How do New Ventures get out of the Governance Dilemmas through Equity Incentives? —— Based on Experimental and Mathematical Statistics Analysis

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Abstract—It is necessary for new ventures that want to expand production scale to adopt the governance model of separation of ownership and management rights, but this model has brought many governance dilemmas while improving governance efficiency. Incentive theory believes that the implementation of equity incentives for operators can help new ventures out of the governance dilemmas, but the applicability of this method needs to be further explored. Therefore, in order to study the internal mechanism and applicability of this method, this paper takes 202 GEM listed companies as samples, constructs a mediation model, and designs experiments for multiple regression analysis. On the basis of the main effect regression, the mediating effect of R & D investment intensity and the moderating effect of ownership concentration and ownership are also discussed. It is found that for new ventures: (1) Equity incentives are helpful to help enterprises out of the governance dilemmas, but the effect is different due to different enterprises. (2) Equity incentives can help enterprises out of the governance dilemmas by increasing the willingness of operators to invest in innovative research and development. (3) Low ownership concentration and non-state-owned enterprises to implement equity incentives effect are significant, while state-owned enterprises have little effect. The research conclusions help to provide reasonable ideas for the long-term development of new ventures.

Keywords—equity incentives; governance dilemmas; new ventures; moderated mediation model; multiple regression analysis

1 INTRODUCTION

In the era of a highly developed market economy, the merger between enterprises meets the needs of social mass production and is also an important way for enterprises to improve their profitability. However, in the process of enterprise merger, how to achieve reasonable arrangements for the assets and leadership of the original enterprise is also an urgent problem of corporate governance. To solve this problem is to achieve a reasonable division of ownership and management rights. The theory of “separation of ownership and control” was put forward in *The Modern Corporations and Private Property*, published in 1932 by American jurist Berle and economist Means[1]. In this theoretical context, shareholders have lost the company’s direct management power and given it to operators, which alleviates the problem of corporate governance to some extent but also brings new problems. Since entering the 21st century, the scandal of "LANTIAN CO. LTD" and other state-owned listed companies

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made people reflect on why China's implementation of the separation of two powers of governance model frequently failed. The reason is that the separation of the two powers has brought many governance difficulties. Under the governance mode of separation of two powers, there is a conflict between the owners and operators of enterprises in the way of pursuing interests, which leads to serious agency problems and contract problems. These problems may lead to an increase in agency costs. Enterprises are pursuing profit. But in today's market conditions，the external market environment competition that enterprises can survive is becoming increasingly fierce. To keep the market, it is the key to carry out innovative research and development activities to improve the enterprise innovation ability. Compared with mature enterprises, new ventures have serious "inherent disadvantages" such as financing constraints [2]. In the face of high-risk and high-input innovation activities, executives in the two-power separation mode will worry about whether to carry out such activities in decision-making. But shareholders are interested in such activities that can bring them long-term benefits. Therefore, modern corporate governance urgently needs a reliable method to ensure the consistency of interests between owners and operators to reduce agency costs, get out of the governance dilemmas under the separation of two rights, and ensure that enterprises effectively improve profitability in the process of expanding scale.

The fundamental conflict between enterprise owners and operators is the interests. To alleviate the conflict of interests, it is necessary to make the two sides achieve "interest binding" to achieve win-win results. According to the principal-agent theory: when giving certain equity incentives to the enterprise operators, the operators are also the owner to a certain extent, and the convergence of interests between the two sides can significantly reduce the agency cost, which is beneficial to the improvement of enterprise profitability[3]. Since December 2005, China's listed companies gradually began and expand the scope and proportion of equity incentives. This is to improve the profitability of enterprises and avoid the failure of the two rights separation governance model in the process of growing enterprise scale. However, different new ventures have different ownerships, and the ownership structure is either centralized or decentralized. Different ownerships and ownership concentration also have an impact on owners' investment decisions. At this time, equity incentives have to consider the impact of ownership and ownership structure. This cannot help but make people reflect, under the governance mode of separation of two rights, for new ventures, can equity incentives solve the dilemmas of governance? Can controversial innovative R & D activities help enterprises make profits as an external force of equity incentives? What role do different ownership structures play in this process? These need to be discussed in-depth with the help of real data. Because of their particularity, new ventures and mature enterprises cannot be mentioned in the same breath. However, the existing literature rarely took new ventures as the research object. Therefore, this paper takes new ventures as the focus to explore, to provide theoretical guidance and practical basis for avoiding the drawbacks of corporate governance under the separation of two rights, and then enrich the relevant corporate governance theory.

