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Article

Multiple large shareholders, earnings management, and operating risk: Empirical evidence from China

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Abstract: This study uses the annual financial data of Chinese A-share listed firms from 2010 to 2020 to investigate the relationship between multiple large shareholders (MLS) and earnings management (EM). After analyzing the samples using the Ordinary Least Squares (OLS) model and endogenous switching regression (ESR) model, the empirical results show that the presence of MLS can increase corporate EM activities and the MLS have a significantly positive effect on EM in both the treatment and control groups. In addition, this conclusion still holds after conducting multiple robustness tests. The cross-section analysis shows that the external audit supervision quality, institutional shareholders, and the uncertainty of the external economic environment have significant impacts on the baseline model results. Lastly, mediation effect analysis shows that the presence of MLS increases the corporate operating risk through EM activities. The conclusions of this paper are critical for policymakers to supervise China's capital market, improve the level of corporate governance of China's listed firms, and further promote reform of ownership structure.

Keywords: multiple large shareholders; earnings management; operating risk; corporate governance; mediation effect analysis

1. Introduction

The rapid economic development in China has not only increased the number of listed firms in China, but also led to two changes in the Chinese securities market. The first change is the increase in the connection of Chinese listed firms with the globe, posing challenges for the governmental agencies in charge of the Chinese listed firms' management and supervision. The second change is the increase in the domestic and foreign institutional and individual investment in Chinese listed firms. Therefore, the shareholding structure of Chinese listed firms has gradually changed from the single large shareholder (SLS) with absolute control to multiple large shareholders (MLS) (In the context of China, firms with two or more shareholders holding more than 10% of the shares are considered to have multiple large shareholders (MLS). A more detailed discussion will be provided in the variable definition section.).

Currently, the increase of the transactions and expansion of the business scope have complicated earnings management (EM) of the Chinese listed firms, which is one of the reasons for the difficulty of supervision by the regulatory authorities and abnormal fluctuation of these firms' stock prices. Earnings management (EM) is essentially a behavior that the accounting disclosure entity controls and adjusts the accounting information under the framework of accounting standards to maximize its interests. Generally speaking, EM reduces the credibility of accounting information

and the readability of financial reports, leading to information asymmetry between listed firms and external investors. Previous studies show two types of EM behaviors: accrual-based EM (Dhaliwal and Wang, 1992) and real EM (Healy and Wahlen, 1999). Accrual-based EM mainly uses biased accounting estimates and policies to achieve the purpose of manipulating a firm's profits. For example, firms can manipulate profit using items such as asset impairment provision, fixed asset depreciation, and working capital. On the contrary, real EM is to achieve the purpose of profit manipulation by controlling the firm's real transaction activities. For example, the firm can achieve the real EM by suddenly changing the product output or input, selling price of products, and advertising expenditure. Some studies also include stock repurchase and adjustment of R&D expenditure as real EM (Bens et al., 2002). The EM behaviors of Chinese listed firms have gradually changed from accrual-based EM into real EM due to converging the Chinese and foreign accounting standards and strengthening the China Securities Regulatory Commission's supervision of listed firms' accounting policies and the choice of estimates. Compared to accrual-based EM, real EM relies on real transaction activities, which is not only more concealed, but also more harmful to the corporate business development (Roychowdhury, 2006).

The existing cases demonstrate the universality and harmfulness of EM in the Chinese securities and capital market. In 2016, Muddy Waters Research, a well-known short-seller, revealed that Huishan Group, a well-known Chinese dairy firm, faked profit growth through cost manipulation and fictitious sources of raw materials. Once the news was confirmed, Huishan Dairy's stock price plummeted by 90% immediately. In 2020, Zhangzidao Island (ZONECO group), a Chinese listed firm, repeatedly used the accounting item of inventory impairment for earnings manipulation, extremely and negatively affecting the Chinese capital market and severely punished by the Chinese regulatory authorities.

The characteristics of ownership structure are an important part of corporate governance. Existing literature studies have shown that ownership structure not only has a significant impact on corporate operation and financing decisions (Boateng and Huang, 2017; Cao et al., 2019), but also has a significant impact on internal principal-agency issues and external stakeholders' judgments on the firm (Adelopo et al., 2012; McGuire et al., 2014). In addition, with the increasing status of the Chinese economy in the world economy, the increase of equity trading in the Chinese securities and capital market and the transformation of the ownership structure of listed firms, more and more researchers are paying attention to the relationship between ownership structure and corporate governance in the Chinese capital market. However, existing research literature has not yet reached a consensus on the advantages and disadvantages of centralized and decentralized ownership structures in the Chinese capital market. Some research literature suggests that a decentralized ownership structure is more beneficial for the governance of listed firms, because it brings better internal supervision and suppresses aggressive financial behavior (Jiang et al., 2018; Ouyang et al., 2020). On the contrary, some literature suggests that a centralized ownership structure is more optimal, as a decentralized ownership structure weakens shareholder oversight of management (Fang et al., 2018). In addition, some research literature suggests that further research is needed on this

relationship, as it may be non-linear (Richardson et al., 2016).

Based on the widespread existence of earnings management in the Chinese securities capital market and the lack of consensus in existing literature on the relationship between ownership structure and corporate governance, using Chinese data to test the relationship between corporate ownership structure and EM and the economic consequences caused by EM in corporate operations have corresponding theoretical significance and practical value. Therefore, in order to comprehensively examine the role of ownership structure in corporate governance, this study investigates its effect on the reliability of the corporate financial statement from the perspective of the Chinese listed firms' ownership structure. Using the annual financial data of Chinese A-share listed firms from 2010 to 2020, the empirical studies show that MLS increase EM behaviors. The results of the endogenous switching model also show that the MLS have a significantly positive effect on the corporate EM in all groups. Moreover, this finding still holds after several robustness tests. The further study shows that intense external audit supervision and a high shareholding ratio of institutional investors can inhibit EM behaviors caused by MLS. In addition, our results show that the possibility of EM behaviors decreases in the case of great uncertainty in the external economic environment. Lastly, mediation effect analysis shows that the increase in EM caused by the MLS increases corporate operating risks and affects its development to a certain extent.

