

Relationship between Earnings Management and large shareholder in Chinese listed companies

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Abstract. The essay aims to find the relationship between earnings management (including accrual-based earnings management and real earnings management) and the large shareholder. The database of the survey is based on the data of listed companies in China between 2014 and 2018. The relationship will be found by testing the moderate effect between the large shareholder and the degree of real earnings management and accrual-based earnings management in the enterprises in the database. The study can help us have a better understanding of the manipulation of accrual-based and real earnings management among listed companies with the shareholder concentration degree and its economic consequences. It can also help users of accounting information and external benefits stakeholders have a better understanding of the financial information of listed companies.

Keywords: earnings management, real earnings management, accrual-based earnings management, large shareholder, listed company.

1. Introduction

Inherent conflicts of interest persist between shareholders and management, and additional complexities emerge from shareholder disputes, especially when large shareholders dominate and shares are divided. Since the development of the Chinese security market is increasingly developing, corporate governance is becoming more and more important. The structure of the shareholder is becoming more valuable to study. The essay aims to find the influence of the structure of large shareholders on accrual-based earnings management and real earnings management. The data on paper depends on the information of listed companies in China between 2014 and 2018, which excludes financial companies. Also, ST and *ST companies are not included. The performance-matched modified cross-sectional Jones model, which is the best measurement of companies' degree of accrual-based earnings management, And the Roy-Chowdhury analysis model is the way to estimate real earnings management. Then regression is used to measure the relationship between them and the large shareholder degree. The research may find relationships between the specific large shareholder degree and the market condition of accrual-based earnings management and real earnings management in Chinese listed companies. It can also provide a better understanding of the real situation of corporate government in the current Chinese market.

2. Literature Review

2.1 Earnings management

For firms, the primary goal often centers on maximizing shareholder value by acquiring assets through equity capital and debt. To achieve this, firms are motivated to present positive earnings growth in order to meet or exceed expectations, thus avoiding disappointing forecasters and investors (Degeorge et al. 1999).

Earnings manipulation can be controlled by people through cash flow manipulation, which operates through two methods: operational adjustments and accruals. Dechow and Skinner (2000) contend that accrual-based earnings management involves individuals using different accounting standard policies to obscure the true operational state of the company. Within the process of constructing enterprise accounting information, GAAP rules provide individuals with the discretion

to selectively apply accounting policies. This discretion allows managers to make judgments regarding which rules and figures to utilize when creating enterprise accounting data and preparing financial statements.

The choice of various accounting judgement and accounting policies may cause totally various results in accounting in the companies. Because of this, corporate managers can have space to control and change the reporting profits. The most used ways by the companies in accrual-based earnings management is to change the depreciation periods or to change the methods of fixed assets. Also, they can change the accounting policies for asset impairment provisions and deferred bad debt charges, and change the revenue fee recognition conditions, or use timely amortization of expenses to smooth profits, capitalize research and development expenses and so on.

In the research of Roy-chowdhury in 2006, the real manipulations was been focused on more. He defines this kind of activity as the moving which are deviate from normal business practices. The usage of this manipulation aims at misleading some of the stakeholders and the public to trust that their management can come to a good end (having benefits and make the company grow) when they are still using the normal operations.

To tell about the economic results in the real earnings management, the views in value impairment and signal transmission are two kinds of viewpoints. Value impairment view argues that real earnings management can hurt the financial performance in future and hurt the final company value of the company (Cohen and Zarowin, 2010; Francis et al., 2011; Zang, 2012). The signal transmission view holds that real earnings management can facilitate achievement of the firm's surplus objectives and thus signal to the market the future prospect of the enterprise (Gunny, 2010). The essence of real earnings management is to alter the firm's normal business decisions to get the company's surplus target. So, for information users, they are harmful.

2.2 Large shareholder control

Economic factors. Grossman and Hart (1988) found that the existence of control earnings is the primary economic motivation for the emergence of large shareholders. Earnings from control refers to the sum of all values obtained by controlling shareholders through the possession and use of control rights. Under the condition of marketization, when the return of control exceeds the interest of diversification of investment, it is inevitable that ownership concentration and investors become the large shareholders of the company. Large shareholders have an incentive to obtain control private benefit that small shareholders cannot share.

