

Research on the Impact of Vertical Interlocks of Executives on Enterprise Innovation

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Abstract: *The question of whether vertical interlocks of executives help to strengthen the supervision of listed companies by major shareholders or facilitates the capture of interests of minority shareholders by major shareholders has aroused concern in both theoretical and practical circles. Based on the data of Shanghai and Shenzhen A-share listed firms in China from 2009 to 2021, this paper examines the impact of vertical interlocks of executives on the enterprise innovation from the perspectives of "tunneling effect". The study finds that vertical executives reduce the enterprise innovation. The paper also finds that the vertical interlocks of executives play a "tunneling effect" through hollowing out by major shareholders.*

Keywords: *Vertical interlocks of executives; Enterprise innovation; Tunneling effect*

1. Introduction

In recent years, China has made significant progress in scientific and technological innovation capacity, leading the world in areas such as high-speed rail, 5G and cloud computing. According to the Global Innovation Index 2020 report released by the World Intellectual Property Organization, China ranks 14th among 131 economies in the world, ranking first among middle-income economies and emerging economies. However, the "Huawei incident" and "ZTE incident" also exposed the gap between China and foreign countries in some key technology fields, and the "bottleneck" problem in the core technology is still severe. Enterprise innovation is the cornerstone of national innovation. Improving enterprise R&D innovation ability is still the main theme of our future development. Probing deeply into the influence factors of enterprise innovation activities is of great significance to improve the enterprise and even our whole innovative development level.

With the rise and development of principal-agent theory, more and more scholars begin to focus on the governance effectiveness of major shareholders. Due to the separation of corporate ownership and control, vertical interlocks of executives are gradually becoming a common means for major shareholders to strengthen the control of listed companies, which is widely existing in corporate governance. China is in a critical period of economic transformation and upgrading, and the Chinese law is insufficient to protect investors. Under this special background, there are two distinct views on whether vertical interlocks of executives can play a positive or negative role in the practical and theoretical circles: One view holds that the vertical interlocks of executives can produce positive effects, which can strengthen the supervision and management of listed companies. The other view is that vertical interlocks of executives can have negative effects, strengthening the control of the major shareholders of the company to obtain private income, and then "hollowing out" the listed company.

From the perspective of practice, different regulatory authorities hold different attitudes towards the situation of vertical interlocks of executive. China's securities and Exchange Commission (CSRC) issued relevant regulations such as "three separate positions" and "five separate positions" in order to restrict the behavior of longitudinal executive positions. Therefore, from the perspective of China Securities Regulatory Commission, the vertical interlocks of executive is a tool for major shareholders to strengthen the control right to obtain private income, which plays a negative role. The state-owned assets management department allows senior executives of group companies to serve as senior executives of listed companies in order to preserve and increase the value of state-owned assets. Therefore, from the perspective of the state-owned assets management department, the vertical interlocks of executives strengthen the supervision and management of listed companies, and plays a positive role.

As a matter of fact, the controversy of vertical interlocks of executive has gradually caused a wide

discussion in the theoretical circle, and produced two completely different views. Zheng et al. (2014)[1] found that vertical interlocks of executives intensified the second type of agency conflicts. In this context, vertical interlocks of executives significantly reduced the value of the company. This shows that vertical interlocks of executives exert more tunneling effect, which has a negative impact on enterprises. However, Pan et al. (2016)[2] believe that vertical interlocks of executives can help alleviate the first type of agency conflicts and reduce agency costs, thus significantly improving the quality of corporate accounting information. This shows that vertical interlocks of executives can actually play a role in strengthening supervision and have a positive impact.