This study has the following research contributions. Firstly, this research expands the research on ownership structure. The empirical conclusion of this article shows that MLS significantly increase the corporate earnings management behavior. This article does not support the theory of mutual supervision among MLS (Attig et al., 2009; Bennedsen and Wolfenzon, 2000); On the contrary, our conclusion provides empirical evidence for the negative impact of MLS on corporate governance and potential collusion among shareholders (Gomes and Novaes, 2005; Maury and Pajuste, 2005). Secondly, the research in this article expands the research related to earnings management. Previous studies have more focus on the mechanisms through which ownership characteristic variables affect earnings management(Jiang et al., 2020; Vorst, 2016); relatively few studies use earnings management as a mediating variable to explore the impact of ownership characteristic variables on corporate operating situation through earnings management behavior. Our studies use earnings management to link ownership structure with corporate operational risks, confirming the negative impact of real earnings management on corporate operations (Vorst, 2016). Finally, this study promotes the application of the ESR model in research related to corporate governance. Unlike existing literature that solely uses OLS models or treatment effects models, this article analyzes the relationship between ownership structure and earnings management using the endogenous switching regression (ESR) model based on the results of the OLS model (Lokshin and Sajaia, 2004; 2011). This article not only analyzes the net effect of the treatment of "the presence of MLS" on earnings management behavior, but also strengthens the causal relationship argument through counterfactual analysis. This provides a reference for subsequent research on ownership structure and corporate governance.

2. Literature and theoretical hypothesis

Previous studies not only classified EM behaviors, but also analyzed the motivation and economic consequences of EM behaviors in listed firms. Generally speaking, compared to the motivation of cost manipulation, the motivation of listed companies to implement income manipulation is stronger. The reason is that manipulating revenue is more intuitive in improving corporate performance (Bansal et al., 2023). Specifically, the motivations for EM include the need to meet external expectations for the firm's profit growth, regulatory requirements, and the managers' personal interests (Cohen and Zarowin, 2010; Gunny, 2010). Some studies pointed out that debt covenant is also a key motivation for EM (Trueman and Titman, 1988). As for the economic consequences of EM, some studies concluded that EM increases the cost of equity financing (Kim and Sohn, 2013). From the perspective of debt financing, Ge and Kim (2014) concluded that EM increased the credit spread of the corporate bonds and reduced their credit rating (Ge and Kim, 2014). From the corporate level perspective, Vorst et al. (2016) showed that the EM behaviors reduced the firm's long-term performance, specifically in firms with real EM (Vorst, 2016). However, some studies reached the opposite conclusions. Gunny et al. (2010) argued that EM allows the firm to meet the external expectations for its future operations, improving its reputation and growth in the long-term (Gunny, 2010). Also, Zhao et al. (2010) found that the EM behaviors may not be purely opportunistic, but rather a way to signal future operating conditions. Therefore, EM activities to achieve the predetermined earnings target can improve the corporate future performance (Zhao et al., 2012). In addition, some studies confirmed that EM behaviors reduce R&D efficiency and stock returns (Ahearne et al., 2016; Bereskin et al., 2018).

The research on MLS comes from the changes in ownership structure brought about by the development of listed firms. Many firms have MLS in the capital market of western countries because of the early development of the stock transactions, and many studies have focused on their role in corporate governance (Edmans and Manso, 2011; Laeven and Levine, 2008; Maury and Pajuste, 2005). However, these studies failed to reach a consensus on this issue. Specifically, the main conclusions of existing literature on the MLS can be divided into "supervisory effects" and "tunneling effects". Therefore, this study proposes corresponding competitive hypotheses based on the above two.

This study conducts the theoretical analysis starting from the "supervisory effect". Some studies believed that MLS have a significant and positive impact on the corporate governance of listed firms, and the ownership structure with MLS is ideal for listed firms. An explanation for this impact is that MLS can supervise each other and are capable of strengthening the corporate development compared to the SLS. Existing literature pointed out that compared with the first type of principal-agent problem (the principal-agent problem between the management of a listed firm and the firm's shareholders), the second type of principal-agent problem (the principal-agent problem between the large shareholders and small shareholders of a listed firm) had a greater negative effect on listed firms. This situation is more common in capital markets with high ownership concentration (Shleifer and Vishny,

1997). Therefore, to the outside world, the ownership structure of MLS is a commitment made by the firm's shareholders to external investors. Since large shareholders can supervise and balance each other, this reduces external investors' concerns about the level of corporate governance and the second type of principal-agent problem (Attig et al., 2009). From the perspective of the second type of principal-agent problem, the supervision and balance brought by MLS can suppress EM behavior led by shareholders, thereby reducing the corporate EM level.

Moreover, the ownership structure with MLS not only strengthens the supervision between shareholders, but also strengthens the supervision of shareholders over the firm's management. The existing literature pointed out that MLS can not only supervise each other, but also jointly supervise the management of the firm (Bloch and Hege, 2003). The ownership structure with MLS inhibits the management's excessive power and increases the sensitivity of their compensation to the firm's performance (Volpin, 2002). From the perspective of the first type of principal-agent problem, MLS can strengthen supervision over management, thereby reducing the level of earnings management led by management and ultimately lowering the corporate EM level.

Finally, the improvement of the corporate operational capabilities by MLS can also help reduce the motivation to implement EM. The research pointed out that, based on the information asymmetry between the firm and the outside world and the choice of the firm's financing method, it is the optimal solution to construct the ownership structure with MLS. Since the ownership structure with MLS makes the firm's operating decisions more open by introducing more shareholders, it reduces the degree of information asymmetry and ultimately reduces the firm's financing costs (Eckbo and Masulis, 1992; Pagano and Röell, 1998). In addition, a firm with MLS has a higher investment efficiency and a lower possibility of over-investment than a firm with a single large shareholder due to the mutual supervision among MLS and their own resources. Ultimately, MLS improve a firm's investment efficiency (Jiang et al., 2018). Lin et al. (2016) research drawn a similar conclusion. Its empirical research pointed out that the ownership structure with MLS can enhance the value of the corporate additional cash holdings due to the interaction between MLS. This provides corresponding evidence that the ownership structure with MLS can improve the firm's investment efficiency (Lin et al., 2016). From the perspective of shareholding structure and related transactions, Bennedsen and Wolfenzon (2000) showed the supervisory role of MLS is directly reflected in reducing the intensity of the corporate related transactions (Bennedsen and Wolfenzon, 2000), the corporate available resources have been increased by this way. There is also relevant research literature that points out from the perspective of daily business operations of companies that MLS can play a role in promoting environmental investment, enhancing R&D innovation, etc., confirming the positive role of MLS in promoting corporate development (Wang et al., 2022; Mo, 2021). Therefore, MLS can reduce the motivation to implement EM behavior by strengthening corporate operational capabilities, ultimately lowering the level of EM behavior in the firms.

In summary, MLS may restrict the corporate EM behaviors from two perspectives. Firstly, the mutual supervision mechanism inhibits the EM behaviors

led by certain large shareholders and management for their own interests. Secondly, the ownership structure with MLS enhances the corporate operational capabilities and suppresses their motivation for potential EM behavior. Therefore, this research proposes the following competitive hypothesis 1a:

The MLS enhance the firm's internal supervision and the corporate operational capabilities, this increases the difficulty for firms to implement EM behavior and reduce motivation for firms to implement EM behavior. Ultimately, the presence of MLS reduce the level of EM behavior.