Legal factors. In addition to the economic reasons at the micro level, the emergence of equity concentration and large shareholders is go hand in hand to the of the protection for investors by the laws of a country at the macro level. La Porta et al. (2000) found that in countries with less investor protection, some seek to become large shareholders, leading to increased share concentration. Civil law systems provide weaker safeguards for small investors compared to common law systems.

Large shareholder control gives rise to two theories: entrenchment defense and benefit synergy. Large shareholders may prioritize personal gains over small shareholders and the firm, causing tunneling. However, they also have incentives to monitor management and enhance company value, creating benefit synergy.

For listed companies, the effects of large shareholder actions under specific institutional conditions are complex. Corporate performance generally improves with greater equity concentration, and large shareholders enhance corporate governance. The impact on corporate value varies, showing linear, u-shaped, or even n-type patterns in different contexts.

2.3 Large shareholders and Earnings management

Large shareholders have absolute control because of their high shareholding ratio. They usually control the company with a smaller cash flow right. The large shareholders in the dominant position usually expect to safeguard their own interests while maximizing the control of the income, so the listed enterprises in the command of the big shareholders have a strong driving force to implement

earnings management. When the proportion of shareholding of the controlling shareholders is going upward, their voice at the shareholders' meeting is further consolidated, and the more the control ability of the companies will lead to the companies to use surplus manipulation and increase the reported surplus.

Ways to measure accrued earnings management. The existing research shows that the revised Jones model of annual industry regression performs better than other types of Jones model in the setting of model setting and the ability of testing the earnings management. Therefore, the revised Jones model is being used to carry out the annual sub-industry regression of the sample data to estimate the model parameters. On this basis, according to the estimated parameters, the non-manipulative accrual profit and manipulative accrual profit of listed companies are calculated according to the estimated parameters, and the manipulative accrual profit stakes are being used as to measure variables for the corresponding earnings management.

Ways to measure real earnings management. According to Roy-chowdhury, real-life manipulation includes sales manipulation, production manipulation and cost manipulation. The basic idea of the real earnings management control estimation model established by Roy-chowdhury is that, although the abnormal real surplus manipulation activities have increased the reported surplus, thus achieving the purpose of the increased surplus, the cost of research and development, publicity and sales, also, staff training were reduced. The cost level of unit assets will be lower than normal. To meet the requirements of production control, the firm will add raw materials and labor input so that the current production costs are higher than normal levels. However, as long as the marginal return is positive, sales will be increased by abnormal price discounts or loose credit conditions, and the surplus will increase, but the net operating cash flow from actual unit sales is decreasing. If the company uses sales manipulation or expense manipulation, the company's actual net cash flow will be higher than normal.

3. Methodology

3.1 Sample

The database of the survey depends on the information of listed companies in China between year 2014-2018. 11200 samples came from 2240 listed companies are used in the research.

It excludes the data of financial enterprises, because there are great differences between financial enterprises and general enterprises in operation and asset structure

Also exclude the ST and * ST company data. Because of the abnormal financial situation and other reasons, the companies whose risk warning is carried out tend to have strong instability in their operating conditions, and the sustainability of their operations may be affected. So the relevant data are excluded.

Finally, those who are not totally existed as listed companies between 2013-2018 are excluded. We adjust the financial information between the beginning of 2014 to the end of 2018.

The data the paper use comes from CSMAR.

3.2 Methods for measuring accrual-based earnings management and real earnings management

Measures of accrual-based earnings management. The existing research shows that the Performance-matched modified cross-sectional Jones model is preferable than other types of Jones models in setting model and ability of testing earnings management. So, in this paper, the Performance-matched modified cross-sectional Jones model is being used to carry out the regression of the sample data to estimate the model parameters.

The specific estimate steps are:

First step: Calculate the total accrued profit

$$T A_t = N I_t - C F O_t \quad (1)$$

TAt is the enterprise's total accrued profit for the t year, NIt is the enterprise's net income for the t year, and CFOt is the net cash flow from the enterprise's operating activities for the t year.