Based on this, this paper takes A-share non-financial listed companies in Shanghai and Shenzhen from 2008 to 2021 as research samples to explore the impact of vertical interlocks of executives on enterprise innovation. The main research contributions of this paper are as follows: First, it enriches the literature on the economic consequences of vertical interlocks of executives. Existing literature mainly studies the impact of vertical interlocks of executives on enterprise value, accounting information quality, enterprise risk taking, but no consistent conclusions have been reached. Therefore, the research carried out in this paper on the impact of vertical interlocks of executives on enterprise innovation has a complementary and referential role for the literature in this field. Second, it broadens the research perspective of influencing factors of enterprise innovation. From the existing public literature, a large number of literatures have discussed the influencing factors of enterprise innovation from the aspects of equity characteristics and executive characteristics, but the conclusions are not uniform. As one peculiar type of board interlocks, vertical interlocks of executives strengthen the control of major shareholders. Meanwhile, the principal-agent relationship becomes more uncertain but prominent in this kind of enterprises, so it can be used as a new perspective to study the enterprise innovation. Third, in the further analysis, this paper studies the influence mechanism between vertical interlocks of executives and enterprise innovation, and opens the "black box" between the two. From the perspective of "tunneling effect", this paper verified the mediating effect of hollowing out of major shareholders, and enriched the mechanism.

2. Literature review

Existing studies on the economic consequences of vertical concurrent executive assignments have not reached a consistent conclusion. Some studies suggest that vertical concurrent executive positions can exert a "monitoring effect", alleviate the first type of agency conflicts, reduce agency costs, improve business performance[3], improve the quality of accounting information[2], improve the efficiency of corporate investment as well as improving risk-taking[4]. In addition, it has also been shown that vertical concurrent executive positions can exacerbate the second type of agency conflict, which can lead to a "hollowing out effect" that undermines corporate value[5] and increase the level of corporate cash holdings[6].

Regarding the economic consequences of vertical concurrent appointments, fewer studies have focused on the important area of corporate innovation. A study by Yan et al. (2019)[7] suggests that vertical concurrent executives can inhibit corporate innovation. Hu et al. (2020)[8] studied the impact of executive concurrent appointments within listed companies on corporate R&D innovation, and found that executive concurrent appointments had a significant contribution to the overall level of innovation in listed companies. There is also similar research focusing on the impact of vertical concurrent executive appointments on firms' intellectual capital value creation, and the results show that vertical concurrent executive appointments inhibit intellectual capital value creation[9].

Regarding the factors influencing corporate innovation, the existing literature focuses on three aspects, including the financing constraint problem[10], the agency problem between managers and shareholders[11], and the benefit capture problem[12]. While vertical concurrent appointments of executives have an impact on the agency problem and financing constraints of firms, there is less literature examining the impact of vertical concurrent appointments of executives on the investment efficiency of firms from the perspective of the latter.

From a review of the literature, we found that the literature on the economic consequences of vertical concurrent executive positions is based on the agency theory of majority and minority shareholders or managerial agency, and mainly investigates the impact of vertical concurrent executive positions on corporate value, the quality of accounting information and the level of wind assumption. Less literature has examined the impact of vertical concurrent executive appointments on the level of corporate innovation, and no consistent conclusions have been reached. At the same time, most of this literature

has studied vertical concurrent executive positions from a single internal governance mechanism, ignoring the various interactions between internal and external governance mechanisms that may have complementary and alternative effects on firms' innovation activities. Moreover, the literature does not specifically examine the specific mechanisms that influence the two roles played by vertical part-time executives. Therefore, it is necessary to further explore the impact of vertical and part-time executives on corporate innovation based on the existing studies, in conjunction with external governance mechanisms, and to further analyse the impact mechanisms based on the "hollowing out effect" and "monitoring effect".

3. Hypothesis development

3.1 Vertical interlocks of executives and enterprise innovation

Based on the " tunneling effect ", the vertical interlocks of executives may further increase the interest grabbing behavior of major shareholders. This is mainly because vertical executives mostly represent the interests of major shareholders, which helps major shareholders to participate in the formulation and implementation of corporate financial decisions more directly and reduces the cost of collusion between major shareholders and managers[1]. At the same time, vertical executives can convey information, reduce the cost of information acquisition, enable major shareholders to obtain more advantageous information, and reduce the possibility of eviction being discovered by regulators[13]. Based on the above analysis, we can speculate that the controlling shareholders are more likely to control resources in the form of vertical concurrent appointment of senior executives to facilitate their tunnel, or have less motivation to make long-term investment. What's more vertical concurrent management reduces available resources for innovation. The "tunnel" transfer behavior of the controlling family further reduces the resources available to the company for long-term investment. Compared with other investment activities, R&D requires long-term and sustained investment of capital and personnel. However, the opportunistic behavior of controlling shareholders will inhibit the willingness of listed companies to carry out innovation activities, reduce the resources needed for innovation activities, and then inhibit enterprise innovation.