Similarly, this study conducts the theoretical analysis of the relationship between MLS and EM behavior based on "tunneling effects". Several studies showed that the ownership structure with MLS weakens the corporate governance of listed firms. This conclusion is on the basis that MLS may collude with each other or bring supervision chaos. Maury and Pajuste (2005) showed that MLS do not supervise each other but conspire to attain personal interests, thus reducing the corporate value (Maury and Pajuste, 2005). Even if MLS do not collude for personal gain, they may compete for control of the firm (Gomes and Novaes, 2005). There is no doubt that this kind of contention for the control of the firm reduces the decision-making efficiency of the firm's shareholders and increases the coordination cost among the firm's shareholders, making it more difficult for equity owners to reach an agreement. From the perspective of collusion or weakened supervision caused by MLS, the difficulty of implementing EM behavior led by shareholders will decrease, and the corporate EM level will increase.

From the perspective of the relationship between shareholders and management, the ownership structure with MLS can be regarded as a weakening of the supervision of management compared with the SLS. Due to the dispersion of equity, the cost of coordination among shareholders increases and the time to reach an agreement becomes longer. Existing studies used executive compensation to measure executive power, and found that the ownership structure with MLS significantly increased the additional compensation of management. This shows that firm management has more power in a firm with MLS. These results showed MLS may reduce the supervision over the firm's management, exacerbating the first type of principal-agent problem (Chakraborty and Gantchev, 2013; Fang et al., 2018). From the perspective of the first type of principal-agent problem, the coexistence of MLS reduce the supervision of the corporate management, ultimately leading to an increase in the EM behaviors.

Therefore, MLS may increase the firm's EM behaviors from two perspectives. Firstly, the collusion among shareholders and weakened supervision caused by MLS have led to an increase in the EM behavior led by shareholders. Secondly, the coexistence of MLS weakens the supervision of the corporate management, and the EM behavior led by management will also increase.

Based on the above analysis, this research proposes the following hypothesis 1b:

The MLS may weaken the mutual supervision among the shareholders and weaken the supervision over management, this reduces the difficulty for firms to implement EM behavior. Ultimately, the presence of MLS increase the level of EM behavior.

3. Study design

3.1. Data resource and research structure

The samples in this study include the financial statement data of Chinese A-share listed firms from 2010 to 2020. The data were processed as follows: (1) We excluded the financial industry from the research sample because of its special nature. (2) We excluded firms in the ST and PT status. ST firms have abnormal financial and operating conditions, and PT firms are those whose list is suspended. (3) We removed the observations with missing financial data. (4) We winsorized all continuous variables at 1% and 99% levels to reduce the adverse effects of the extreme observation in financial data on the empirical results and research conclusions. Lastly, we obtain 21,323 observations for 3151 firms. The financial data in this study are from the Chinese Research Data Services and the Wind database. The two databases are commonly used to study the governance of Chinese listed firms. They provide both financial data at the firm level and China's macroeconomic data at the national level. The empirical tool used in this study is Stata 16.

The research structure of this study is following: Firstly, making corresponding research hypotheses based on the background and literature review (Chapters 1 to 2 of the article). Secondly, using OLS and ESR models to test the corresponding research hypotheses and explain the model results (Chapters 3 to 4 of the article). Once again, conducting a robustness test on the empirical conclusions (Chapter 5 of the article). Finally, on the basis of further research, this study investigated the economic consequences of MLS through EM behavior and linked ownership structure with operational risk (Chapter 6 of the article).

3.2. Variable definitions

EM behaviors have two categories: accrual-based EM and real EM. With the continuous improvement of China's accounting standards and the convergence with major accounting standards in the world, the space gradually narrows for Chinese listed firms to carry out accrual-based EM, and real EM has become the main method of EM. Therefore, this study uses indicators related to the real EM in the baseline model and accrual-based EM in robustness tests to reflect the actual operating conditions of Chinese listed firms and the key point of EM.

Firstly, Equations (1)–(3) show the calculation of real EM level according to the existing studies (Cohen et al., 2008; Roychowdhury, 2006):

$$CFOi,t/Ai,t-1=\beta 0+\beta 1/Ai,t-1+\beta 2\times Si,t/Ai,t-1+\beta 3\times \Delta Si,t/Ai,t-1+\varepsilon i,t \quad (1)$$

$$PRODi,t/Ai,t-1=\beta 0+\beta 1/Ai,t-1+\beta 2\times Si,t/Ai,t-1+\beta 3\times \Delta Si,t/Ai,t-1+\beta 4\times \Delta Si,t-1/Ai,t-1+\varepsilon i,t \quad (2)$$

$$EXPi,t/Ai,t-1=\beta 0+\beta 1/Ai,t-1+\beta 2\times Si,t-1/Ai,t-1+\varepsilon i,t \quad (3)$$

where CFO denotes the firm's actual operating cash flow, A is the total asset, S represents the sales revenue, PROD is the actual product cost, Δ represents the change, and EXP is the sum of sales expenses and management expenses. The absolute value of the residuals items in Equations (1) to (3) is the real EM level, Abs_real. The larger the value, the higher the level of real EM in the firm.

Then, the modified Jones model is used to calculate the accrual-based EM level (Dechow et al., 1995):

$$TAi,t/Ai,t-1=\beta 0/Ai,t-1+\beta 1\times(\Delta BSi,t-\Delta ACi,t)/Ai,t-1+\beta 2\times PPEi,t/Ai,t-1+\varepsilon i,t \quad (4)$$

where *TA* is the difference between the firm's operating profit and operating cash flow, *A* denotes the total assets, *BS* represents the business sales, *AC* is the accounts receivable, and *PPE* represents the net fixed assets. The absolute value of the regression residuals is the degree of accrual-based *EM*, denoted as Abs_accrual. The larger the value, the higher the degree of *EM* in the firm.

According to the relevant laws and regulations about listed firms in China (e.g., Company Law of the People's Republic of China), shareholders who individually or collectively hold more than 10% of shares have the right to convene an extraordinary meeting of directors and meeting of shareholders. Moreover, shareholders holding more than 10% of the shares can appoint at least one director and a certain number of executives. Therefore, from the perspective of corporate governance, the firm has MLS and the variable Multiple_if is equal to 1 when two or more shareholders own more than 10% of the firm's shares (including persons acting in concert) (Ben-Nasr et al., 2015; Lin et al., 2013). In addition, the explanatory variable Multiple_n, the number of shareholders with a shareholding ratio larger than 10% is also used to strengthen the robustness of the conclusion (Attig et al., 2008).