All variables are standardized by dividing the total assets at the end of the t-1 year to eliminate the impact of the enterprise size difference.

Step 2: Calculate the non-manipulative accrued profit

$$NDA_t = \beta_0 + \beta_1 * \frac{1}{A_{t-1}} \beta_2 * \frac{\Delta S_t - \Delta REC_t}{A_{t-1}} + \beta_3 * \frac{PPE_t}{A_{t-1}} + \beta_4 * ROA_t + \varepsilon_t \quad (2)$$

Among them, NDA_t is the company's t-year non-manipulative accrued profit after the end of the t-1 year, the ΔS_t represents the company's Sales increase in the t year, and ΔREC_t represents the company's accounts receivable increase in the t-year; PPE_t represents the company's fixed assets at the end of the t-year; ROA_t represents the company's return on total assets at the end of the t-year; and A_{t-1} is the company's total assets at the end of the t year. All variables are divided by A_{t-1} are designed to eliminate the impact of the size of the company.

(The parameters $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ in the formula (1.2) can be evaluated by the following formula;

$$TA_t = b_0 + b_1 * \frac{1}{A_{t-1}} + b_2 * \frac{\Delta S_t - \Delta REC_t}{A_{t-1}} + b_3 * \frac{PPE_t}{A_{t-1}} + b_4 * ROA_t + \varepsilon_t \quad (3)$$

Among them, b_1, b_2, b_3 and b_4 are estimates of parameter $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$, and ε_t is a random error term.

Step 3, calculate the manipulative accrual profit

The degree of earnings management is represented by the total accrued profit minus the non-manipulatable accrued profit to obtain the manipulative accrual profit. It is calculated as:

$$DA_t = TA_t - NDA_t \quad (4)$$

Among them, DA_t is representing the company's t-year accrual earnings management degree of manipulative accrual profit.

Measures of real earnings management. According to Roy-chowdhury, real activity manipulation includes sales manipulation, production manipulation and cost manipulation. The three control methods can be measured by the net cash flow of abnormal operating activities, abnormal product cost and abnormal discretionary expense.

Based on the practice of Roy-chowdhury, this paper first estimated the normal value of the enterprise's net operating cash flow, production cost and discretionary expenses through regression of the valuation model, and then estimated outliers by minus the normal value with the actual value of these three projects. The normal value estimation model is as follows

$$CFO_t = \beta_0 + \beta_1 * \frac{1}{A_{t-1}} \beta_2 * \frac{S_t}{A_{t-1}} + \beta_3 * \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \quad (5)$$

$$PROD_t = \beta_0 + \beta_1 * \frac{1}{A_{t-1}} \beta_2 * \frac{S_t}{A_{t-1}} + \beta_3 * \frac{\Delta S_t}{A_{t-1}} + \beta_4 * \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (6)$$

$$DISEXP_t = \beta_0 + \beta_1 * \frac{1}{A_{t-1}} \beta_2 * \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (7)$$

The $CFO_t, PROD_t, DISEXP_t$ in the model represents the net operating cash flow, production costs and discretionary expenses of the company in the t year, which are standardized by dividing t-1 year total assets.

The production cost in Model (1.6) is equal to the sum of the operating cost and the cost of inventory changes for the current period. In Model (1. 7), Discretionary expenses are equal to the sum of sales and management costs.

S_t Represents the firm's operating income for the t year, ΔS_t represents the firm's operating income change for the t year, and ΔS_{t-1} represents the firm's operating income change for the $t-1$ year.

The least square method was used to estimate models (1.5), (1.6) and (1.7) respectively, and the value of regression coefficient in the model was obtained. Residual item ε_t represents the firm's abnormal net operating cash flow, abnormal production costs and abnormal discretionary expenses in year t .

