovation investment. Among them, stable institutional investors are more willing to participate in corporate governance and have a more significant impact on earnings management behavior of listed companies [12]. Liu and Gao studied the "clustering" of institutional investors and found that institutional investors can improve the information transparency of listed companies. Specifically, compared with withdrawal threat, information collection has a stronger impact [13]. Similar to the study of "cluster", Yang et al. studied the influence of the "network relationship" of Chinese institutional investors on the A-share listed companies in Shanghai and Shenzhen and drew the same conclusion: the institutional network relationship is positively correlated with the innovation level of the company, the nature of property rights inhibits this relationship, and the degree of market competition promotes this relationship [14]. Through the above discussion, this paper puts forward the following hypothesis.

H2: The higher the shareholding ratio of long-term institutional investors, the lower the level of positive real earnings management.

Based on the literature review of controlling shareholder equity pledge, institutional investor shareholding and real earnings management, this paper makes the following assumptions.

H3: The increase in the shareholding ratio of long-term institutional investors can restrain the positive effect of equity pledge of controlling shareholders on real earnings management.

3. **Research Design.** In this paper, A-share listed companies in China from 2015 to 2020 were selected as the research samples. In order to ensure the rationality of empirical results, the data were processed as follows: ST and * ST samples were removed, and the samples with abnormal financial data were deleted; Delete the financial industry and insurance industry; Delete the samples with missing data and incomplete data; The upper and lower 1% of all continuous variables are indent. After the above processing, 5067 observations were finally obtained, and the data in this paper came from the CSMAR database. Based on the methods of Roychowdhury [15] and Li et al. [16], this paper divides real earnings management into three types, and the specific calculation methods are as follows.

Operating activities cash flow estimation model:
$$\frac{CFO_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Production cost estimation model:
$$\frac{PROD_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \alpha_4 \frac{\Delta S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Discretionary cost estimation model:
$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

This paper draws lessons from Li et al. [16] to construct a comprehensive measure index (REM) for real earnings management: REM = R_PROD − R_CFO − R_DISEXP

$$\begin{aligned}
REM_{i,t} = {} & \gamma_0 + \gamma_1 Ple_{i,t} + \gamma_2 Top1_{i,t} + \gamma_3 Balance_{i,t} + \gamma_4 Instotal_{i,t} + \gamma_5 Growth_{i,t} \\
& + \gamma_6 ROA_{i,t} + \gamma_7 Lev_{i,t} + \gamma_8 Age_{i,t} + \gamma_9 Property_{i,t} + \gamma_{10} Opinion_{i,t} + \gamma_{11} Big4_{i,t} \\
& + \sum Industry + \sum Year + \varepsilon
\end{aligned} \quad (1)$$

$$\text{REM}_{i,t} = \gamma_0 + \gamma_1 \text{Ins}_{i,t} + \gamma_2 \text{Top1}_{i,t} + \gamma_3 \text{Balance}_{i,t} + \gamma_4 \text{Instotal}_{i,t} + \gamma_5 \text{Growth}_{i,t}$$
$$+ \gamma_6 \text{ROA}_{i,t} + \gamma_7 \text{Lev}_{i,t} + \gamma_8 \text{Age}_{i,t} + \gamma_9 \text{Property}_{i,t} + \gamma_{10} \text{Opinion}_{i,t} + \gamma_{11} \text{Big4}_{i,t}$$
$$+ \sum \text{Industry} + \sum \text{Year} + \varepsilon \qquad (2)$$

$$\text{REM}_{i,t} = \gamma_0 + \gamma_1 \text{Ple}_{i,t} + \gamma_2 \text{Ins}_{i,t} + \gamma_3 \text{Ple}_{i,t} * \text{Ins}_{i,t} + \gamma_4 \text{Top1}_{i,t} + \gamma_5 \text{Balance}_{i,t}$$
$$+ \gamma_6 \text{Instotal}_{i,t} + \gamma_7 \text{Growth}_{i,t} + \gamma_8 \text{ROA}_{i,t} + \gamma_9 \text{Lev}_{i,t} + \gamma_{10} \text{Age}_{i,t} + \gamma_{11} \text{Property}_{i,t}$$
$$+ \gamma_{12} \text{Opinion}_{i,t} + \gamma_{13} \text{Big4}_{i,t} + \sum \text{Industry} + \sum \text{Year} + \varepsilon \qquad (3)$$