On the other hand, based on the " supervisory effect ", major shareholders can directly participate in the business activities of the company by arranging vertical interlocks of executives to take posts, which can effectively supervise and restrain the self-serving behaviors of internal agents, thus effectively reducing the principal-agent cost between agents and shareholders. The characteristics of enterprise innovation activities such as high risk and task complexity require managers to invest more energy, and the increase of managers' private cost makes them less willing to implement innovation activities, leading to managers' "inaction" in innovation activities. At the same time, due to the uncertainty of innovation activities, shareholders are difficult to accurately supervise the management. When the enterprise's innovation activities fail to achieve the expected goal or the innovation fails, it is difficult for shareholders to decide whether to blame the high risk of the project itself or the poor work of the management. In this process, the management has a high autonomy in innovation activities, and is likely to use the innovation of the enterprise to seek personal gains, resulting in the opportunistic behavior of innovation activities. The management's "inaction" and opportunistic behavior require shareholders to strengthen the supervision of the management to ensure the smooth development of innovation activities. Vertical interlocks of executives can strengthen the supervision of management behavior[2], so as to restrain management's "inaction" and opportunistic behavior and promote enterprise innovation output. To sum up, this paper puts forward the following competitive assumptions:

Hypothesis 1a: Vertical interlocks of executives will inhibit enterprise innovation.

Hypothesis 1b: Vertical interlocks of executives will promote enterprise innovation.

3.2 Analysis of the influence mechanism

3.2.1 Vertical interlocks of executives, hollowing out by major shareholders and corporate innovation

Based on the "tunneling effect", we analyse the influence mechanism of vertical and concurrent executives on corporate innovation. By increasing the control of the majority shareholder and shortening the distance of the majority shareholder's access to information about the listed company, vertical concurrent executives exacerbate the degree of hollowing out by the majority shareholder[2]. And compared to other investment activities, innovation requires long-term and continuous financial support

from companies[14]. As an important means for major shareholders to hollow out listed companies, major shareholders occupy funds of listed companies for a long period of time, which leads to a tight operating capital of listed companies, and the funds available to enterprises for innovation are constrained, which is detrimental to their innovative activities. Based on the above analysis, hypothesis 3a is proposed.

Hypothesis 2a: Vertical interlocks of executives inhibit corporate innovation by exacerbating the hollowing out by major shareholders.

3.2.2 Vertical interlocks of executives, agency costs and corporate innovation

Based on the "supervisory effect", we analyse the mechanism of the influence of vertical interlocks of executives on corporate innovation. Vertical concurrent senior management is a means of linking the majority shareholder and the enterprise, which can increase the control of the majority shareholder, strengthen the supervision of the management of the listed company by the majority shareholder, restrain short-sighted behaviours such as on-the-job consumption committed by managers for their own interests, and reduce agency costs, thereby securing more funds for the enterprise to carry out innovative activities[10] and improve the level of corporate innovation. Based on the above analysis, Hypothesis 3b is proposed.

Hypothesis 3b: Vertical interlocks of executives promote corporate innovation by reducing agency costs.

4. Research design and sample

4.1 Related concepts and measurements

Dependent Variable: Enterprises innovation. Based on the method proposed by Li et al. (2022)[15], this paper measures enterprise innovation by the ratio of R&D investment to main business income.

Independent Variable: Vertical interlocks of executives. In this paper, referring to the definition method of Zheng et al. (2014)[1], AM takes the value of 1 when the chairman or general manager of a company holds a position with the first largest shareholder unit or the effective controller, and 0 otherwise.

Control variables: In this paper, control variables are defined and measured with reference to the study by Jiang et al. (2018)[12], as shown in Table 1 below.