Considering that the relevant companies may use these three ways at the same time as the real earnings management, in addition, the paper study the comprehensive impact of real earnings management on operating performance, set the aggregate index of real earnings management to measure the comprehensive degree of real earnings management

Real earnings management indicators are as follows:

$$REM_t = (-1) * AB - CFO_t + AB_PROD_t + (-1) * AB_DISEXP_t \quad (8)$$

Among them, REM_t represents the degree of real earnings management of the enterprise, the more absolute value of REM_t indicates that the enterprise is more likely to manage real earnings, $AB - CFO_t$ indicates the abnormal operating net cash flow, AB_PROD_t represents abnormal production costs, AB_DISEXP_t indicates abnormal discretionary expenses.

3.3 Hypothesis

Hypothesis 1. Large shareholders sometimes infringe on the benefit of small shareholders. The degree of this will change with the change of ownership structure. The confiscation hypothesis of small shareholders emphasizes the information asymmetry between big shareholders and small shareholders holds that with the increase of the proportion of large shareholders. Companies tend to damage the wealth of small shareholders which will not decrease the whole wealth of the company. The assumption applies to earnings management based on accrued profits. Large shareholders can use discretion in accruals, exaggerate short-term performance, distort information and deceive small shareholders to change the financial report and damage the benefit of small shareholders to earn their own profit. So the larger the large shareholder is, the more they can control the company and damage other's profit.

Therefore, the hypothesis of this study is presented in the form as follows:

H1: Companies with higher proportions of large shareholder ownership are associated with higher accrual-based earnings management

Hypothesis 2. With the regard to actual earnings management, though It is thought unreasonable to allow actual manipulation to improve NI in the current period for most shareholder. The manipulation will finally hurt their own interests. But for the listed companies, they have pressure to maintain the financial report and good public image. So they may also control the net operating cash flow, Production Costs and discretionary expense to hurt small shareholders. Therefore, the larger the shareholder is, the more he want to keep the reputation and good image. When the proportion of ownership held by large shareholders is high, the actual earnings management is expected to increase. Therefore, the second hypothesis of this study is presented in another form, as follows:

H2: Companies with higher proportions of large shareholder ownership are associated with higher real earnings management.

3.4 Variables

3.4.1 Dependent variables

(a) DA (Accrual-based Profit Manipulation Degree)

Through research on many literatures, it is found that many scholars measure the accrued earnings management through the modified Jones cross-section model, and the modified Jones model is recognized as the best method for estimating earnings management in many models. As an result, this

paper uses this model to measure the accrued earnings management. The main principle of the model is to calculate the uncontrollable part of the accrued surplus project, and then calculate the amount of the controllable accruals by subtracting the uncontrollable part from the total amount of the accrued items. It is the degree of accrued earnings management. The way of calculation is shown before

(b) REM (Real Earnings Management Degree)

The study of Roy-chowdhury (2006) shows that in order to achieve company performance and avoid losses, the company will adopt measures such as expanding sales discounts, expanding production scale, and reducing current expenses to control the company's surplus. Therefore, this paper draws on Roy-chowdhury's research method to measure the real earnings management of the company from three aspects: sales control, production control and cost control. This paper test these three variables with AB-PROD, AB-CFO and AB-DISEXP. REM represents the total effects of these three manipulations.

(c) AB-PROD (Abnormal Production Cost Manipulation Degree)

The production control is that the listed company's managers use the principle of scale effect to expand the production volume and reduce the unit fixed cost, so that the profit per unit increases. However, if the company does not investigate the market, does not predict the future sales trend of the product, but simply pursues the current profit, it will undoubtedly increase the company's operating risk. When the company's products are seriously unsalable, it may cause the company to fall into a desperate situation. AB-PROD calculates the Abnormal Production Cost Manipulation Degree in the company.

(d) AB-CFO (Abnormal net Operating Cash Flow Manipulation Degree)

The main means for the operators of listed companies to control through sales is to expand sales by expanding sales discounts or extending the collection period when selling to customers. This will increase the company's revenue and profit growth. However, this practice leads to a reduction in unit cost profit and increases the risk of bad debts. AB-CFO calculates the Abnormal net Operating Cash Flow Manipulation Degree in the company.