2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS

2.1 Equity Incentives and Corporate Profitability

Equity incentives and the improvement of corporate profitability in solving the governance

dilemmas are the relationships between methods and results. The responsibility subjects of the two rights separation governance mode are both the owners and the operators of the enterprise. To explore whether the enterprise can get out of the governance dilemmas through the implementation of equity incentives, the owners and the operators should be the main body. Therefore, equity incentives in this paper refer to equity incentives for operators, especially executives. The survival and development of enterprises and the acquisition of interests by both sides are based on the profitability of enterprises. The improvement of profitability is the basis for ensuring the high-quality development of enterprises. Therefore, this paper measures whether enterprises can successfully get out of the governance dilemmas to achieve high-quality development with the improvement of profitability. Governance dilemmas are a legacy of the two-power separation model. Whether equity incentives can help enterprises improve profitability and get out of governance dilemmas, the existing conclusions are roughly divided into two categories.

The first is the interest convergence hypothesis proposed by Jensen and Meckling[4]. When giving certain equity incentives to the operators, the operators assume the responsibility of some owners, which can effectively avoid the interest divergence caused by the principal-agent problem, so as to ensure that the enterprise can improve its profitability in the long run. On this basis, relevant scholars have also used a variety of methods to confirm this hypothesis. Aboody, Johnson, and Kasznik[5] took 1773 companies as the research object, which proved that appropriate equity incentives for executives can help improve corporate financial performance. Mehran[6] conducted a study of US industrial firms and found that executive ownership could significantly boost profitability. Kothari, Leone, and Wasley's [7] empirical analysis showed that in enterprises with a better operating environment and strong growth, their executives had higher shareholding levels. In addition, Zahra, Neubaum and Huse[8], Morck, Wolfenzon and Yeung[9] also proved this hypothesis with research.

The second is the management barrier hypothesis. When operators get equity incentives, they will germinate a stronger desire to control the enterprise, which weakens the supervision function of owners and is not conducive to the improvement of the profitability of the enterprise. Morck, Shleifer, and Vishny [10] analyzed and empirically tested financial data from US companies in 1988 and found that increasing equity incentives were not conducive to long-term profitability when executives held between 5 and 25 percent of equities. McConnell and Servaes[11] proved the inverted U-shaped relationship between equity incentives and financial performance. Hermalin and Weisbach[12] proved that there is also an interval effect between them.

Most of the existing research conclusions took mature enterprises as the research object. Such enterprises often have successful merger experiences and have certain initiatives in the market. Their mode of operation and profitability have high stability. But for new ventures, due to their own serious financing constraints and fierce competition in the external market environment, the agency problems are more significant. When new ventures want to expand their scale, the situation of "internal and external troubles" often leads to the failure to solve the governance dilemmas. Therefore, it is necessary to enrich relevant knowledge with new ventures as the research object. Combined with the existing literature and considering the high sensitivity of new ventures to risk, when equity incentives are carried out, the incentive effect is more significant, and the mitigation effect on agency problems is more obvious. Based on this, the following assumptions are made:

H1: The implementation of equity incentives in new ventures can significantly promote the improvement of enterprise profitability.

2.2 Equity Incentives and Innovative R & D

One of the reasons for the governance dilemmas is the different ways of obtaining interests between the owners and operators of enterprises. Especially for new ventures with unstable foundations, operators tend to pay more attention to short-term benefits to ensure their interests are not damaged, and owners often want to ensure their continuous inflow of interests through the long-term benefits of enterprises. As the competitiveness of enterprises for long-term development and long-term profit, the improvement of innovation ability is the key to gain a foothold in the future market[13]. However, the high risk and high investment of innovative R & D activities are often worried by operators, which makes the interests of both sides diverge. Therefore, whether to carry out innovative R & D activities is also a manifestation of governance dilemmas. In order to measure the attention of new ventures to innovative R & D activities, this paper uses the variable of R & D investment intensity to explain.

