A Study on the Effect of Executive Incentives on Corporate Performance of Chinese Listed Companies

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Abstract: Based on existing theories, this paper proposes the hypothesis of the effect of executive incentives on corporate performance. The financial data of Chinese A-share listed companies from 2013 to 2023 are taken as samples, and empirical analysis is conducted by constructing a regression model. The results show that (1) there is a significant positive relationship between executive compensation incentives and corporate performance; (2) executive equity incentives also show a significant positive relationship with corporate performance; and (3) whether it is compensation incentives or equity incentives, the positive effect of executive incentives on corporate performance is more pronounced in non-state-owned enterprises compared to state-owned enterprises.

***Keywords*:** executive incentives, corporate performance, listed companies in china

1. Introduction

With China's economic transformation and development stage, if enterprises want to maintain their competitiveness in the fierce market, talent is also an essential part. As a reserve of core talents of the enterprise, top management's operation and decision-making can often effect the performance of the enterprise. However, the problem of agency costs brought about by executives is also a problem that enterprises cannot ignore. Therefore, how to manage the development strategy of the enterprise, what kind of incentive policy for executives to ensure the solid growth of the company's performance at the same time, it has become the key research object of the enterprise nowadays.

2. Theoretical analysis and research hypothesis

2.1 The effect of executive compensation incentives on firm performance

In order to solve the agency problems that ensue in the day-to-day operations of a firm, it is essential to design effective and rational executive incentive policies and implement them.David A. Carter et al. (2023) showed that stock option incentives, one of the forms of compensation incentives, significantly improve firm performance, and that stock option incentives, by linking an executive's personal interests to the firm's long-term performance, promote innovation and the realization of long-term strategic goals [1].Maria J. Silva et al. (2024) suggested that performance-oriented compensation can effectively enhance firm financial performance, especially in those firms with clear performance metrics and incentive structures[2].Therefore this paper proposes the hypothesis:

H1: There is a significant positive relationship between executive compensation incentives and firm performance.

2.2 The effect of executive equity incentives on enterprise performance

The development of enterprises can not be achieved without the participation of managers, so in order to motivate executives in the long term, equity incentives came into being.Anna R. Jensen et al. (2024) showed that there is a positive relationship between the percentage of company stock owned by executives and firm performance [3]. Zhu Jin Ye (2020) showed that equity incentives have a positive effect on all corporate performance [4]. Therefore this paper proposes the hypothesis:

H2: Executive equity incentives are significantly and positively related to firm performance.

2.3 The effect of executive incentives on firm performance under different ownership properties

Different property rights nature of its company characteristics have differences, the nature of the enterprise, the company's main business strategy, direction will be different.Zhao, L. et al. (2023) found that the positive effect of executive compensation incentives on corporate performance was significantly higher in non-state-owned enterprises than in state-owned enterprises [5].Therefore this paper proposes the hypothesis:

H3: The positive effect of executive compensation incentives on firm performance is more significant in non-state-owned enterprises compared to state-owned enterprises.

H4: Compared with state-owned enterprises, the positive effect of executive equity incentives in non-state-owned enterprises on enterprise performance is more significant.

3. Research design

3.1 Sample Selection and Data Source

The data of Chinese A-share listed companies from 2013-2023 are extracted from the Cathay Pacific database as the research samples, and the following data are excluded: (1) the stock samples of ST and * ST companies are excluded; (2) the listed companies in the insurance and financial industries are excluded; (3) the data with abnormal values or missing values in the financial data of enterprises are excluded. After screening, the available valid data samples are 30956. In this paper, the data of the valid samples are summarized and processed with Excel tables, and finally the valid data samples are analyzed by regression analysis with STATA.

3.2 Variable definition and model construction

The explained variables, explanatory variables and control variables are shown in Table 1.