(e) AB-DISEXP (Abnormal discretionary expense Manipulation Degree)

The cost control refers to the company's adjustment of research and development expenditures, advertising fees, sales expenses, management fees, etc. to adjust the current profit. At present, all companies are looking for globalization through the change of the whole environment. They all hope to find a way out through change. Then the company must find its own market position through innovation and increase R&D investment. However, if the company's managers significantly reduce R&D expenditures or advertising expenditures in order to realize current profits, the company will not have enough funds to innovate. In the long run, the company will also be eliminated. AB-DISEXP calculates the abnormal discretionary expense Manipulation Degree in the company.

3.4.2 Independent variable

TOP_P (Shareholding Proportion of the First Large Shareholder) Large shareholder can control more about and do more decisions without the knowing and agreement of the minor shareholders. When controlling the company, they tend to do some earnings management, which includes the accrual-based earnings management and real earnings management, to change the financial reports to mislead the users and win more profit for themselves. So we would like to explore the relationships between the large shareholder and the earnings management to see whether it effects and how it effects. We measure the independent variable with number of shares held by the largest shareholder/total number of shares held at the end of the year.

3.4.3 Control variables

(a) SIZE (Company size)

Whether the size of the company will increase the earnings management behavior or reduce the current conclusion has not yet been exactly reached, but it still affects the earnings management. Generally speaking, when the company is large in scale, the company will have strict internal

supervision and a relatively complete corporate governance structure. It has internal auditors and plays the supervisory role of the prosecutor in the company's operation. At the same time, the company's larger listed companies generally hire the four large accounting firms to audit the company's annual financial statements, making the company's financial statements more credible. Investors can get more effective information to invest and achieve efficient use of resources.

(b)LEV (Asset-liability ratio)

When the level of the company's debt is too high, the company's solvency will increase. Creditors consider that the risk of borrowing may require the company to pay off the debt in advance or require the debtor to guarantee it to protect its own interests. These restrictive clauses increase the cost of financing for the business. At the same time, when the company's asset-liability ratio reaches a certain dangerous value, it may cause the company's operation to be in crisis. Even if the company does not face a financial crisis, creditors and investors will subjectively believe that the company has a financial crisis and invest in the company. It will be carefully considered, which greatly increases the financing difficulties and financing costs. In order to avoid the above behavior, the company has great motivation to manage earnings. So, Asset-liability ratio will affect the earnings management in some degree.

(c)ROE (Return on total equity)

The profitability that reflects the shareholders' equity is calculated by net profit/shareholders' equity. The profit level is the source of a company's existence and growth. The more surplus profits, the better the future performance of the listed company. If the companies have worth performance, they may have more chances tend to management the earnings to maintain their reputation or to maintain the status on stock markets.

(d)GROWTH (Corporate Growth)

The indicators for measuring the growth rate of current business income are as follows:

(current business income- last-stage operating income) / last-stage operating income

The company's strong growth ability indicates that the company's profitability and development prospects are good, and its future business performance will be better. The better growth the companies have, the less chances they will try to use abnormal ways to control the companies.

(e)ZZ (Capital turnover)

To know about the efficiency of companies' asset operation, Capital turnover can be a kind of useful indicator. This indicator shows the flow rate of all assets from the input to the output during in companies' operation period, showing the asset's management quality and their utilization efficiency. It can reflect the operational efficiency and change of the total assets of the enterprise in current year and the previous year, indicating that the faster the total asset turnover of the firm, the better the sales ability and the better the asset utilization efficiency. If the company have the satisfied ways on the sales themselves, we expect them will control less operating cash flow to effect the sales.

3.5 Model

To study the influence of Large shareholders on real earnings management and accrual-based earnings management, based on the research hypothesis, the following model is constructed.