Existing literature on equity incentives and R & D intensity, the conclusions are roughly divided into two categories. One is the positive correlation between the two. Armstrong and Vashishtha [14] have shown that executive equity incentives can link executives' interests to corporate interests and help increase innovation investments. In addition, Wu and Tu[15], Dechow and Sloan[16], Fong[17], and others also drew corresponding conclusions from different perspectives. Second, there is no linear correlation between the two. Balkin, Markman, and Gomez-Mejia[18] found no significant correlation between equity incentives and R & D investment. Ghosh, Moon, and Tandon [19] through empirical research found that equity incentives and R & D investment nonlinear correlation.

When certain equity incentives are given to the executives of a new venture, it means that the interests of the management and the long-term interests of the enterprise are invisible "tied". Although technological innovation activities are faced with a high degree of risk, considering the long-term interests of themselves and enterprises, executives will increase their investments in R & D activities to a certain extent compared with those without equity incentives. Based on this, the following assumptions are made:

H2: Equity incentives of new ventures are positively correlated with R & D investment intensity.

2.3 Equity Incentives, Innovation R & D, and Corporate Profitability

The interests of operators and owners should be based on the business interests of enterprises, and the improvement of profitability of enterprises should be ensured while resolving conflicts of interests. According to the input-output perspective, innovation R & D investment provides the necessary resource preparation for enterprises to improve their innovation ability, which is beneficial to the long-term development of enterprises. Chauvin and Hirschey[20] proved through research that R & D investment has a positive impact on improving the long-term market value of enterprises. Through a survey of 647 new ventures in the Netherlands, Stam and Wennberg[21] found that innovation investment plays a very important role in the rapid growth of new venture performance.

For new ventures, because of management's short-sightedness and high risk of R & D, although business owners want long-term benefits from the enterprise, management does not tend to use the assets of enterprises with financing constraints for R & D innovation[22], which to some extent limits the way out of the governance dilemmas. When giving operators certain equity incentives, due to the incentives effect, operators are willing to increase R & D investments to try to carry out R & D activities, thereby reducing the possibility of self-interest behavior, so as to help enterprises out of the governance dilemmas. In other words, for new ventures, if there are no incentives for executives in some way, the promotion effect of R & D investment on corporate profitability will be very weak because the management will invest as little as possible. Based on this, the following assumptions are made:

H3: R & D investment intensity of new ventures is positively correlated with corporate profitability.

H4: R & D investment intensity is the mediating variable affecting the relationship between equity incentives and the profitability of new ventures.

2.4 Ownership Concentration, Equity incentives, and R & D Investment Intensity

There are certain differences in the ownership structure of different enterprises. It is unreasonable to analyze all enterprises in general, so the influence of ownership structure must be considered when considering how enterprises can get out of the governance dilemmas with equity incentives. In the perspective of principal-agent theory, when the company's shares are more dispersed, it is difficult for the few shareholders to fully exercise the supervision function of the enterprise, so as to leave more "self-play" space for management. The asymmetry of internal and external information increases the possibility of "moral hazard" when faced with decision-making, and even make acts detrimental to the interests of owners for selfish desire, and these behavior are more obvious in new ventures. At this time, on the one hand, increasing executive equity incentives can make the interests of management and shareholders converge, and on the other hand, it can increase the initiative of management to pursue the long-term interests of enterprises. In this way, the possibility of such events can be effectively reduced. However, when the company's equity is more concentrated, the major shareholders of new ventures know that their enterprises have not yet stood firm, they will consciously increase the desire for supervision of enterprises and management, to prevent management from making decisions that are detrimental to their own interests[23]. Good supervision has been an effective way to encourage the management of new ventures. At this time, equity incentives to increase R & D investments have little effect. Based on this, the following assumptions are made:

H5: Ownership concentration negatively regulates the promotion of equity incentives on R & D investment.

2.5 Moderating effect of ownership

There are significant institutional differences between enterprises of different ownership. Even if the executives of the two enterprises are given the same equity incentives, their incentive effects may be different. According to the theory of corporate governance, the higher redundancy of state-owned enterprises makes the management efficiency of enterprises low, and the enthusiasm of employees is far less than that of non-state-owned enterprises[24]. In

addition, the management of state-owned enterprises is often generated through administrative appointments[25], lacking a professional management level[26]. The limitation of tenure makes the management pay more attention to the current performance during their tenure, so they pay less attention to R & D activities with long return periods. According to the policy catering theory, state-owned enterprises need to lead the national policy to a certain extent. Unlike non-state-owned enterprises, they can take profitability as the first pursuit goal, so they cannot make decisions only from the perspective of profitability. In other words, state-owned enterprises are sometimes not proactive in technological innovation activities. State-owned new ventures are inferior to mature state-owned enterprises in terms of corporate governance capacity and the ability to solve principal-agent problems. A large number of existing research conclusions also prove that non-state-owned enterprises have higher innovation efficiency. Thus, different ownership of new ventures, the results of equity incentives to help enterprises out of the governance dilemmas are also different. Based on this, compared with state-owned new ventures, the following assumptions are made:

H6: The promoting effect of non-state-owned new ventures' implementation of equity incentives on corporate profitability is stronger.