Table 1. Definition of variables

Variable type	variable name	variable symbol	Variable Definition
Explanatory variable	Corporate Performance	ROA	Net Profit/Total Assets
		ROE	Net Profit/Net Assets
		TobinQ	Market Capitalization/Total Assets
Explanatory Variables	Executive Incentives	Econ Sal	Logarithm of top three executive compensation
		Econ Eq	Executive Stock Ownership
Control Variables	Enterprise Size	Size	Log of total assets
	Gearing Ratio	Lev	Total Liabilities/Total Assets
	Total Asset Turnover Ratio	ATO	Operating Income/Total Assets
	Shareholding Concentration	TOP10	Shareholding ratio of top ten shareholders
	Equity Checks and Balances	Balance	Shareholding ratio of the second to fifth largest shareholders/ shareholding ratio of the first largest shareholder
	Board Size	Board	Logarithmic number of board of directors
	Percentage of Independent Directors	Indep	Number of independent directors/number of board of directors
Grouping Variables	Nature of Shareholding	Soe	State-owned enterprises-1: Non-state-owned enterprises-0
Dummy variables	Year	Year	Year dummy variable
	Industry	Ind	Industry dummy variable

4. Model construction

The following model is constructed through the research hypotheses presented in the theoretical analysis above:

$$ROA = \partial_0 + \partial_1 EconSal + \partial_2 Controls + Soe + \partial_3 Year + \partial_4 Ind + \varepsilon \quad (1)$$

$$ROA = \beta_0 + \beta_1 EconEq + \beta_2 Controls + Soe + \beta_3 Year + \beta_4 Ind + \varepsilon \quad (2)$$

$$ROE = \partial_0 + \partial_1 EconSal + \partial_2 Controls + Soe + \partial_3 Year + \partial_4 Ind + \varepsilon \quad (3)$$

$$ROE = \beta_0 + \beta_1 EconEq + \beta_2 Controls + Soe + \beta_3 Year + \beta_4 Ind + \varepsilon \quad (4)$$

$$TobinQ = \partial_0 + \partial_1 EconSal + \partial_2 Controls + Soe + \partial_3 Year + \partial_4 Ind + \varepsilon \quad (5)$$

$$TobinQ = \beta_0 + \beta_1 EconEq + \beta_2 ontrols + Soe + \beta_3 Year + \beta_4 Ind + \varepsilon \quad (6)$$

In the above four models, ROA, ROE and TobinQ represent firm performance, Econ Sal is executive compensation incentives, and Econ Eq is executive equity incentives.Controls are the control variables, including firm size (Size), gearing (Lev), total asset turnover (ATO), equity concentration (TOP10), equity checks and balances (Balance), board size (Board), and the percentage of independent directors (Indep), Soe represents the nature of the grouping variable equity, Year represents the dummy variable year, Ind represents the dummy variable industry, and represents the residual term.

5. Empirical results and analysis

5.1 Descriptive statistical analysis

Table 2 shows the descriptive statistical results of each main variable. Regarding corporate performance, the table shows that the maximum and minimum values of ROA are 0.2203 and -0.545, respectively, which can be seen that there is still a big gap in ROA of Chinese listed companies.The maximum and minimum values of ROE are 0.3591 and -2.1517, and the difference between the maximum values of ROE is even bigger than that of ROA. With the above data, it can be seen that the performance level of Chinese listed companies has a large difference, and the overall performance level is not satisfactory, which indicates that the performance level of enterprises still needs to be improved.

Regarding executive compensation incentives, Table 2 shows that the maximum value is 12.4296 while the minimum value is 12.1415 and the mean value is 14.5596, which shows that the gap between the levels of executive compensation incentives of Chinese listed companies is relatively small. The maximum value is 0.6254 and the minimum value is 0. The mean value is 0.0827. It can be seen that some enterprises do not implement equity incentives for executives, while some enterprises pay more and more attention to the effect of equity incentives on executives and enterprises. The standard deviation of executive compensation incentives is larger than the standard deviation of executive equity incentives, which indicates that there is a larger difference in the volatility of the implementation of compensation incentives in listed companies relative to equity incentives.

Table 2. Descriptive statistics for each major variable

Variable	Observations	Mean	Std. Dev.	Min	Max
ROA	30956	0.0365	0.0683	-0.5451	0.2203
ROE	30956	0.0491	0.1668	-2.1517	0.3591
TobinQ	30956	2.0771	1.4048	0.7151	15.4005
Top10	30956	58.8456	15.1011	21.7277	95.5062
ATO	30956	0.5960	0.3966	0.0563	2.6375
Econ_Sal	30956	14.5596	0.6958	12.4296	16.7989
Econ_Eq	30956	0.0827	0.1451	0.0000	0.6254
Size	30956	22.2144	1.2827	19.5674	26.4132
Lev	30956	0.4110	0.2013	0.0281	0.9047
Balance	30956	0.7806	0.6189	0.0198	2.9902
Board	30956	2.1104	0.1950	1.6094	2.7081
Indep	30956	0.3770	0.0536	0.2857	0.6000