$$DA=\alpha_0+\alpha_1TOP_P+\alpha_2SIZE+\alpha_3LEV+\alpha_4ROE+\alpha_5GROWTH+\alpha_6ZZ \quad (9)$$

$$REM= \alpha_0+\alpha_1TOP_P+\alpha_2SIZE+\alpha_3LEV+\alpha_4ROE+\alpha_5GROWTH+\alpha_6ZZ \quad (10)$$

$$AB-PROD= \alpha_0+\alpha_1TOP_P+\alpha_2SIZE+\alpha_3LEV+\alpha_4ROE+\alpha_5GROWTH+\alpha_6ZZ \quad (11)$$

$$AB-CFO= \alpha_0+\alpha_1TOP_P+\alpha_2SIZE+\alpha_3LEV+\alpha_4ROE+\alpha_5GROWTH+\alpha_6ZZ \quad (12)$$

$$AB-DISEXP= \alpha_0+\alpha_1TOP_P+\alpha_2SIZE+\alpha_3LEV+\alpha_4ROE+\alpha_5GROWTH+\alpha_6ZZ \quad (13)$$

The model 1 aims to test hypothesis 1, which is firms with higher ratios of shares of large shareholders are associated with higher accrual-based earnings management.

Model 2-5 aim to test hypothesis 2, which is firms with higher ratios of shares of large shareholders are associated with higher real earnings management.

4. Results & analysis

4.1 Descriptive statistical analysis

Table 1 Descriptive statistical analysis

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
AB-CFO	0.000513	-0.081806	50.31764	-6.258048	1.005213	11200
AB-DISEXP	0.000544	-0.144891	32.74991	-1.412018	0.997704	11200
AB-PROD	0.000882	-0.11541	42.13726	-7.623555	1.004728	11200
DA	-0.001051	-0.002567	6.995896	-6.613218	0.219901	11200
DA+	0.09238	0.049383	19.32456	0.0000186	0.340332	5441
DA-	-0.087279	-0.050676	-5.8E-06	-6.613218	0.200702	5759
DA	0.089757	0.050034	19.32456	0.0000058	0.277454	11200
GROWTH	7.209338	1.089521	19846.58	0.14564	246.9851	11200
LEV	0.380541	0.366136	3.261896	0.13473	0.218638	11200
REM	-0.000175	0.108638	17.54478	-55.60322	1.182109	11200
REM	0.24588	0.126566	55.60322	4.89E-06	1.153509	11200
ROE	0.046062	0.058431	34.18592	-53.22524	0.87011	11200
SIZE	22.22268	22.068	28.25083	14.13347	1.232634	11200
TOP_P	0.335048	0.3125	0.8999	0.0029	0.147684	11200
ZZ	0.730587	0.487567	198.367	0.2587	2.268696	11200

This paper uses Eviews to make descriptive statistics of all large continuous variables.

From table 1, it can be seen that |DA|, which represents accrual-based earnings management, has an average value of 0.089757, while REM, which is a total indicator of real earnings management, has an average value of 0.24588, indicating that there are earnings management activities in the overall sample and shows obvious signs of earnings management. Moreover, the degree of real earnings management was higher than those of accrual earnings management in the selected sample companies.

DA+ represents enterprises with positive accrual earnings management, which manipulate the increase in profits in the current period to show better earnings. Among 11200 samples, 5441 of them, nearly half of them, have the mean of 0.09238. DA- represents negative accrual earnings management firms that manipulate earnings reduction during the current period. These are 5,759 out of 11,200 samples, slightly more than positive accrual earnings management, and their mean is -0.087279.

In addition, the mean values of AB-CFO, AB-DISEXP and AB-PROD were 0.000513, 0.000544 and 0.000544, respectively, with the median value of -0.081806, -0.144891 and -0.11541, indicating that the real earnings management of the overall sample was obvious. Among the three real earnings management activities, the Manipulation Degree of abnormal Production Costs is the largest, and the Manipulation Degree of abnormal net operating cash flow is the smallest. This phenomenon shows that the sample companies tend to increase the surplus through production manipulation most, such as controlling the current production volume, and less use abnormal price discount or abnormal credit relaxation to control the company's current surplus

4.2 Correlation analysis

Table 2 lists the correlation coefficient matrix of the main variables. As is shown, the phases between the main explanatory variables. The relation number is very small, less than 0.5, which indicates that the multicollinearity between the large explanatory variables is small. Among them, the

proportion of large shareholder control is significantly positively correlated with real earnings management comprehensive data, three kinds of real earnings management activities and accrual earnings management. It can be inferred that large shareholder control has positive effects on real earnings management and accrual earnings management.