H7: The mediating effect of R & D investment intensity on equity incentives and profitability of non-state-owned new ventures is stronger.

H8: The moderating effect of ownership concentration of non-state-owned new ventures on equity incentives and profitability is stronger.

3 RESEARCH DESIGN

3.1 Sample selection and data source

According to the research needs, this paper takes 2012-2019 as the survey interval and selects the GEM data of listed companies in China as the initial research sample from the CSMAR database. On this basis, the following samples are eliminated: (1) Companies that are ST and ST* during the sample period. (2) Companies with continuous missing values or incomplete sample information. (3) Companies whose ownership changes. In data processing, the continuous variables are truncated at the levels of 1% and 99%. Finally, 203 qualified samples were selected.

3.2 Variable description

Return on equity is a financial indicator to measure the efficiency of the use of owners' capital. Considering the lag effect of profitability, ROE is one-period lagged. R & D investment mainly includes investment in manpower and material resources. This paper mainly considers R & D cost input intensity and takes it as an intermediary variable because of the availability of data. Other variables are defined as shown in Table 1.

Table 1 Variable Definition Explanation Table

Variable Type	Variable Symbol	Variable Name	Variable Explanation
Explained Variable	ROE	Return on Equity	After tax profit / net assets
Explanatory Variable	EI	Equity Incentives	Number of shares held by executives / total equity
Mediator Variable	R & D	R & D Investment Intensity	R & D investment amount / total assets
Regulated Variable	CON	Ownership Concentration	The Shareholding ratio of the top five shareholders
	SOE	Ownership	1 = state-owned enterprises, 0 = non-state-owned enterprises
Control Variable	SIZE	Size	Logarithm of total assets
	LEV	Equity-Debt Ratio	Total liabilities / total assets
	ASC	Ascending Ability	(Current-period OI- prior-period OI) / prior-period OI, OI: operating income
	AGE	Age	Year of investigation - the year of establishment
	DEP	The Proportion of Independent Directors	Number of independent directors / total number of board of directors
	COM	Executive Compensation	Number of top three executive pay

3.3 Research methods and model design

This paper constructs a moderated mediation model to verify the rationality of the hypothesis. The theoretical model is shown in Figure 1:

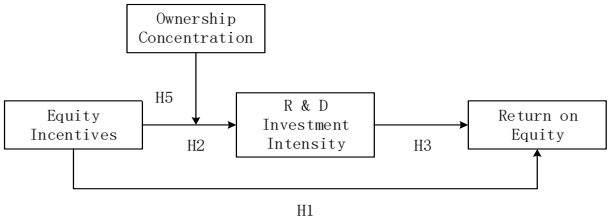

Figure 1 Theoretical Model Diagram

In order to verify the rationality of the theoretical model and the correctness of the hypothesis, the following models are established:

$$ROE=\beta_0+\beta_1 EI+\beta_2 Controls+\gamma_1+\varepsilon_1 \quad (1)$$

$$R\ \&\ D=\beta_0+\beta_1 EI+\beta_2 Controls+\gamma_2+\varepsilon_2 \quad (2)$$

$$ROE=\beta_0+\beta_1 R\ \&\ D+\beta_2 Controls+\gamma_3+\varepsilon_3 \quad (3)$$

$$ROE=\beta_0+\beta_1 EI+\beta_2 R\ \&\ D+\beta_3 Controls+\gamma_4+\varepsilon_4 \quad (4)$$

$$R\ \&\ D=\beta_0+\beta_1 EI+\beta_2 CON+\beta_3 EI*CON+\beta_4 Controls+\gamma_5+\varepsilon_5 \quad (5)$$

To test the moderating effect of ownership, it is necessary to divide the samples into the

state-owned enterprise group and the non-state-owned enterprise group to perform the regression again.