Table 1. Variable definitions.

Variable type	Variable names and symbols	Definition
Explained variable	*Abs_real*	See above
	Abs_accrual	See above
Explanatory variables	*Multiple_if*	when two or more shareholders own more than 10% of the firm's shares, *Multiple_if* = 1
	Multiple_n	the number of shareholders with a shareholding ratio larger than 10%
Control variable	*Size*	the natural logarithm of the firm's total assets
	PPE	Fixed assets/total assets
	Lev	Total liability/total asset
	Liquid	(Current assets-current liabilities)/total assets
	Dual	Dual = 1 when the chairman and CEO are the same person
	Indep	Number of independent directors/total number of board directors
	Top1	Shareholding ratio of the largest shareholder
	Soe	If the firm is state-owned, *Soe* = 1
	Age	Natural logarithm of the difference between the establishment and current years plus 1

According to the previous studies (Ben-Nasr et al., 2015; Bereskin et al., 2018; Gunny, 2010), the control variables are as follows: (1) Size denotes the firm size, measured by the natural logarithm of the firm's total assets, (2) PPE is the ratio of fixed assets to the total assets, (3) Lev represents the ratio of the firm's total liabilities to total assets, (4) Liquid is the ratio of the difference between current assets and current liabilities to the total assets, (5) Dual denotes whether the firm's

chairman and CEO is the same person, Dual = 1 when the chairman and CEO is the same person, (6) Indep is the proportion of independent directors in the total number of board directors, (7) Top1 is the shareholding ratio of the largest shareholder, (8) Soe represents the firm's property rights, if the firm is state-owned, Soe= 1, (9) Age is the natural logarithm of the difference between the establishment and current years plus 1. The variables are listed in **Table 1**.

3.3. Model setting

We used Model 5 to examine the previous hypotheses.

$$Abs\_reali,t = \beta 0 + \beta 1 \times Multiplei,t + \sum \beta i \times Controli,t + \sum Year + \sum Inds + \sum Area + \varepsilon i,t \quad (5)$$

Abs_real is the firm's real EM level, calculated using the method described above. Multiple contains two variables: Multiple_if and Multiple_n, which indicate whether the firm has MLS and the number of large shareholders. Control is the control variable in the regression. Year and Inds represent the year and industry fixed effects, respectively. We also controlled the province fixed effect Area to avoid bias in the regression results due to regional characteristics of EM behaviors of Chinese listed firms. If the regression coefficient of Multiple is statistically significant, MLS have a significant relationship with the firm's EM behaviors. Lastly, ε is the residual term of the regression.

However, the OLS model setting has endogenous problems. The relationship between the explanatory variables and the explained variables cannot be solely based on whether the OLS regression coefficients are significant. For example, when a financially aggressive business culture with MLS in a firm is insufficient to confirm the causal relationship between the MLS and the EM. An explanation for this issue is that the EM behaviors rely on the firm's own characteristics and are independent of the ownership structure. The treatment effect model is often used to correct this kind of self-selection bias (Maddala, 1983), but it still has some limitations. Firstly, the treatment effect model is incapable of testing whether the variables in the regression play different roles in various groups. Secondly, the treatment effect model cannot directly observe the estimated values of the explained variables in different groups. Therefore, the treatment effect model cannot estimate the treatment effect of explanatory variables in different groups directly. In order to overcome the above limitations, this study adopted the endogenous switching regression (ESR) model to assess the relationship between the MLS and EM behaviors, evaluate the treatment effect of the ownership structure on the EM behaviors, and overcome the endogenous problem in setting the OLS model (Hu and Schiantarelli, 1998; Lokshin and Sajaia, 2011).

Then, an endogenous switching regression model was established based on the OLS Model 5. Equation (6) predicts the presence of MLS.

$$Multiple\_ifi,t = \beta 0 + \beta 1 \times Avg\_ratioi,t + \beta 2 \times Poweri,t + \sum \beta i \times Controli,t + \sum Year + \sum Inds + \sum Area + \varepsilon i,t \quad (6)$$

Equation (6) is essentially a probit regression includes new explanatory variables in addition to the existing control variables according to the previous

studies (Zhang et al., 2016), including the proportion of firms with MLS in the same area, denoted as Avg_ratio, and the ratio of the largest shareholder's shareholding to the second largest shareholder's shareholding, denoted as Power. The reason is that the firm's ownership structure may be significantly affected by the location of its operations. And when the largest shareholder has a larger power relative to other shareholders, it is more difficult to form an ownership structure with MLS. In general, the largest shareholders are unlikely to share control of the firm.

Based on Equation (6), Equations (7) and (8) are obtained for the treatment and control groups.

$$Abs\_reali1,t = \beta 0 + \sum \beta i \times Controli1,t + \sum Year + \sum Inds + \sum Area + \varepsilon i1,t \quad if\ Multiple\_if = 1 \quad (7)$$

$$Abs\_reali0,t = \beta 0 + \sum \beta i \times Controli0,t + \sum Year + \sum Inds + \sum Area + \varepsilon i0,t \quad if\ Multiple\_if = 0 \quad (8)$$

Equations (7) and (8) show two possible situations for a sample firm: with and without MLS. The samples with and without MLS are assigned to the treatment group (*Multiple_if* = 1) and control group (*Multiple_if* = 0), respectively. Then, Equation 7 obtains the EM level, Abs_real_{i1}, for firm i in the treatment group, and Equation 8 obtains the EM level, Abs_real_{i0}, in the control group. Furthermore, it is obtained that the actual (observable) EM levels of the treatment and control groups are E($Abs\_real_{i1}|Multiple\_if = 1$) and E($Abs\_real_{i0}|Multiple\_if = 0$), denoted as *Treatture* and *Controlture*, respectively. Comparing the differences between the two groups is insufficient to directly obtain the treatment effect of the shareholding structure on the firm's EM due to the self-selection bias of the differences. Then, Equations (7) and (8) use counterfactual analysis to predict the two unobservable expected values for comparing the treatment effects. If the treatment group rejects the treatment, and the EM level is E($Abs\_real_{i0}|Multiple\_if = 1$) (denoted as *TreatCF*). Similarly, if the control group accepts the treatment, and the EM level is E($Abs\_real_{i1}|Multiple\_if = 0$) (denoted as *ControlCF*). In other words, we obtained unobservable EM levels for the control and treatment groups, respectively. Lastly, the endogenous switching regression model obtains the treatment effects (*ATT* and *ATU*) of the firm's ownership structure on EM in the treatment and control groups, respectively. The specific calculation method is:

$$ATT = E(Abs\_real_{i1}|Multiple\_if = 1) - E(Abs\_real_{i0}|Multiple\_if = 1) = Treatture - TreatCF \quad (9)$$

$$ATU = E(Abs\_real_{i1}|Multiple\_if = 0) - E(Abs\_real_{i0}|Multiple\_if = 0) = ControlCF - Controlture \quad (10)$$

If the treatment effects are significant in the two groups, the change of shareholding structure has a causal relationship with the EM level.