In addition, the comprehensive value of company size and real earnings management, AB-CFO, AB-PROD and AB-DISEXP are all significantly correlated and highly correlated. It can be speculated that compared with other variables, company size has a strong influence on all values of real earnings management

The correlation between accrual earnings management variables and related variables is not significant and the model is likely to be invalid.

Table 2 Correlation analysis

	REM	AB-CFO	AB-PROD	AB-DISEXP	DA	TOP	SIZE	LEV	ROE	GROWTH	ZZ
REM	1										
AB-CFO	0.864**	1									
AB-PROD	0.603**	0.632**	1								
AB-DISEXP	0.776**	0.702**	0.875**	1							
DA	0.0123	0.0065	0.0013	0.0057	1						
TOP	0.125**	0.129**	0.142**	0.137**	0.0018*	1					
SIZE	0.297**	0.238**	0.318**	0.348**	-0.0020	0.256**	1				
LEV	0.051**	0.0164	0.062**	0.045**	-0.0060**	0.042**	0.376**	1			
ROE	0.0125	0.0087	0.0128	0.0182	0.0018*	0.029**	0.037**	-0.047**	1		
GROWTH	0.0118	0.0079	0.0021	0.0052	-0.0021	0.021*	0.0077	-0.0130	0.0008	1	
ZZ	0.050**	0.019*	0.085**	0.075**	0.0012*	0.032**	-0.0106	-0.021*	0.031**	0.022*	1

4.3 Multivariate regression analysis

Table 3 Multivariate regression analysis

	REM	AB-CFO	AB-PROD	AB-DISEXP	DA
Intercept	-6.22758*** (-31.532)	-4.5538*** (-26.166)	-5.9493*** (-35.101)	-6.68252*** (0.167)	0.092746* (1.855)
TOP	0.365402*** (5.023)	0.455307*** (7.103)	0.394309*** (6.316)	0.29044*** (0.062)	0.03896* (0.212)
SIZE	0.290934*** (30.976)	0.204096*** (24.661)	0.265401*** (32.927)	0.302708*** (0.008)	-0.007 (-0.029)
LEV	-0.35103*** (-6.858)	-0.3691*** (-8.184)	-0.28445*** (-6.476)	-0.43764*** (0.043)	-0.0748** (-0.577)
ROE	-0.0068 (-0.566)	-0.008 (-0.757)	-0.00766 (-0.744)	-0.00438 (0.01)	0.0454* (0.15)
GROWTH	0.00003*** (0.718)	0.000013*** (0.338)	-1.8E-05*** (-0.492)	-6E-06*** (0)	-3E-06 (-0.242)
ZZ	0.025898*** (5.639)	0.008072** (1.995)	0.037863*** (9.607)	0.033658*** (0.004)	0.000129 (0.111)
F	201.714	135.3418	243.9689	296.189	228.654
Adj-R ²	0.097094	0.067143	0.11518	0.136555	0.10962
N	11200	11200	11200	11200	11200

Table 3 lists the result of multivariate regression analysis. In order to verify the hypothesis, OLS regression was carried out for models 1-5 in the paper. The results of the multiple regression show that the control power of large shareholders is positively correlated with the absolute value of real earnings management variable, which means that when other conditions are certain, the more shares the largest shareholder have, the more the control power of large shareholders is, and the absolute number of real earnings management index goes upward respectively.

The control power of big shareholders is positively correlated with the absolute number of real earnings management, which is having a positive influence on the operating range of real earnings, which indicates that with the enhancement of the control degree of large shareholders, companies are more and more be inclined to manage to increase real earnings management.

According to different ways to realize real earnings management, the real earnings management can be divided into three categories: real earnings management that manipulates cash flow, real earnings management that manipulates production costs, and real earnings management that manipulates discretionary expenses. In order to analyze the influence of large shareholder control on real earnings management in a more comprehensive and in-depth way, the absolute value of abnormal cash flow, abnormal production cost and abnormal controllable expenses were regressed respectively with large shareholder control.