4 EMPIRICAL ANALYSIS

4.1 Variable descriptive statistics and multicollinearity test

Table 2 is a descriptive statistical and multicollinearity test table. The following conclusions can be drawn from Table 2: (1) There is a large difference between the extreme value and mean value of ROE, and the ROE of some new ventures are negative, indicating that some enterprises are in the negative growth stage of profit. (2) The maximum, minimum, and mean values of EI are 0.638, 0.000, and 0.162, indicating that the level of equity incentives varies greatly among different new ventures. (3) The maximum, minimum, and mean values of R & D are 0.100, 0.004, and 0.028, indicating that although some new ventures have paid attention to R & D investment, most new ventures still do not pay enough attention to R & D investment. (4) For CON, its mean value is 0.520, which is closer to the maximum value of 0.773, indicating that the equity of most new ventures is relatively concentrated, but the standard deviation is 0.129, indicating that the ownership concentration in different enterprises is quite different. (5) The maximum value of VIF is 1.970, far less than the critical value 10, and there is no obvious multicollinearity between variables, so regression analysis can be carried out.

Table 2 Descriptive Statistics and Multicollinearity Test Table

Variable	Mean	Standard Deviation	Maximum	Minimum	VIF
ROE	0.043	0.121	0.216	-0.697	/
EI	0.162	0.180	0.638	0.000	1.140
R & D	0.028	0.019	0.100	0.004	1.220
CON	0.520	0.129	0.773	0.240	1.150
SOE	0.158	0.365	1.000	0.000	1.100
SIZE	21.454	0.825	23.668	19.809	1.970
LEV	0.308	0.166	0.711	0.035	1.420
ASC	0.216	0.365	1.827	-0.493	1.070
AGE	14.663	3.000	32.000	3.000	1.060
DEP	0.381	0.250	0.600	0.250	1.060
COM	14.227	0.581	15.704	12.913	1.530

4.2 Correlation description

The following conclusions can be drawn from Table 3. (1) The correlation coefficient between EI and ROE is 0.072***, indicating that there is a significant positive correlation between equity incentives and the profitability of new ventures. Increasing the level of equity incentives can improve the new ventures' profitability and help them out of the governance dilemmas. (2) The correlation coefficient between R & D and ROE is 0.071***, indicating that the higher the R & D investment intensity is, the stronger the promotion effect on the profitability of new ventures is. (3) The correlation coefficient between EI and R & D is 0.084***, indicating that increasing equity incentives helps to improve the R & D investment

intensity of new ventures. (4) The correlation coefficient between CON and R & D is -0.099***, indicating that the new ventures with high ownership concentration are not conducive to an increase of R & D investment intensity. The conclusions are the same as the hypothesis.

Table 3 Correlation Coefficient Table

Variable	ROE	EI	R & D	CON	SOE	SIZE	LEV	ASC	AGE	DEP	COM
ROE	1.000										
EI	0.072***	1.000									
R & D	0.071***	0.084***	1.000								
CON	0.152***	0.233***	-0.099***	1.000							
SOE	0.008	-0.224***	-0.041	0.011	1.000						
SIZE	0.015	-0.183***	-0.143***	-0.304***	0.065***	1.000					
LEV	-0.170***	-0.151***	-0.187***	-0.175***	0.085***	0.525***	1.000				
ASC	0.275***	0.035	-0.020	0.004	-0.023	0.169***	0.129***	1.000			
AGE	-0.118***	-0.023	0.015	-0.069***	0.053**	0.164***	0.163***	-0.115***	1.000		
DEP	-0.025	0.064**	0.107***	-0.024	-0.178***	-0.073***	0.008	-0.025	0.034	1.000	
COM	0.049**	-0.119***	0.223***	-0.233***	0.068***	0.491***	0.157***	0.008	0.193***	-0.034	1.000

Note: *, ** and *** represents 10 %, 5 % and 1 %, significance level. The following is the same

4.3 Regression analysis

In order to test the main effect, the mediating effect, and the moderating effect, the regression was carried out by relevant software. Table 4 shows the regression results, which can show that:

(1) Model 1 is a regression of the main effect of equity incentives and the profitability of new ventures, and the regression coefficient of EI and ROE is 0.055***. It shows that equity incentives can improve the profitability of new ventures, help new ventures out of the governance dilemmas, and there is a lag effect. This conclusion verifies hypothesis H1.