4. Discussion

(1) Descriptive statistics and correlation coefficients

Table 2 represents the descriptive statistics of the variables in this study. According to **Table 2**, the standard deviation (SD) of the real EM level Abs_real is 0.07, suggesting there are certain differences in the Chinese listed firms' EM behaviors. The average Multiple_if is 0.38, implying that 38% of firms have MLS, and the Chinese securities market is far behind that of Western countries. The average value of Top1 is 0.35, suggesting that the largest shareholder has a high shareholding ratio and great power in these firms.

Table 2. Descriptive statistics.

variable	mean	sd	min	P50	Max
Abs_real	0.06	0.07	0.00	0.04	1.82
Multiple_if	0.38	0.49	0.00	0.00	1.00
Multiple_n	1.44	0.66	0.00	1.00	3.00
Size	22.29	1.28	19.98	22.10	26.26
PPE	0.22	0.16	0.00	0.19	0.70
Lev	0.44	0.20	0.06	0.44	0.89
Liquid	0.21	0.24	-0.37	0.21	0.74
Dual	0.24	0.43	0.00	0.00	1.00
Indep	0.37	0.05	0.33	0.33	0.57
Top1	0.35	0.15	0.09	0.33	0.75
Soe	0.42	0.49	0.00	0.00	1.00
Age	2.92	0.28	2.20	2.94	3.58

The correlation coefficients of the variables are all below 0.5, rejecting any serious collinearity problem among the variables. The correlation coefficients are available upon request.

(2) Regression results of the baseline models

Table 3 represents the regression results of Model 5. According to **Table 3**, the presence of MLS is significantly positively correlated with the firm's EM behaviors, preliminarily supporting hypothesis 1b in this study. The regression results of the control variables are in agreement with the existing studies. For instance, the nature of corporate property rights, Soe, is significantly negatively correlated with the EM level, indicating that state-owned firms are less motivated to make profits through EM due to their low-performance pressure and political connections.

Table 3. OLS regression results.

Variables	(OLS)	(OLS)
	Abs_real	Abs_real
Multiple_if	0.0041***	
	(3.394)	
Multiple_n		0.0033***
		(3.504)
Size	−0.0039***	−0.0039***
	(−6.389)	(−6.355)
PPE	−0.0350***	−0.0350***
	(−7.107)	(−7.100)
Lev	0.0739***	0.0741***
	(13.527)	(13.555)
Liquid	0.0300***	0.0300***
	(6.222)	(6.230)

Table 3. (*Continued*).

Variables	(OLS)	(OLS)
	Abs_real	Abs_real
Dual	0.0007	0.0008
	(0.524)	(0.534)
Indep	0.0089	0.0090
	(0.827)	(0.843)
Top1	0.0221***	0.0219***
	(4.499)	(4.474)
Soe	−0.0064***	−0.0064***
	(−4.002)	(−3.999)
Age	0.0029	0.0029
	(1.153)	(1.168)
Constant	0.1027***	0.0991***
	(6.113)	(5.869)
Year	YES	YES
Inds	YES	YES
Area	YES	YES
Observations	21,323	21,323
R-squared	0.077	0.077
adj_R^2	0.0738	0.0739

Note: The values in parentheses are *T* values (*Z* values) after cluster adjustment, *, **, and *** indicate statistical significance at 10%, 5% and 1% levels, respectively. The meanings are the same in the following tables.

Table 4 represents the regression results of the endogenous switching regression model. According to **Table 4**, the ratio of firms with MLS in the same region has a significant correlation with the presence of MLS for a firm. This result indicates the significant effect of the regional factors on the ownership structure. Moreover, a significant negative correlation exists between Power and the presence of MLS, indicating that the greater the power of the largest shareholder, the more difficult it is for the firm to form a structure with MLS. In addition, the regression symbols of the control variables are the same in both the treatment and control group samples, implying that the control variables have similar effects in different groups.

In addition, the regression result of Equations (7) and (8) show the EM level of the treatment and control groups in different situations, and obtain the treatment effect of the MLS for different groups. **Table 5** shows that the presence of MLS has a significantly positive effect on the EM level in both groups. In other words, the presence of MLS increases the EM level, accepting hypothesis 1b. Lastly, the kernel density curve of the EM level was obtained for the treatment and control groups in different situations (**Figure 1**). Based on the diagram on the left, if the samples of the treatment group (with MLS) do not accept the treatment, the curve shifts to the left, indicating a lower level of the EM. According to the diagram on the right, if the samples in the control group (without MLS) accept the treatment, the curve shifts to the right, implying a higher level of the EM. These results show both a correlation

and causal relationship between the presence of MLS and the EM behaviors.

Table 4. Regression results of the endogenous switching regression model.

Variables	Model(6)	Model(7)	Model(8)
	Multiple_if	Abs_real	Abs_real
Avg_ratio	5.5143**		
	(2.404)		
Power	−81.9876***		
	(−5.914)		
Size	0.5848***	−0.0030***	−0.0045***
	(3.276)	(−3.127)	(−5.856)
PPE	0.2338	−0.0469***	−0.0286***
	(0.239)	(−5.804)	(−4.843)
Lev	−0.7957	0.0675***	0.0781***
	(−0.657)	(7.385)	(11.563)
Liquid	−0.1164	0.0242***	0.0330***
	(−0.105)	(3.042)	(5.693)
Dual	−0.3363	0.0013	0.0002
	(−1.370)	(0.591)	(0.130)
Indep	−2.1050	0.0041	0.0126
	(−0.809)	(0.234)	(0.923)
Top1	820.6740***	0.0087	0.0278***
	(5.927)	(0.932)	(4.797)
Soe	0.6942**	−0.0075***	−0.0059***
	(2.332)	(−2.840)	(−2.976)
Age	−0.2506	0.0024	0.0029
	(−0.453)	(0.600)	(0.924)
Constant	−16.0334***	0.1050***	0.1085***
	(−4.061)	(4.152)	(5.044)
Year	YES	YES	YES
Inds	YES	YES	YES
Area	YES	YES	YES
Observations	21,323	21,323	21,323

Table 5. Treatment effects.