5.2 Correlation analysis

When the absolute value of correlation coefficient is less than 0.8, the multicollinearity between variables is less, as can be seen from Table 3, the maximum value is 0.869 for ROA and ROE, and the absolute value of coefficient of other variables is less than 0.8. And the VIF value of variables is less than 3, which indicates that the variables are more reasonable, and there is no multicollinearity to carry out regression analysis. Table 3 shows the results of correlation analysis, from which it can be seen that compensation incentives and ROA and ROE are significantly positively correlated at the level of 1%, and hypothesis 1 is partially supported. Meanwhile, according to the data in Table 3, it can be seen that equity incentives are significantly positively correlated with ROA, ROE and TobinQ at 1% level, and Hypothesis 2 is also supported, which indicates that enterprises increase equity incentives can enhance market value.

Table 3. Correlation analysis

	ROA	ROE	TobinQ	Top10	ATO	Econ Sal	Econ Eq
ROA	1						
ROE	0.869***	1					
TobinQ	0.126***	0.045***	1				
Top10	0.243***	0.193***	-0.102***	1			
ATO	0.124***	0.112***	-0.026***	0.047***	1		
Econ Sal	0.161***	0.155***	-0.078***	0.079***	0.120***	1	
Econ Eq	0.129***	0.069***	0.029***	0.193***	-0.037***	-0.042***	1
Size	0.00200	0.081***	-0.362***	0.081***	0.061***	0.427***	-0.300***
Lev	-0.341***	-0.221***	-0.238***	-0.112***	0.154***	0.085***	-0.250***
Balance	-0.020***	-0.033***	0.047***	0.004*	-0.062***	0.092***	0.130***
Board	0.007***	0.031***	-0.106***	0.004*	0.010***	0.081***	-0.176***
Indep	-0.019***	-0.020***	0.041***	0.024***	-0.015***	-0.007***	0.084***
	Size	Lev	Balance	Board	Indep		
Size	1						
Lev	0.510***	1					
Balance	-0.107***	-0.112***	1				
Board	0.267***	0.150***	0.014***	1			
Indep	-0.008***	-0.011***	-0.029***	-0.569***	1		

5.3 Regression analysis

In this paper, equity incentives (Econ_Eq) and compensation incentives (Econ_Sal) are regressed on firms' financial performance (ROA) respectively, and Table 4 is obtained.Mod (1) shows the effect of equity incentives on financial performance under the full sample. Obviously, equity incentives are significantly and positively correlated with financial performance at the 1% level, which further validates hypothesis H2.In order to examine more deeply the extent of the effect of equity incentives on financial performance under different ownership attributes, this paper divides the research sample into two types of state-owned enterprises (SOEs) and non-state-owned enterprises (NSOEs).Mod (2) is the regression of equity incentives on the financial performance of state-owned enterprises (SOEs), and Mod (3) is the regression of equity incentives on the financial performance of non-state-owned enterprises do regression. It can be seen that the effect of equity incentives on the financial performance of SOEs and non-SOEs is significant at 5% and 1% level respectively. It is concluded that the positive effect of equity incentives for executives in non-state-owned enterprises on corporate performance is more significant compared to state-owned enterprises, and hypothesis H4 is verified.

Mod (4) is the effect of compensation incentives (Econ_Sal) on financial performance (ROA) in the full sample, and compensation incentives have a significant positive correlation with financial performance, which again verifies Hypothesis H1. Mod (5) does a regression of compensation incentives on the financial performance of state-owned firms, and it can be seen that compensation incentives are significantly positively correlated with financial performance at the 5% level of significance.Mod (6) does a regression of compensation incentives on the financial performance of non-state-owned enterprises to do regression, pay incentives and financial performance at the 1% level of significance of a significant positive relationship, but also verify the hypothesis H3, compared with state-owned enterprises, non-state-owned enterprises executive compensation incentives on corporate performance of the positive effect is more significant.