(2) Based on Model 1, Model 2 replaces the explained variable with R & D. The regression coefficient of EI and R & D is 0.006***, indicating that EI positive correlation between EI and R & D. That is to say, the implementation of equity incentives by new ventures can effectively promote enterprises to improve the intensity of R & D investment, and help enterprises to carry out innovative activities that can bring long-term competitive advantages. This conclusion verifies hypothesis H2.

(3) Based on Model 1, Model 3 replaces explanatory variables with R & D. The regression results show that there is a positive correlation between R & D and ROE (0.697***), indicating that the increase in R & D investments of new ventures will effectively improve the profitability of enterprises. This conclusion verifies Hypothesis H3. Model 4 adds the mediating variable R & D based on Model 1 to explore its mediating effect on EI and ROE. After adding R & D, the regression coefficient of EI and ROE is 0.050***. Similarly, the regression coefficient of R & D and ROE is 0.663***, indicating that the intensity of R & D investment in new ventures plays a partial mediating role in promoting equity incentives on profitability. Equity incentives help enterprises out of governance dilemmas by promoting operators to increase the proportion of R & D investments. This conclusion verifies hypothesis H4.

(4) The regression results of Model 2 and Model 5 test the moderating effect of CON on EI and R & D. Model 2 shows that at the 1% level, EI is significantly positively correlated with R & D. Model 5 adds CON and the interaction between EI and CON based on model 2. It shows that the regression coefficient between EI*CON and R & D is -0.043***, indicating that Con

as a moderator has a negative impact on the relationship between EI on R & D, and the effect of equity incentives on new ventures with dispersed equity to get out of governance dilemmas is more significant. This conclusion verifies hypothesis H5.

Table 4 Regression Coefficient Table (1)

Variable	Model 1 ROE	Model 2 R & D	Model 3 ROE	Model 4 ROE	Model 5 R & D
EI	0.055*** (3.54)	0.006** (2.43)		0.050*** (3.26)	0.011*** (4.03)
R & D			0.697*** (4.58)	0.663*** (4.36)	
CON					-0.021*** (-5.95)
EI*CON					-0.043** (-2.04)
SIZE	0.031*** (7.09)	-0.006*** (-8.34)	0.034*** (7.68)	0.035*** (7.91)	-0.007*** (-9.22)
LEV	-0.112*** (-5.95)	-0.012*** (-3.85)	-0.108*** (-5.75)	-0.104*** (-5.54)	-0.012*** (-3.97)
ASC	-0.020*** (2.72)	0.002 (1.52)	0.020*** (2.77)	0.019** (2.55)	0.002* (1.73)
AGE	-0.003*** (-4.30)	0.000 (0.20)	-0.002*** (-4.19)	-0.003*** (-4.34)	0.000 (0.35)
DEP	-0.041 (-0.84)	0.034*** (4.29)	-0.056 (-1.14)	-0.062 (-1.27)	0.031*** (3.99)
COM	0.006 (1.10)	0.012*** (14.02)	-0.003 (-0.56)	-0.002 (-0.40)	0.012*** (13.56)
Cons	-0.608*** (-6.87)	-0.055*** (-3.85)	-0.546*** (-6.21)	-0.578*** (-6.55)	-0.034** (-2.27)
F	18.00	42.44	19.29	18.33	37.81
Obs	1 414	1 616	1 414	1 414	1 616

The samples are divided into the state-owned enterprise group and the non-state-owned enterprise group according to ownership, and group regression is used to study the moderating effect of ownership. Table 5 shows the results of the regression. According to Table 5, the following conclusions can be drawn:

(1) As can be seen from the regression results of model 1, the regression coefficient of state-owned enterprises is negative and does not pass the main effect test. The regression coefficient of the non-state-owned enterprise group is 0.065***, indicating that non-state-owned new ventures have a stronger promoting effect on profitability when implementing equity incentives, and the effect of using equity incentives to get out of the governance dilemmas is more significant. However, state-owned new ventures have little effect on getting out of the governance dilemmas by using equity incentives. This conclusion verifies Hypothesis 6.