TABLE 1. Definition of variables

Variable	Variable name	Variable calculation method
Explained variable	REM: Real earnings management	REM = R_PROD − R_CFO − R_DISEXP
Explaining variable	Ple: Proportion of equity pledged by controlling shareholders	Number of shares pledged by controlling shareholders/Number of shares held by controlling shareholders
	Ins: Proportion of shares held by long-term institutional investors	Year-end stability number of shares held by institutional investors/Number of shares outstanding at year-end
Control variable	Top1: Ownership concentration	Number of shares held by controlling shareholders/Total number of shares of the company
	Balance: Equity balance degree	Shareholding ratio of the 2-5 largest shareholders/Shareholding ratio of the largest shareholder
	Instotal: Proportion of shares held by institutional investors	Total number of institutional shares/Total number of company shares
	Growth: Development ability	(Operating income current period amount – Last year period amount)/Operating income last year period amount
	ROA: Return on assets	Net profit after tax/Total assets
	Lev: Debt paying ability	Total ending liabilities/Total ending assets
	Age: Time to market	Total number of years from market time to sample data deadline
	Property: Property rights	State is 1, otherwise 0
	Big4: High quality audit	Auditor for international "big Four" is 1, otherwise 0
	Opinion: Audit opinion	Issuing standard audit opinions. The value is 1; otherwise, it is 0
	Year	Year dummy variable
	Industry	Industry dummy variable

4. **Empirical Test.** Table 2 shows the descriptive statistical results. Among them, the average value of real earnings management (REM) level is −0.002, and the standard deviation is 0.188, indicating that all companies generally conduct real earnings management. The average shareholding ratio (Ins) of long-term institutional investors is 4.641, indicating that most companies in China have long-term institutional investors holding shares. Institutional investors can play a certain role in corporate governance, but the shareholding ratio varies greatly.

TABLE 2. Descriptive statistics

Variable	N	Mean	sd	min	max
REM	5067	−0.002	0.188	−0.647	0.500
Ple	5067	57.300	28.490	4.053	100.000
Ins	5067	4.641	5.264	0.000	23.440
Top1	5067	33.770	14.020	8.030	76.130
Balance	5067	0.742	0.564	0.032	2.709
Instotal	5067	40.550	23.320	0.325	92.010
Growth	5067	0.185	0.468	−0.626	3.261
ROA	5067	0.036	0.063	−0.249	0.224
Lev	5067	0.448	0.191	0.069	0.929
Age	5067	14.790	7.122	3.000	29.000

TABLE 3. Pearson correlation analysis

	REM	Ple	Ins	Top1	Balance	Instotal	Growth	ROA	Lev	Age
REM	1									
Ple	0.113***	1								
Ins	−0.154***	−0.122***	1							
Top1	−0.077***	−0.228***	−0.069***	1						
Balance	−0.001	0.162***	0.053***	−0.525***	1					
Instotal	−0.064***	−0.009	0.170***	0.337***	−0.165***	1				
Growth	−0.049***	0.019	0.073***	0.009	0.080***	0.053***	1			
ROA	−0.344***	−0.223***	0.225***	0.144***	−0.027*	0.087***	0.232***	1		
Lev	0.135***	0.122***	0.023*	0.031**	−0.069***	0.160***	0.041***	−0.293***	1	
Age	0.037***	0.203***	0.011	−0.154***	−0.067***	0.296***	0.006	−0.106***	0.224***	1

Note(s): *, ** and *** denote significance at 10%, 5% and 1%, respectively. (The following is the same.)

As can be seen from the results in Table 3, the coefficient of equity pledge of controlling shareholders and real earnings management is 0.113, and the coefficient of institutional investors' shareholding and real earnings management is −0.154, both of which are significant at 1% level. Therefore, it can be inferred that the equity pledge of controlling shareholders is positively correlated with real earnings management. The shareholding of institutional investors is negatively correlated with real earnings management, which preliminarily verifies the correctness of hypotheses 1 and 2.

TABLE 4. Multiple regression analysis of main variables

	(1) REM	(2) REM	(3) REM
Ins	−0.0054***		−0.0075***
	(−10.79)		(−7.01)
Ple		0.0007***	0.0004***
		(7.56)	(3.22)
c.Ins*c.Ple			0.0000***
			(2.59)
_cons	0.0344	−0.0362	0.0109
	(0.67)	(−0.70)	(0.21)
N	5067	5067	5067
adj. R^2	0.063	0.052	0.071
Industry	YES	YES	YES
Year	YES	YES	YES

Table 4 shows the multiple regression results of real earnings management, controlling shareholder's equity pledge and institutional investor's shareholding. The regression coefficients between real earnings management (REM), controlling shareholder's equity pledge (Ple) and institutional investor's shareholding (Ins) are 0.0007 and −0.0054 respectively, both significant at the level of 1%. Through multiple regression analysis, the correctness of hypotheses 1 and 2 is verified, but the interaction effect is not significant, that is, the increase of the shareholding proportion of institutional investors has little inhibitory effect on the positive real earnings management level caused by equity pledge of controlling shareholders, and hypothesis 3 is not valid.