Table 4. The effect of different incentives on firm performance ROA

ROA	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
	Full sample	State enterprise	Non-state enterprise	Full sample	State enterprise	Non-state enterprise
Econ_Eq	0.0296***	-0.104**	0.0217***			
	(5.84)	(-2.79)	(3.80)			
Top10	0.000723***	0.0000769	0.000807***	-0.00645***	0.000119	0.000810***
	(14.80)	(1.01)	(11.92)	(-7.51)	(1.59)	(12.07)
ATO	0.0536***	0.0535***	0.0599***	0.330***	0.0488***	0.0566***
	(30.37)	(23.37)	(25.36)	(10.64)	(21.43)	(23.75)
Size	0.0239***	0.0215***	0.0333***	-0.538***	0.0161***	0.0299***
	(25.06)	(15.23)	(27.40)	(-32.09)	(11.20)	(23.77)
Lev	-0.195***	-0.180***	-0.197***	0.267***	-0.170***	-0.194***
	(-55.65)	(-34.22)	(-43.27)	(4.35)	(-32.53)	(-42.66)
Balance	-0.0135***	-0.00722***	-0.0138***	0.0261	-0.00895***	-0.0140***
	(-11.40)	(-3.79)	(-8.80)	(1.25)	(-4.77)	(-8.96)
Board	-0.00585	-0.00296	-0.00260	-0.00161	-0.00595	-0.00474
	0.000723***	(-0.59)	(-0.48)	(-0.02)	(-1.19)	(-0.88)
Econ_Sal				0.0153***	0.0208**	0.0137***
				(15.08)	(15.36)	(10.04)
_cons	-0.481***	-0.373***	-0.585***	-0.604***	-0.535***	-0.700***
	(-18.76)	(-10.12)	(-17.24)	(-22.45)	(-14.14)	(-19.55)
N	30956	9464	21492	30956	9464	21492
R^2	0.195	0.199	0.201	0.201	0.221	0.204
adj. R^2	0.042	0.057	0.027	0.049	0.083	0.032
F		55.47	119.8	176.6	63.37	122.7
p		0	0	0	0	0

* p < 0.1, ** p < 0.05, *** p < 0.01

This paper regresses the two incentives on firms' financial performance (TobinQ) separately and obtains Table 5. From Mod (1), it can be seen that equity incentives are significantly positively correlated with financial performance at the 1% level in the full sample, and Hypothesis 2 is supported. In Mod (2), equity incentives are significantly and positively related to the financial performance of SOEs at the 5% level. In Mod (3), equity incentives are significantly and positively related to the financial performance of non-state-owned firms at the 1% level and Hypothesis 4 is supported.

Regression of compensation incentives on firms' financial performance (TobinQ).Mod (4) is the effect of compensation incentives (Econ_Sal) on financial performance (TobinQ) in the full sample, with a correlation coefficient of 0.122, which suggests that compensation incentives have a positive contributing effect on the enhancement of firms' long term value, verifying Hypothesis 1.In Mod (5), compensation incentives are significantly and positively correlated at the 5% level to the financial performance of state-owned firms. In Mod (6), compensation incentives are significantly positively related to the financial performance of non-state-owned enterprises at the 1% level. It can be seen that the pay incentive approach has a positive effect on the market value of both non-state and state-owned firms, but the effect on non-state-owned firms is greater and hypothesis H3 is supported.

Table 5. The effect of different incentives on firm performance TobinQ

TobinQ	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
	Full sample	State enterprise	Non-state enterprise	Full sample	State enterprise	Non-state enterprise
Econ_Eq	0.576***	4.253**	0.502***			
	(6.48)	(6.04)	(5.10)			
Top10	-0.00551***	0.000131	-0.00704***	-0.00645***	0.000228	-0.00804***
	(-6.34)	(0.09)	(-6.04)	(-7.51)	(0.16)	(-6.94)

TobinQ	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
	Full sample	State enterprise	Non-state enterprise	Full sample	State enterprise	Non-state enterprise
ATO	0.362***	0.233***	0.398***	0.330***	0.200***	0.370***
	(11.78)	(5.37)	(9.79)	(10.64)	(4.56)	(9.01)
Size	-0.511***	-0.500***	-0.525***	-0.538***	-0.534***	-0.548***
	(-31.60)	(-18.73)	(-25.12)	(-32.09)	(-19.35)	(-25.30)
Lev	0.228***	-0.281**	0.406***	0.267***	-0.201*	0.430***
	(3.71)	(-2.82)	(5.19)	(4.35)	(-2.00)	(5.48)
Balance	0.0241	0.0485	0.0116	0.0261	0.0237	0.0153
	(1.16)	(1.34)	(0.43)	(1.25)	(0.66)	(0.57)
Board	0.0288	0.158	0.00279	-0.00161	0.141	-0.0343
	(0.42)	(1.64)	(0.03)	(-0.02)	(1.47)	(-0.37)
Econ_Sal				0.122***	0.133**	0.106***
				(6.84)	(5.12)	(4.47)
_cons	12.44***	12.27***	12.70***	11.37***	11.19***	11.75***
	(27.70)	(17.55)	(21.73)	(24.05)	(15.39)	(19.04)
N	30956	9464	21492	30956	9464	21492
R^2	0.217	0.215	0.234	0.217	0.214	0.234
adj. R^2	0.069	0.076	0.068	0.069	0.075	0.068
F	195.2	61.04	145.8	195.4	60.68	145.6
p	0	0	0	0	0	0