(2) Since the state-owned enterprise group does not pass the main effect test, it is not necessary to consider the sample of this group when testing the mediating effect of R & D investment intensity. The results of model 2 show that for the non-state-owned enterprise

group, EI is still positively correlated with R & D (0.007***). It shows that the implementation of equity incentives in non-state-owned new ventures can still significantly improve the R & D investment intensity. In Model 3, the correlation coefficient between R & D and ROE is 0.743***. In Model 4, the regression coefficients of EI, R & D, and ROE are 0.060*** and 0.691***, respectively, indicating that for non-state-owned new ventures, the mediating effect of R & D on EI and ROE still exists. In other words, the mediating effect of the R & D investment intensity of non-state-owned new ventures on the relationship between equity incentives and profitability is stronger. This conclusion verifies hypothesis H7.

(3) The regression coefficient between EI and R & D of the state-owned enterprise group in Model 2 is negative, and the significance is poor, indicating that for state-owned new ventures, increasing the shareholding ratio of executives will reduce the intensity of R & D investment. The regression coefficient of the non-state-owned enterprise group is 0.007***, indicating that the implementation of equity incentives by non-state-owned new ventures will still significantly promote the intensity of R & D investment. In model 5, the interaction coefficient of the state-owned enterprise group did not pass the significant test, indicating that for the state-owned enterprise group, ownership concentration is no longer a moderator affecting equity incentives and R & D investment intensity. For the non-state-owned enterprise group, the coefficient of EI*CON is −0.042*, indicating that the ownership concentration of non-state-owned new ventures still negatively regulates the promoting effect of equity incentives on R & D investment intensity. In other words, compared with state-owned new ventures, the ownership concentration of non-state-owned new ventures has a stronger negative impact on the relationship between equity incentives and R & D investment intensity. This conclusion verifies hypothesis H8.

Table 5 Regression Coefficient Table (2)

Variable	Model 1 ROE		Model 2 R & D		Model 3 ROE	Model 4 ROE	Model 5 R & D	
	SOE=1	SOE=0	SOE=1	SOE=0	SOE=0	SOE=0	SOE=1	SOE=0
EI	-0.019	0.065***	-0.019*	0.007***		0.060***	-0.023**	0.014***
	(-0.29)	(3.98)	(-1.82)	(2.64)		(3.64)	(-2.07)	(4.49)
R & D					0.743***	0.691***		
					(4.41)	(4.11)		
CON							0.024	-0.025***
							(1.61)	(-6.79)
EI*CON							0.103	-0.042*
							(1.05)	(-1.94)
SIZE	0.031***	0.031***	-0.007***	-0.006***	0.034***	0.035***	-0.006***	-0.007***
	(3.05)	(6.39)	(-4.18)	(-7.46)	(6.83)	(7.16)	(-3.37)	(-8.34)
LEV	-0.109**	-0.111***	0.011	-0.016***	-0.105***	-0.100***	0.011	-0.016***
	(-2.12)	(-5.46)	(1.24)	(-4.74)	(-5.12)	(-4.90)	(1.23)	(-4.92)
ASC	0.042**	0.016**	-0.001	0.002*	0.017**	0.015**	-0.001	0.003**
	(2.33)	(2.02)	(-0.32)	(1.82)	(2.06)	(1.82)	(-0.36)	(2.03)
AGE	-0.002	-0.003***	-0.000	0.000	-0.003***	-0.003***	-0.000	0.000
	(-1.53)	(-4.08)	(-1.17)	(0.79)	(-3.91)	(-4.20)	(-1.26)	(0.79)
DEP	-0.100	-0.022	0.011*	0.029***	-0.040	-0.042	0.017**	0.026***
	(-0.59)	(-0.43)	(2.47)	(3.52)	(-0.76)	(-0.81)	(2.45)	(3.21)
COM	0.016	0.003	0.010***	0.013***	-0.007	-0.006	0.010***	0.012***
	(1.31)	(0.48)	(4.86)	(13.47)	(-1.09)	(-0.96)	(4.48)	(12.79)
Cons	-0.739***	-0.578***	-0.017	-0.066***	-0.495***	-0.538***	-0.031	-0.040**

	(-3.52)	(-5.88)	(-0.47)	(-4.20)	(-5.07)	(-5.49)	(-0.79)	(-2.52)
F	4.82	14.39	6.74	39.05	14.95	14.88	5.55	36.70
Obs	224	1 190	256	1 360	1 190	1 190	256	1 360