TABLE 5. Multiple regression analysis under different property rights

	Non-state-owned enterprise			State-owned enterprise		
	REM	REM	REM	REM	REM	REM
Ple	0.0010***		0.0007***	0.0001		−0.0000
	(9.68)		(5.29)	(0.33)		(−0.07)
Ins		−0.0053***	−0.0066***		−0.0062***	−0.0067**
		(−9.53)	(−5.61)		(−4.98)	(−2.36)
c.Ple*c.Ins			0.0000*			0.0000
			(1.94)			(0.19)
_cons	−0.0573	0.0257	−0.0151	−0.0003	0.0500	0.0490
	(−0.86)	(0.39)	(−0.23)	(−0.01)	(0.74)	(0.71)
N	4195	4195	4195	872	872	872
adj. R^2	0.061	0.060	0.077	0.139	0.167	0.165
Industry	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES

As shown in Table 5, the samples are divided into state-owned enterprises and non-state-owned enterprises according to property rights for further study. According to the regression results, it can be found that the equity pledge ratio of non-state-owned controlling shareholders and the real earnings management coefficient are still positive and significant at 1% level. However, the sample of state-owned enterprises did not pass the significance test, indicating that the equity pledge ratio of controlling shareholders has a greater impact on real earnings management in non-state-owned listed companies, while it has almost no impact in state-owned enterprises.

As shown in Table 6, institutional investors in the market have different assets and liabilities, different sources of funds, different investment concepts and strategies, and different market influences. Among them, the regression results of QFII and Broker are different from the theoretical analysis. The empirical results show that QFII and Broker also accelerate the adjustment of real earnings management to a certain extent, especially QFII plays a significant role in promoting it. Among them, Fund has the most significant inhibiting effect, which may be because compared with other investors in the stock market, Fund institutional investors hold a larger proportion of shares and are more capable of participating in corporate governance.

The controlling shareholder's equity pledge to its holding (Ple) is replaced by the controlling shareholder's equity pledge to the company's total shares (Pleratio).

By changing alternative explanatory variables, it can be seen from the above table that the pledge ratio is significantly positively correlated with earnings management, while the shareholding of institutional investors is significantly negatively correlated with earnings management, and the interaction between the two has little influence. It can be found that hypotheses 1, 2, and 3 can all be tested for consistency, indicating that the previous empirical results are robust and reliable.

TABLE 6. Multiple regression analysis of different types of long-term holding institutional investors

	(1) REM	(2) REM	(3) REM	(4) REM	(5) REM
Ins	−0.0030***				
	(−5.92)				
Fund		−0.0037***			
		(−6.32)			
QFII			0.0035***		
			(2.68)		
Broker				0.0023	
				(1.47)	
SSF					−0.0044
					(−1.20)
_cons	−0.0090	−0.0010	0.2789*	−0.0385	0.1088
	(−0.17)	(−0.02)	(1.90)	(−0.41)	(0.97)
N	5067	5067	5067	5067	5067
adj. R^2	0.170	0.173	0.296	0.183	0.323
Industry	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES

TABLE 7. Multiple regression analysis after variable substitution

	(1) REM	(2) REM	(3) REM
Pleratio	0.0006***		0.0006***
	(5.11)		(4.54)
Ins		−0.0027***	−0.0027***
		(−7.21)	(−7.63)
Pleratio*Ins			−0.0000**
			(−2.50)
_cons	−0.0936***	−0.0759***	−0.0817***
	(−3.35)	(−2.72)	(−2.93)
N	5067	5067	5067
adj. R^2	0.185	0.188	0.189
Industry	YES	YES	YES
Year	YES	YES	YES

5. **Conclusions.** This paper takes China's A-share listed companies from 2015 to 2020 as the research sample. Through empirical analysis and research, it is found that with the increase of equity pledge ratio of controlling shareholders, the real earnings management level of the company is significantly improved, the shareholding ratio of institutional investors is increased, and the real earnings management level of the company is decreased. However, institutional investors' shareholding has no significant inhibiting effect on the real earnings management caused by equity pledge of controlling shareholders. At the same time, the study also demonstrates that the equity pledge of non-state-owned enterprises has a more significant impact on real earnings management, possibly because the management of state-owned enterprises will be subject to more supervision. Finally, the empirical analysis shows that Fund and Social Security Fund (SSF) have a more significant inhibiting effect on corporate real earnings management among long-term holding institutional investors. Disadvantages of this paper: ST and ST* are excluded from the empirical

analysis in this paper, but from the practical situation, most listed companies with financial difficulties are more inclined to implement equity pledge and earnings management, so the following research can take ST and ST* companies as the main research objects. In addition, the measurement methods of real earnings management are diversified, and only mainstream measurement methods are adopted in this paper. Therefore, various measurement methods of real earnings management can be studied in the model design in the following papers. Through empirical analysis, this paper puts forward the following two suggestions. First, non-state-owned enterprises should strengthen supervision, pay attention to the importance of shareholders' ability, and improve the comprehensive ability of management. It is of great significance for regulators to regulate the announcement information of shareholders' equity pledge. Second, according to different investment motivations and needs of investors, make relevant policy to maintain the order of financial markets, for investors, also want to improve their understanding of the capital market, to distinguish whether the controlling shareholder value management behavior is real and effective.

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