Table 1: Definitions of key variables and calculation methods

Category	Symbols	Definition
Dependent Variable	PA	R&D investment/main business income
Independent Variable	AM	AM takes the value of 1 when the chairman or general manager of a company holds a position with the first largest shareholder unit or the effective controller, and 0 otherwise.
Intermediate Variable	FEE	Management expense ratio
	RPT	Total related transactions/total assets
Control variables	Lev	Ratio of total liabilities to total assets of the company
	Size	Natural logarithm of the company's total assets
	Top1	Shareholding ratio of the company's first largest shareholder
	Top2_5	Sum of shareholdings of the second to fifth largest shareholders
	NumDS	Total number of directors
	InDS	Number of independent directors/total number of directors
	Growth	Growth rate of operating revenue
	ROA	Ratio of the company's net profit to its total assets
	SOE	When the actual control of the listed company is the state, take 1, otherwise take 0
	Inst	Ratio of shares held by institutional investors
IND	Industry dummy variables	
YEAR	Annual dummy variables	

4.2 Sample and data collection procedures

The research object of this paper is the A-share listed companies in Shanghai and Shenzhen from

2009 to 2021 in China. In order to ensure the completeness of the research data and the robustness of the results, the following treatment was applied to the selected sample of enterprises.

- (1) Excluding financial and insurance corporates.
- (2) Eliminate ST, SST, *ST, S*ST corporates.
- (3) Excluding the sample of listed companies with missing values and outliers in the relevant financial data.

In order to eliminate the influence of extreme values, all continuous variables involved in this paper are indented in 1% and 99% quantiles. All data of sample companies in this paper come from CSMAR database.

4.3 Data analysis approaches

To test the effect of vertical interlocks of executives on corporate innovation in hypothesis 1, model (1) is constructed in this paper.

$$RD_{i,t} = \beta_0 + \beta_1 AM + \sum Control_{i,t} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \tag{1}$$

To test the mediating role played by large shareholder shelling in hypothesis 2a, models (2) and (3) are constructed.

$$RPT_{i,t} = \alpha_0 + \alpha_1 AM + \sum Control_{i,t} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$RD_{i,t} = \gamma_0 + \gamma_1 AM + \gamma_2 RPT + \sum Control_{i,t} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \tag{3}$$

To test the mediating role played by agency costs in hypothesis 2b, models (4) and (5) were constructed.

$$FEE_{i,t} = \alpha_0 + \alpha_1 AM + \sum Control_{i,t} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \tag{4}$$

$$RD_{i,t} = \gamma_0 + \gamma_1 AM + \gamma_2 FEE + \sum Control_{i,t} + \sum IND_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \tag{5}$$

5. Empirical results and analysis

5.1 Descriptive statistics

Table 2: Descriptive statistics of samples

Variable	Mean	Sd	Min	P50	P75	Max
RD	4.841	4.773	0.030	3.700	5.715	27.670
AM	0.371	0.650	0.000	0.000	1.000	7.000
Lev	0.397	0.198	0.051	0.386	0.542	0.866
Size2	22.718	1.144	20.744	22.556	23.371	26.307
Top1	0.338	0.145	0.086	0.318	0.432	0.731
Top2_5	0.203	0.111	0.017	0.193	0.279	0.473
NumDS	8.440	1.606	5.000	9.000	9.000	14.000
InDS	37.652	5.342	33.330	36.360	42.860	57.140
Growth	0.312	0.677	-0.639	0.138	0.411	4.186
ROA	0.039	0.065	-0.281	0.041	0.071	0.198
SOE	0.286	0.452	0.000	0.000	1.000	1.000
Inst	0.060	0.070	0.000	0.035	0.088	1.456

Notes: N=26,504.

Descriptive statistics of all variables in this study are shown in Table 2. The average value, minimum value, maximum value, and standard deviation of corporate innovation (RD) are 4.841, 0.030, 27.670, and 4.733, indicating that innovation input of sample companies accounts for 4.841% of operating income on average, of which more than 50% companies account for less than 3.7% of operating income.

On the whole, the innovation investment level of Chinese listed companies is low, and the difference between different companies is great; The mean of the vertical interlocks of executives (AM) is 0.371, which indicates that 37.1% of sample companies have the vertical interlocks of executives, which proves that there is a widespread phenomenon of the vertical interlocks of executives in listed companies in our country. Other variables are basically consistent with the reality of the enterprise.

5.2 Correlation analysis

Table 3 shows the correlation coefficient matrix of variables in this paper. The correlation coefficient results show that there is a significant negative correlation between vertical interlocks of executives (AM) and enterprise innovation (RD) at the 1% level, which preliminarily indicates that companies with vertical interlocks of executives have lower enterprise innovation input, which is basically consistent with the expectation of the theoretical hypothesis. In addition, correlation coefficients among variables are all less than 0.5, indicating that there is no serious multicollinearity problem among variables in this paper.