Group	***Multiple_if* = 1**	***Multiple_n* = 0**	**Treat effect**	***T* value**
Treatment	E(Abs_real_{i1}|*Multiple_if* = 1) = *Treatture* = 0.0611	E(Abs_real_{i0}|*Multiple_if* = 1) = *TreatCF*= 0.0564	*ATT* = 0.0047	43.5931
Control	E(Abs_real_{i1}|*Multiple_if* = 0) = *ControlCF* = 0.0643	E(Abs_real_{i0}|*Multiple_if* = 0) = *Controlture* = 0.0605	*ATU* = 0.0038	40.8824

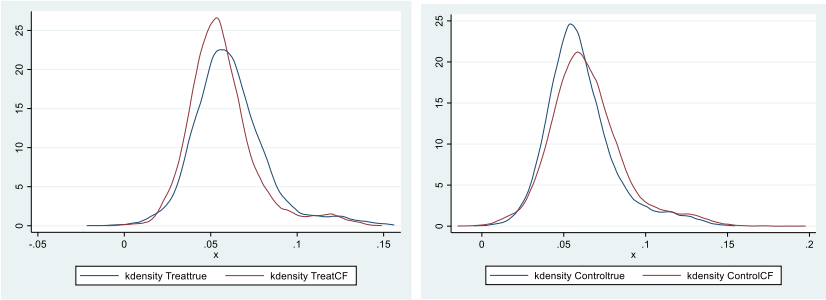

Figure 1. Treatment effects.

5. Robustness test

(1) Replacement of explanatory and explained variables

Our analysis classifies the presence of MLS based on the perspective of corporate governance: Shareholders who individually or collectively own more than 10% of the equity can hold the extraordinary board meeting and meeting of shareholders and shareholders with more than 10% equity can appoint directors or executives. This study defines the large shareholder from other perspectives to enhance the reliability of the conclusion. According to the Security Law of the People's Republic of China, when a shareholder holds more than 5% of a listed firm's shares, the change of more than 1% in shareholding must be disclosed. Therefore, from the transaction perspective, shareholders with more than 5% of equity can be regarded as large shareholders that can significantly influence the listed firm. Therefore, taking 5% as the threshold, when a firm has two or more shareholders with more than 5% of shares, it is considered that the firm has MLS. Accordingly, two explanatory variables Multiple_if5% and Multiple_n5% were constructed. **Table 6** confirms our results in the previous section.

In addition, we also changed the explained variable from the real EM to the accrual-based EM Abs_accrual. **Table 6** shows a significantly positive correlation between the explanatory and the explained variables, confirming the positive correlation between the presence of MLS and EM.

(2) Fixed effect model and change model

The fixed effect model and the change model eliminate the problem of missing variables in the model and verify the results. Both the regression results are in agreement with the baseline model, implying a significantly positive correlation between the presence of MLS and the corporate EM behaviors. Moreover, the results of the change model show that the difference term of the explanatory variable correlates positively with the explained variable, indicating that the increase in the number of large shareholders raises the corporate EM level.

(3) Propensity score matching

There are some differences between firms with and without MLS (i.e., the treatment and control groups, respectively). The propensity score matching was used to alleviate the difference between the two before testing the baseline model and reduce the adverse effect of the difference on the research conclusions. Firstly, the control variables in the regression above were used to perform nearest neighbor matching on the samples, and the difference between the samples is controlled at less than 0.01. Secondly, the samples that did not participate in the matching were

eliminated. The kernel density curve before and after matching shows that the difference reduces between the two groups after matching (**Figure 2**). In addition, the regression results after matching are still consistent with those of the baseline model.

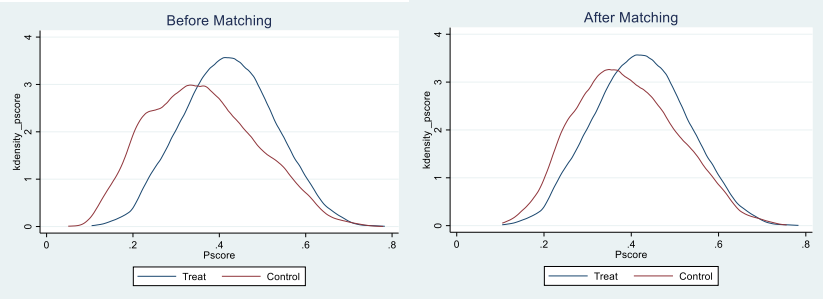

Figure 2. Comparison before and after propensity score matching.

(4) Assuming the incorrect explanatory variable

The change of the EM behaviors during the sampling period may not be caused by changes of the corporate ownership structure, but rather by changes in other factors. In order to rule out this possibility, the time when the corporate shareholding structure changes were shifted backward by one year and an incorrect variable Wrong_multiple was constructed. If this variable still has a significant relationship with the explained variable, it means that the change of the EM is not caused by the change in the corporate ownership structure. Otherwise, the change of the EM behaviors is caused by the change of the shareholding structure. **Table 6** represents the regression results. **Table 6** shows no significant relationship between the constructed explanatory variables and the EM behaviors. Thus, changes of the ownership structure increase the EM behaviors.

Table 6. Robustness test results.

Variables	**(OLS)**	**(OLS)**	**(OLS)**	**(OLS)**	**(Change model)**		**(Fixed effect model)**		**(psm)**		**(OLS)**
	Abs_accrual	**Abs_accrual**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**	**Abs_real**
Multiple_if	0.0017**						0.0094***		0.0042***		
	(2.005)						(5.087)		(3.351)		
Multiple_n		0.0015**						0.0078***		0.0034***	
		(2.554)						(5.544)		(3.633)	
Wrong_multiple											0.0071
											(1.512)
Multiple_if5%			0.0040***								
			(2.964)								
Multiple_n5%				0.0036***							
				(5.763)							
D.Multiple_if					0.0093**						
					(2.243)						
D.Multiple_n						0.0077**					
						(2.261)					

Table 6. (*Continued*).