* p < 0.1, ** p < 0.05, *** p < 0.01

5.4 Robustness test

In order to further verify the above conclusions, this paper does the following test, replacing the proxy variable of enterprise performance with return on equity (ROE). The test results show that the effect of equity incentives on non-state-owned enterprises exceeds that of state-owned enterprises; the effect of compensation incentives on the financial performance of enterprises is still significantly positive, and the effect on non-state-owned enterprises is higher than that of state-owned enterprises. The results in Table 6 further confirm the previous empirical results. Therefore, the conclusions of this paper are robust.

Table 6. The effect of different incentives on ROE of firm performance

ROE	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
	Full sample	State enterprise	Non-state enterprise	Full sample	State enterprise	Non-state enterprise
Econ_Eq	0.0543***	-0.318**	0.0416***			
	(3.92)	(-2.72)	(2.75)			
Top10	0.00132***	0.000576*	0.00143***	0.00139***	0.000693**	0.00143***
	(9.74)	(2.41)	(7.98)	(10.38)	(2.93)	(8.06)
ATO	0.114***	0.134***	0.103***	0.105***	0.121***	0.0965***
	(23.84)	(18.61)	(16.52)	(21.84)	(16.81)	(15.31)
Size	0.0805***	0.0608***	0.0899***	0.0712***	0.0457***	0.0831***
	(31.90)	(13.73)	(28.01)	(27.31)	(10.11)	(25.00)
Lev	-0.504***	-0.451***	-0.494***	-0.496***	-0.423***	-0.488***
	(-52.60)	(-27.32)	(-41.06)	(-51.81)	(-25.71)	(-40.56)
Balance	-0.0299***	-0.0161**	-0.0328***	-0.0312***	-0.0211***	-0.0332***
	(-9.19)	(-2.69)	(-7.92)	(-9.62)	(-3.56)	(-8.04)
Board	-0.00637	0.00591	-0.00458	-0.0121	-0.00241	-0.00890
	(-0.59)	(0.37)	(-0.32)	(-1.13)	(-0.15)	(-0.63)

ROE	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
	Full sample	State enterprise	Non-state enterprise	Full sample	State enterprise	Non-state enterprise
Econ_Sal				0.0356***	0.0583**	0.0274***
				(12.81)	(13.64)	(7.57)
_cons	-1.430***	-1.103***	-1.625***	-1.430***	-1.556***	-1.853***
	(-20.41)	(-9.51)	(-18.11)	(-20.41)	(-13.04)	(-19.57)
N	30956	9464	21492	30956	9464	21492
R^2	0.159	0.144	0.165	0.159	0.162	0.167
adj. R^2	-0.000	-0.007	-0.016	-0.000	0.014	-0.014
F	132.7	37.50	94.13	132.7	43.29	95.74
p	0	2.75e-239	0	0	1.07e-276	0

* p < 0.1, ** p < 0.05, *** p < 0.01

6. Summary and recommendations

This paper selects China's A-share listed companies from 2013 to 2023 as the research sample, and empirically analyzes it to draw the following conclusions. First, based on the descriptive analysis, it is learned that the main way of executive incentives is still compensation incentives. Secondly, regression analysis shows that both compensation incentives and equity incentives are significantly positively correlated with corporate performance in both state-owned and non-state-owned enterprises. Compensation incentives can play a positive and significant role in executives' motivation. Equity incentive is to make the interests of executives and shareholders converge, which is a kind of long-term incentive, executives in order to maximize their own interests and reduce their own short-sighted behavior, so as to improve the performance of the enterprise. However, the effect of both incentive methods in state-owned enterprises is worse than that in non-state-owned enterprises.

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