Table 3: Correlation analysis of variables

Variables	RD	AM	Lev	Size2	Top1	Top2_5
RD	1.000					
AM	-0.130***	1.000				
Lev	-0.307***	0.144***	1.000			
Size2	-0.151***	0.193***	0.455***	1.000		
Top1	-0.185***	0.181***	0.035***	0.126***	1.000	
Top2_5	0.095***	-0.166***	-0.176***	-0.124***	-0.331***	1.000
NumDS	-0.115***	0.157***	0.156***	0.243***	0.012*	-0.022***
InDS	0.044***	-0.062***	-0.003	0.019***	0.050***	-0.003
Growth	0.134***	-0.022***	0.018***	-0.018***	-0.026***	0.002
ROA	-0.020***	-0.022***	-0.375***	0.044***	0.141***	0.129***
SOE	-0.199***	0.289***	0.297***	0.353***	0.213***	-0.239***
Inst	0.038***	0.021***	0.036***	0.337***	-0.093***	-0.017***

Variables	NumDS	InDS	Growth	ROA	SOE	Inst
NumDS	1.000					
InDS	-0.532***	1.000				
Growth	0.003	-0.002	1.000			
ROA	0.004	-0.019***	-0.002	1.000		
SOE	0.280***	-0.056***	0.032***	-0.094***	1.000	
Inst	0.063***	-0.010	0.010*	0.179***	-0.003	1.000

Notes: N=26,504; ***, ** and * are significantly correlated at the level of 1%, 5% and 10% respectively.

5.3 Analysis of empirical results

Table 4 reports the OLS regression results of vertical interlocks of executives and enterprise innovation. Column (1) is the empirical results with only control variables added, which is consistent with the results of existing research in the academic circle. The results in column (2) show that there is a negative correlation between vertical interlocks of executives (AM) and enterprise innovation (RD), and it is significant at the 1% level, which verifies hypothesis 1a. Columns (3) and (4) show the test results of the hollowing out mechanism of major shareholders. Column (3) shows that there is a positive correlation between the hollowing out of major shareholders (RPT) and vertical interlocks of executives (AM), and it is significant at the 1% level, indicating that vertical interlocks of executives will exacerbate the hollowing out of major shareholders. Column (4) shows that both vertical interlocks of executives (AM) and hollowing out degree of major shareholders (RPT) are significantly negatively correlated with corporate innovation (RD), indicating that hollowing out of major shareholders plays a partial mediating role between vertical interlocks of executives and enterprise innovation.

Table 4: Main regression results

Variables	RD	RD	RPT	RD
	(1)	(2)	(3)	(4)
RPT				-0.006*** (-9.914)
AM		-0.142*** (-3.848)	2.056*** (5.271)	-0.129*** (-3.502)
Lev	-7.124*** (-36.745)	-7.117*** (-36.696)	71.659*** (45.142)	-6.666*** (-33.687)
Size2	0.233*** (7.392)	0.242*** (7.654)	-2.212*** (-7.941)	0.228*** (7.207)
Top1	-2.107*** (-11.275)	-2.048*** (-10.853)	9.120*** (5.183)	-1.990*** (-10.558)
Top2_5	0.570** (2.332)	0.515** (2.109)	-1.672 (-0.761)	0.505** (2.069)
NumDS	-0.056*** (-2.803)	-0.054*** (-2.656)	-0.584*** (-3.312)	-0.057*** (-2.840)
InDS	0.014** (2.524)	0.013** (2.437)	-0.206*** (-4.203)	0.012** (2.201)
Growth	0.703*** (14.691)	0.701*** (14.636)	-0.266 (-0.783)	0.699*** (14.637)
ROA	-10.483*** (-16.032)	-10.496*** (-16.051)	-34.635*** (-7.634)	-10.714*** (-16.375)
SOE	-0.614*** (-10.536)	-0.576*** (-9.850)	1.607*** (2.629)	-0.566*** (-9.699)
Inst	3.829*** (9.482)	3.807*** (9.426)	-3.584 (-1.090)	3.784*** (9.371)
IND、YEAR	YES	YES	YES	YES
Constant	-0.170 (-0.240)	-0.331 (-0.469)	60.594*** (9.003)	0.050 (0.071)
Adjusted. R ²	0.313	0.313	0.156	0.315