Variables	(OLS)	(OLS)	(OLS)	(OLS)	(Change model)		(Fixed effect model)		(psm)		(OLS)
	Abs_accrual	Abs_accrual	Abs_real	Abs_real	Abs_real	Abs_real	Abs_real	Abs_real	Abs_real	Abs_real	Abs_real
Control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.1424***	0.1407***	0.1001***	0.0934***	−0.0027	−0.0028	−0.2585***	−0.2692***	0.1030***	0.0994***	0.1009***
	(11.661)	(11.550)	(5.932)	(5.475)	(−0.640)	(−0.675)	(−5.288)	(−5.495)	(5.838)	(5.607)	(5.969)
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Inds	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Area	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	21,323	21,323	21,323	21,323	17,831	17,831	21,323	21,323	17,690	17,690	21,323
R-squared	0.078	0.078	0.077	0.078	0.073	0.073	0.030	0.030	0.074	0.074	0.076
adj_R^2	0.0755	0.0756	0.0737	0.0754	0.0699	0.0700			0.0704	0.0706	0.0734
Number of Co.							3,151	3,151			

(5) Random sampling 500 times

This study performs a placebo test to enhance the accuracy of the causal relationships. Firstly, Multiple_if and Multiple_n were placed out of order, and the values were assigned to the samples randomly. Then, the regression between the randomly generated variable and the explained variable was carried out, and the regression coefficient and *T* value were recorded. The above steps were repeated 500 times. **Figure 3** displays the distribution of *T* values from the 500 regressions. Based on **Figure 3**, the distribution of *T* values presents an inverted U shape with 0 as the axis. In addition, the *T*-test that examines whether the *T* values from regression were different from 0 accepts the null hypothesis that the *T* values from regression were not different from 0 (*T* values are 0.2415 and 1.3483). The results indicate that the coefficients of the randomly generated explanatory variables have an insignificant relationship with the EM behaviors.

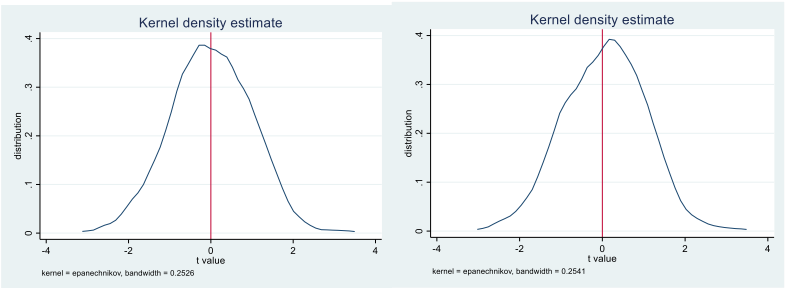

Figure 3. Random sampling results.

6. Further analysis

(1) Impact of external audit supervision

External audit supervision is a vital part of corporate governance. As an independent third party, external audit institutions play a key role in regulating the operation of listed firms and enhancing the quality of information disclosure (Fan and Wong 2005). This study divides the samples into a high-quality audit group (Audit = 1) and a low-quality audit group (Audit = 0) to explore the impact of high-quality external audits on the conclusions of the baseline model. When a firm's

annual financial statements are audited by the Big Four accounting firms (i.e., Deloitte, Ernst & Young, PricewaterhouseCoopers, and KPMG), it is included in the high-quality audit group. Then, a cross-sectional analysis (grouped regression) was performed on the samples. **Table 7** represents the results. Based on **Table 7**, the presence of MLS is significantly positively correlated with the EM behaviors only in the low-quality audit group, but not in the high-quality audit group. This finding indicates that a high-quality external audit can restrain the corporate EM behaviors and improve the effectiveness of accounting information.

Table 7. Impact of external audit supervision.

Variables	**(Audit = 0)**	**(Audit = 1)**	**(Audit = 0)**	**(Audit = 1)**
	Abs_real	**Abs_real**	**Abs_real**	**Abs_real**
Multiple_if	0.0049***	−0.0032		
	(3.855)	(−0.553)		
Multiple_n			0.0036***	0.0018
			(3.710)	(0.380)
Control	YES	YES	YES	YES
Constant	0.0978***	0.0632	0.0941***	0.0672
	(5.414)	(1.097)	(5.177)	(1.170)
Year	YES	YES	YES	YES
Inds	YES	YES	YES	YES
Area	YES	YES	YES	YES
Observations	19,964	1,359	19,964	1,359
R-squared	0.078	0.112	0.078	0.112
adj_R^2	0.0749	0.0701	0.0750	0.0699

(2) Impact of institutional investors

As an important stakeholder in corporate governance, institutional investors' shareholding represents the strength of attention and the degree of involvement in the firm's operations. Existing studies have shown that institutional investors play a role of restraining aggressive financial behaviors and regulating firm operations (Appel et al., 2016; Zouari and Rebaï, 2009). To study the impact of institutional investors on the relationship between the presence of MLS and the EM behaviors, the samples were divided into two groups based on the median shareholding ratio of institutional investors in firms in the same industry within one year (Holding = 0 and Holding = 1, respectively). **Table 8** represents the results of the cross-sectional analysis (grouped regression). According to **Table 8**, the presence of MLS has a significant and positive correlation with the EM behaviors in the group with a low shareholding ratio of institutional investors. In addition, this correlation is insignificant in samples with a high shareholding ratio of institutional investors. This finding demonstrates that the increase of the shareholding ratio of institutional investors plays a crucial role in enhancing the level of corporate governance and improving the quality of financial information.

Table 8. Impact of shareholding ratio by institutional investors.

Variables	(Holding = 0)	(Holding = 1)	(Holding = 0)	(Holding = 1)
	Abs_real	Abs_real	Abs_real	Abs_real
Multiple_if	0.0064***	0.0023		
	(3.805)	(1.307)		
Multiple_n			0.0050***	0.0018
			(3.864)	(1.285)
Control	YES	YES	YES	YES
Constant	0.1202***	0.0645***	0.1145***	0.0624***
	(4.834)	(2.898)	(4.583)	(2.784)
Year	YES	YES	YES	YES
Inds	YES	YES	YES	YES
Area	YES	YES	YES	YES
Observations	10,653	10,670	10,653	10,670
R-squared	0.091	0.075	0.091	0.075
adj_R^2	0.0852	0.0689	0.0854	0.0689

(3) Impact of external economic environment

Table 9. Impact of external economic environment.

Variables	(Uncertainty = 0)	(Uncertainty = 1)	(Uncertainty = 0)	(Uncertainty = 1)
	Abs_real	Abs_real	Abs_real	Abs_real
Multiple_if	0.0052***	0.0027		
	(3.386)	(1.611)		
Multiple_n			0.0043***	0.0020
			(3.546)	(1.605)
Control	YES	YES	YES	YES
Constant	0.1230***	0.0858***	0.1181***	0.0837***
	(5.878)	(3.755)	(5.645)	(3.650)
Year	YES	YES	YES	YES
Inds	YES	YES	YES	YES
Area	YES	YES	YES	YES
Observations	12,536	8787	12,536	8787
R-squared	0.080	0.080	0.080	0.080
adj_R^2	0.0757	0.0736	0.0759	0.0736

The external economic environment has a significant impact on corporate business development. Existing studies show the effect of the external economic environment on the level of information asymmetry and investment efficiency (Bloom et al., 2007; Chen et al., 2018). To investigate the influence of the external economic environment on the relationship between the presence of MLS and the EM behaviors, the samples were divided into low and high external economic groups,

i.e., Uncertainty = 0 and Uncertainty = 1 based on the median of the China Economic Environment Uncertainty Index (Baker et al., 2016). The larger the index, the higher the uncertainty of China's macroeconomy. **Table 9** presents the results of cross-sectional analysis (grouped regression). The presence of MLS is significantly positively correlated with the EM behaviors only when the uncertainty is low in the external economic environment. The reason is that EM, specifically the real EM, relies on manipulating production and sales activities. EM during a period with high economic uncertainty is more likely to endanger the firm's existence. Therefore, the motivation for EM was reduced during this period.