5 ROBUSTNESS TEST

Robustness tests are needed to ensure that the conclusions are accurate and reliable. Considering that there are many indicators to measure the profitability of enterprises, the robustness test is carried out by the index substitution method: The explained variable is replaced by the rate of return on total assets (ROA), and then the regression analysis is carried out again. Since the explained variables of Model 2 and Model 5 are R & D, it is only necessary to re-regression Model 1, Model 3, and Model 4. Similarly, in the group regression, since the state-owned enterprise group in Model 1 does not pass the significance test, it is unnecessary to regress the state-owned enterprise group in Model 3 and Model 4. As with the original explanatory variables, taking into account the impact of the lag effect, the return on total assets is still a lag value. The regression results are shown in Table 6, which still support the conclusions above.

Table 6 Regression Coefficient Table (3)

Variable	Model 1(ROA)			Model 3(ROA)		Model 4(ROA)	
	SOE=0&1	SOE=1	SOE=0	SOE=0&1	SOE=0	SOE=0&1	SOE=0
EI	0.034***	-0.030	0.041***			0.031***	0.038***
	(3.36)	(-0.85)	(3.71)			(3.11)	(3.44)
R & D				0.387***	0.407***	0.366***	0.374***
				(3.87)	(3.59)	(3.66)	(3.31)
SIZE	0.016***	0.014**	0.017***	0.018***	0.018***	0.019***	0.019***
	(5.76)	(2.45)	(5.23)	(6.22)	(5.53)	(6.45)	(5.83)
LEV	-0.103***	-0.103***	-0.102***	-0.101***	-0.099***	-0.098***	-0.096***
	(-8.36)	(-3.65)	(-7.49)	(-8.20)	(-7.21)	(-8.00)	(-7.02)
ASC	0.010**	0.021**	0.008	0.010**	0.008	0.009*	0.007
	(2.00)	(2.17)	(1.38)	(2.07)	(1.45)	(1.85)	(1.21)
AGE	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(-5.27)	(-2.66)	(-4.67)	(-5.16)	(-4.50)	(-5.30)	(-4.77)
DEP	-0.020	-0.092	-0.006	-0.028	-0.016	-0.031	-0.017
	(-0.63)	(-0.98)	(-0.18)	(-0.87)	(-0.45)	(-0.99)	(-0.49)
COM	0.007**	0.011	0.006	0.002	0.001	0.003	0.001
	(2.03)	(1.65)	(1.48)	(0.56)	(0.14)	(0.71)	(0.26)
Cons	-0.345***	-0.316***	-0.349***	-0.309***	-0.300***	-0.328***	-0.327***
	(-5.96)	(-2.74)	(-5.29)	(-5.35)	(-4.56)	(-5.68)	(-4.96)
F	20.77	6.00	16.67	21.35	16.54	20.01	16.08
Obs	1 414	224	1 190	1 414	1 190	1 414	1 190

6 CONCLUSIONS AND SUGGESTIONS

Through empirical research, this paper proves that equity incentives are indeed an effective method to promote new ventures out of the dilemmas of corporate governance under the separation of two rights governance mode, but the effect varies greatly due to different enterprises. In the further exploration of the internal mechanism of equity incentives to solve the governance dilemmas, it is found that equity incentives are to help new ventures out of the governance dilemmas by improving the willingness of operators to innovate R & D investment. In the implementation of equity incentives, operators who obtain equity incentives tend to pursue the long-term interests of enterprises. Considering that innovation as the core competitiveness of enterprises can ensure long-term development, they are willing to invest in R & D. As a moderating variable, ownership concentration negatively regulates the relationship between equity incentives and R & D investment intensity. This shows that the more dispersed the equity, the more obvious the effect of equity incentives. Due to differences in resource endowments and systems, non-state-owned new ventures have stronger management desire and enthusiasm for enterprises. Therefore, when non-state-owned new ventures implement equity incentives, it plays a stronger role in promoting profitability, the intermediary role of R & D investment intensity is more obvious, and the negative moderating effect of ownership concentration is more significant. This shows that non-state-owned new ventures have a significant effect on getting out of the governance dilemmas by means of equity incentives. However, due to the limitation of the term of office and other reasons, the operators of state-owned new ventures pay attention to the enterprise only during their tenure, the implementation of equity incentives will reduce the R & D investment willingness of operators. So it doesn't work for state-owned new ventures to get out of governance dilemmas through equity incentives.

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