5.4 Endogeneity test

5.4.1 Hysteresis effect

In order to alleviate the endogenous problem caused by reverse causality, it is impossible for enterprise innovation in the current period to have an impact on vertical interlocks of executives in the previous period. In addition, considering that there may be a certain lag in the effect of vertical interlocks of executives on enterprise innovation, this paper takes the independent variable of vertical interlocks of executives one stage behind, and conducts regression on model (1) again. The regression results are shown in column (1) of Table 5. The results show that the vertical interlocks of executives (AMt-1) with a lag of one period is negatively correlated with enterprise innovation, and is significant at the 1% level, which proves hypothesis 1a. The reliability of the research conclusions in this paper is verified.

5.4.2 Heckman two-stage test

Considering that there may be self-selection problem, that is, listed companies with low innovation are more likely to have vertical interlocks of executives, this paper further adopts Heckman two-stage method to conduct endogeneity test. In the regression of Heckman in the first stage, using the method of Yang et al. (2020)[16] for reference, the influential factor model of whether listed companies have vertical interlocks of executives was constructed, and the Probit regression was used to calculate the Inverse Mills Ratio. In the second stage of Heckman regression, the calculated inverse Mills ratio is put into the regression model. The regression results are reported in columns (2) and (3) of Table 5. The results in column (2) show that there is a significant regression coefficient between IMR and enterprise innovation, indicating that companies with low enterprise innovation choose vertical interlocks of executives. The vertical interlocks of executives (AM) is negatively correlated with enterprise innovation (RD), and is significant at the 1% level. Hypothesis 1a is still valid. The reliability of the research conclusions in this paper is verified.

Table 5: Results of endogeneity test

Variables	First stage		Second stage
	(1)	(2)	(3)
	RD	AM	RD
AM _{t-1}	-0.107*** (-2.609)		
AM			-0.354*** (-4.883)
IMR			7.752*** (7.559)
Lev	-7.175*** (-33.354)	0.154*** (2.707)	-6.251*** (-28.188)
Size2	0.362*** (10.710)	0.123*** (11.731)	0.925*** (9.980)
Top1	-2.512*** (-12.025)	0.863*** (13.006)	2.671*** (4.214)
Top2_5	0.005 (0.017)	-0.993*** (-11.493)	-5.265*** (-6.859)
NumDS	-0.087*** (-3.909)	0.046*** (6.839)	0.197*** (5.364)
InDS	0.012** (2.049)	-0.011*** (-5.720)	-0.054*** (-5.281)
Growth	0.717*** (12.684)	-0.049*** (-3.605)	0.422*** (7.206)
ROA	-9.674*** (-14.165)	0.045 (0.286)	-10.192*** (-15.544)
SOE	-0.662*** (-10.287)	0.448*** (21.623)	1.875*** (5.803)
YEAR、IND	Yes	Yes	Yes
Constant	6.042*** (12.890)	6.047*** (12.897)	6.067*** (12.940)
Adjusted. R ²	0.172	0.172	0.172

6. Research conclusion

As a common corporate governance arrangement, vertical interlocks of executives have an important impact on the investment decision of the company. Based on the data of non-financial A-share listed companies from 2009 to 2021, this paper studies the impact of vertical interlocks of executives on enterprise innovation. The results show that the vertical interlocks of executives have an inhibitory effect on enterprise innovation, that is, the innovation level of enterprises with vertical interlocks of executives is lower, which verifies hypothesis 1a. The paper further explores the effect path of vertical interlocks of executives on enterprise innovation, finds that vertical interlocks of executives inhibit enterprise innovation through the hollowing out of major shareholders, and verifies hypothesis 2a.

The findings of this paper indicate that the vertical interlocks of executive is more likely to be a means of hollowing out by major shareholders under the special institutional background of our country. Under the macro background of advocating investor protection and promoting economic development through technological innovation, the findings of this paper have certain implications for the formulation of corporate governance and relevant regulatory policies.

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