(4) Mediation effect analysis

According to the theoretical analysis in previous sections, MLS may conspire with each other for personal gain or weaken the corporate internal supervision mechanism. This results in increasing of EM behaviors. But more importantly, we need to consider the impact of EM caused by MLS on corporate business development. Because EM behaviors, especially real EM behavior, require controlling the corporate real trading activities to achieve the purpose of manipulating information, its implementation process will disrupt the corporate normal business behavior, cause the corporate business arrangements to be disconnected from the actual market environment, and bring corresponding corporate operating risk. Corporate operating risk generally refers to the uncertainty of future revenue caused by business decisions such as strategic choices, product prices, and sales methods. Examining the relationship between EM behaviors and operational risk is an extension of studying the relationship between MLS and EM, which can better explore the consequences of EM and the impact of MLS on corporate operations.

Based on existing studies, this research measured the corporate operating risk using the standard deviation of the corporate total return on assets from t-3 to t years, Sd_roa, and the standard deviation of the weekly stock return in that year, Sd_stock (Acharya et al., 2011). The greater the standard deviation of the corporate total asset return, Sd_roa, the higher the return volatility and the corporate operating risk. Similarly, the greater the Sd_stock, the higher the stock price volatility and the corporate operating risk. This study analyzed the mediation effect using the following steps (**Tables 10** and **11**). Firstly, we performed regression on EM using MLS. The regression results show that the presence of MLS increases the EM behaviors, which is consistent with the above conclusion. Secondly, we performed regression on operating risk using MLS. The regression results reveal that firms with MLS have higher volatility of the return on total assets and stock yield. In other words, the presence of MLS raises the corporate operating risk. Lastly, we performed regression on operating risk using MLS and EM at the same time. The results showed a significantly positive correlation among the presence of MLS, EM level, and the corporate operating risk, which suggests that the presence of MLS increases the corporate operating risk by increasing the EM behaviors.

Table 10. Mediation effect analysis (volatility of roa).

Variables	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)
	Sd_roa	Abs_real	Sd_roa	Sd_roa	Abs_real	Sd_roa
Abs_real			0.0321***			0.0322***
			(7.567)			(7.566)
Multiple_if	0.0026***	0.0041***	0.0024***			
	(3.312)	(3.386)	(3.164)			
Multiple_n				0.0017***	0.0033***	0.0016***
				(2.774)	(3.499)	(2.615)
Control	YES	YES	YES	YES	YES	YES
Constant	0.1740***	0.1029***	0.1707***	0.1720***	0.0993***	0.1689***
	(14.376)	(6.118)	(14.160)	(14.196)	(5.874)	(13.985)
Year	YES	YES	YES	YES	YES	YES
Inds	YES	YES	YES	YES	YES	YES
Area	YES	YES	YES	YES	YES	YES
Observations	21,311	21,311	21,311	21,311	21,311	21,311
R-squared	0.078	0.077	0.082	0.077	0.077	0.082
adj_R^2	0.0748	0.0739	0.0791	0.0746	0.0740	0.0789

Table 11. Mediation effect analysis (volatility of stock yield).

Variables	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)
	Sd_stock	Abs_real	Sd_stock	Sd_stock	Abs_real	Sd_stock
Abs_real			0.0193***			0.0193***
			(6.760)			(6.736)
Multiple_if	0.0013***	0.0040***	0.0013***			
	(3.027)	(3.251)	(2.902)			
Multiple_n				0.0009***	0.0032***	0.0009***
				(3.248)	(3.337)	(3.092)
Control	YES	YES	YES	YES	YES	YES
Constant	0.1816***	0.1040***	0.1796***	0.1805***	0.1006***	0.1786***
	(43.185)	(6.133)	(43.254)	(43.371)	(5.902)	(43.358)
Year	YES	YES	YES	YES	YES	YES
Inds	YES	YES	YES	YES	YES	YES
Area	YES	YES	YES	YES	YES	YES
Observations	20,879	20,879	20,879	20,879	20,879	20,879
R-squared	0.411	0.076	0.413	0.411	0.076	0.413
adj_R^2	0.409	0.0734	0.411	0.409	0.0735	0.411

7. Conclusion and policy recommendations

The empirical results of this study show that the presence of MLS increases corporate EM behaviors and operating risks to a certain extent. The results of the endogenous switching regression model demonstrate that the treatment effect of MLS on corporate EM behaviors is significantly positive in both the control and

treatment groups. This finding provides strong evidence for analyzing the causal relationship in this study. Further analyses in this study show that the relationship between the presence of MLS and corporate EM behaviors can be significantly affected by external audit supervision, the shareholding ratio of institutional investors, and the external economic uncertainty.

The results of this study provide empirical evidence for the conclusion in previous literature that the decentralized ownership structure has a negative impact on corporate governance (Gomes and Novaes, 2005; Maury and Pajuste, 2005). Secondly, mechanism analysis shows that the decentralized ownership structure increases the corporate operational risk by enhancing EM behavior, providing corresponding empirical evidence for the negative impact of implementing EM in the firms (Roychowdhury, 2006). Overall, the conclusion of this article enriches the relevant research on ownership structure and EM behavior in the Chinese capital market.

The empirical results of this study have a certain reference value for the supervision and governance of listed firms in China. With the continuous development of China's economy and the integration of the securities capital market with foreign countries, more and more domestic and foreign investors have started investing in China's securities market. This situation prompted the ownership structure of Chinese public firms to gradually shift to MLS. In this transformation process, relevant government agencies should pay close attention to the impact of structural transformation on the corporate governance of listed firms. In contrast with the expectation that MLS will supervise each other, they may seek personal gains or weaken the corporate supervision mechanism, resulting in a decline in corporate governance and an increase in EM behaviors. Although some studies indicate that the presence of MLS brings some benefits, relevant regulatory agencies still need to consider the possibility that the presence of MLS distorts the earnings information.

The research in this article also has certain limitations. Although this study considers the existence of different types of earnings management methods, it does not focus on the transformation between different methods; In addition, future research can further refine the classification of ownership structure types.

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