Regression results show that the significance level controlled by large shareholders is significantly positively correlated with the real earnings management of manipulating cash flow, manipulating production costs and manipulating controllable expenses, which are 0.455307, 0.394309 and 0.29044, respectively. This shows that, with the increase of the shareholding ratio of the largest shareholder, listed companies under the control of the largest shareholder are more inclined to adopt the real earnings management mode of controlling the cash flow and production more concealed than controlling the controllable expenses and production costs.

LEV has a significant negative correlation with real earnings management, indicating that the more debt a company has, the more likely it is not to conduct real earnings management. Although ROE, GROWTH and ZZ of an enterprise are significantly correlated, the regression coefficient is very small, which indicates that they have less influence on the manipulation degree of the company's real earnings management than the proportion of large shareholders, the asset-liability ratio and the enterprise scale.

For the degree of manipulation of accrual earnings management, the influence degree of ownership proportion on it is 0.03896, which is significantly positive correlation with 10% confidence. This means that the higher the proportion of shares held by the major shareholders, the more likely the shareholders are to use their rights to control the enterprise for accrual earnings management.

However, the impact of the proportion of shareholders' equity on real earnings management is far greater than that of accrual earnings management, which shows that the larger the proportion of shareholders' equity in Chinese listed companies, the more likely they are to use real earnings management to control enterprises.

5. Conclusions and recommendations

5.1 Conclusions

In this study, we utilized a database comprising information from listed companies in China for the years 2014-2018, incorporating 11,200 samples from 2,240 listed companies. The key conclusions are as follows:

Large shareholder control will aggravate the level of real earnings management of listed companies. According to the empirical results, when other conditions are certain, there is a significant positive correlation between the control variable of large shareholders and the relevant variable of real earnings management, indicating that the stronger the control variable of large shareholders, the higher the degree of real earnings management of listed companies.

To study the issue, this paper deal with the exception of cash flow, large shareholder control production as well as the abnormal cost and do the regression. It is found that the large shareholder control and manipulation of cash flow, control of cost and control production cost of real earnings management are all positively related. Compared to handling charge and control the production cost, large shareholders under the control of listed companies are more likely to take more concealed to control cash flow and the production to reach real earnings management.

Therefore, with the enhancement of the control power of large shareholders, listed companies are more likely to choose to implement the real earnings management with less risks and stronger concealment in order to maximize the acquisition of control benefits.

With the reform of non-tradable shares and the continuous development of the financial market, the interests of large shareholders are increasingly closely linked with the market value. Therefore, under the control of large shareholders, listed companies are more likely to implement upward real earnings management, to convey good information about the operating conditions and development prospects to the market, and to stimulate the market response to achieve wealth maximization. Therefore, compared with controlling controllable expenses, listed companies under the control of large shareholders are more inclined to adopt the real earnings management mode that manipulates cash flow. In conclusion, the control of large shareholders leads to more real earnings management behaviors.

5.2 Recommendations

Based on the findings, the following recommendations are proposed:

Enhancing Equity Governance. To mitigate the adverse effects of concentrated ownership, there is a need to establish a diversified equity structure. Reducing the absolute control power of major shareholders can facilitate a system of checks and balances, ultimately promoting healthier corporate governance.

Strengthening the Independent Director System. Increasing the number of independent directors and enhancing their independence and expertise is essential. Independent directors should play a more active role in providing objective advice and ensuring sound decision-making processes within the company.

Improving Earnings Quality. Robust internal control measures should be implemented to reduce information asymmetry and enhance the quality of accounting earnings. A company with sound internal control is better positioned to provide accurate and complete financial information.

Enhancing Internal and External Audit. Strengthening the independence of audit institutions is crucial. This can be achieved by improving audit standards, increasing auditor independence, and enhancing the professional ethics and skills of auditors. Legal supervision of audit firms should also be intensified to deter violations of professional standards.

Promoting the Development of Institutional Investors. Building a well-regulated market and legal framework is essential for the healthy development of institutional investors. Implementing a rigorous exit approval mechanism can help curb excessive turnover and earnings manipulation, contributing to the stability of the capital market.

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