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Compensations of Top Executives and M&A Behaviors: An Empirical Study of Listed Companies

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Abstract: This study empirically examines the relationship between executive compensation and mergers and acquisitions (M&A) behaviors by identifying the influence of short- and long-term incentive on the propensity and scale of M&A. When the short-term incentive is insufficient, M&A behaviors serve as a beneficial compensation mechanism. Thus, lack of executives' incentive promotes the propensity to engage in M&A and significantly affects the scale of M&A. With regard to long-term incentives, M&A behaviors serve as a beneficial creation mechanism. Shareholding of executives promotes M&A propensity, and does not significantly affect the scale of M&A. This study significantly contributes to research in M&A behaviors by revealing the beneficial distribution mechanisms of M&A behaviors.

Keywords: mergers and acquisitions behaviors; executive compensation incentive; beneficial distribution mechanisms; listed companies

JEL Classification: G34; M52; N25

1. Introduction

Top executives play an important role in the corporate mergers and acquisitions (M&A) behaviors (Zhou et al. 2020; Amewu and Alagidede 2019; Agyei-Boapeah et al. 2019). Separation of ownership and management rights enables high-ranking executives who control the resources of listed corporations to use M&A as a means for personal gain (Tang et al. 2020; Jensen and Meckling 1976; Fama and Jensen 1983). Consequently, such executives are motivated to pursue investments of large scale rather than large return, leading to losses in shareholder values. As an effort to increase the interest drive among high-ranking executives and shareholders, listed corporations often introduce a set of executive incentives, which aim to reduce agency costs through profit-sharing schemes that improve incentive compatibility (Chu et al. 2020).

The Code of Corporate Governance for Listed Companies in China clearly dictates that a board of directors should establish a subordinate compensation committee to oversee the design of executive-incentive mechanisms. The China Securities Regulatory Commission (CSRC) further requires that listed corporations disclose the work results of the compensation committee (as well as those of the audit committee) in their annual reports. The rationale behind this policy is that incentives may affect the behavioral propensity of high-ranking executives, particularly with regard to strategic behaviors concerning corporate development and resource allocation (Zhou et al. 2020). Preliminary investigations have been conducted on the associations between executive incentives and M&A, but these studies have neglected to compare the effects of short- and long-term incentives on corporate M&A.

The present study examines 952 listed companies across 3 years in the Shanghai and Shenzhen Stock Exchanges. For a theoretical framework of business expansion, this study implements the principal–agent theory for an empirical analysis of short-term (primarily compensation-based incentives) and long-term (primarily equity-based incentives) executive incentives and their effects on corporate M&A. Specifically, this study first investigates how executive incentives affect listed corporations in determining their expansion propensity in the M&A process, and subsequently determines how executive incentives affect the scale of M&A that listed corporations engage in.

This study offers three contributions to existing theories: (1) the principal–agent theory is applied in examination of executive incentives' effects on corporate M&A, thus broadening the horizon of M&A research; (2) the effects of both short-term (salary-based) and long-term (equity-based) executive incentives on corporate M&A are examined; and (3) the in-depth investigation on M&A involves comparison and further analysis of the propensity behind and scale of such operations. This study offers a valuable reference for the reform of executive-incentive systems and the improvement of M&A monitoring systems in China.

2. Theoretical Analysis and Hypothesis

2.1. Salary-Based Executive Incentives and Corporate M&A

The effectiveness of salary-based (or cash-based) executive incentives lies in the reasonability of the association between compensation and performance. Reasonable executive compensation can alleviate agency costs induced by executives' self-interested behaviors (Bizjak et al. 2008). Salary-based executive incentives have long served as a key governance mechanism for solving the agency problems between shareholders and corporate managers. Compensations are increasing for managers of listed corporations in both the United States and China. The problem of private managerial benefits is a focal point for the effects of agency problems on corporate expansion. The purpose of compensation-based executive incentives is to promote agency behaviors that align with the interests of the principals. Studies based on human capital theory and managerial power theory indicate that when a corporation's board of directors design a compensation contract for managers, compensations offered by similar corporations should be considered as benchmarks (Faulkender and Yang 2010; Bizjak et al. 2008). Benchmarks should also include corresponding salary levels in the industry and corporate size, because managers working for large corporations tend to receive higher salaries. The pecuniary gains that the managers receive from corporate expansion can serve as a driving force for corporate expansion (Grinstein and Hribar 2004; Firth 1980).

M&A propensity is represented by a relative value obtained from comparing the scale of M&A-based expansion with the scale of an expansion from a corporation's investments. That is, M&A propensity represents the degree of a listed corporation's propensity to choose M&A as an expansion strategy. The literature indicates that corporations with lower levels of executive incentives are more inclined to expand through M&A. However, endogeneity is also observed in the relationship between compensation-based incentives and the scale of an expansion based on a corporation's investments. Thus, whether executive compensations should be classified as incentives or rewards for corporate-investment-based expansion is difficult to determine. Compared with M&A, the investment-based expansion yields a longer cycle (Demsetz and Villalonga 2001). In addition, because of the fixed term of high-ranking executives in listed corporations, M&A is an effective means for high-ranking executives to directly vie for rapid obtainment of increased compensation. Harford and Li (2007) verify this point; they report that high-ranking executives tend to initiate mergers for their own benefits, such as for increases in personal salaries. Therefore, this study poses the following hypothesis:

Hypotheses 1. *Top executives receiving lower compensations are more inclined to choose M&A.*

Because the scale of M&A is positively correlated with the short-term pecuniary compensations high-ranking executives receive, unsatisfactory short-term compensation-based incentives can prompt

high-ranking executives to undertake large-scale M&A. The reasons for this are two-fold: first, M&A enables high-ranking executives who possess residual rights of control to rearrange their pecuniary compensations, thereby maximizing their private benefits (Gabaix and Landier 2008). Furthermore, M&A is a complicated undertaking, wherein high-ranking executives can obtain tremendous returns because of task complexity and the returns will be proportional to task complexity. Thus, large-scale M&A is beneficial in raising the short-term compensation of high-ranking executives. Second, the potential elevated compensation, power, fame, and status that M&A can generate may tempt managers to undertake large-scale M&A at the expense of shareholder interests (Jensen 1986; Shleifer and Vishny 1990). Based on these factors, this study presents the following hypothesis:

Hypotheses 2. *Salary-based incentives for top executives are negatively correlated with the scale of M&A; that is, top executives with relatively low compensation levels tend to engage in relatively large-scale M&A.*

2.2. Equity-Based Executive Incentives and Corporate M&A

In 2005, the Measures for the Administration of Equity Incentives of Listed Companies issued by the CSRC established a legal foundation for the promotion of stock options as executive incentives. Executive shareholding is a complicated mechanism that influences corporate business performance. Studies based on varying research contexts, data sources, and theories have concluded the following: (1) executive shareholding and corporate business performance show a linear correlation (Cael et al. 2003; Jensen and Murphy 1990); (2) executive shareholding and corporate business performance show a nonlinear correlation (Kole 1995); and (3) no significant correlation is observable between executive shareholding and corporate business performance (Himmelberg et al. 1999). Some studies present contradictory conclusions on the mechanisms through which executive shareholding influences strategic corporate decisions. Some researchers in support of the convergence-of-interest hypothesis argue that (1) from the perspective of principal–agent theory, executive shareholding is a mechanism that enables the convergence of managerial and shareholder interests, and this convergence can lower agency costs, and (2) from the perspective of team production theory, executive shareholding encourages and helps supervise managers to a limited degree (Chapple et al. 2020). Researchers in support of the managerial entrenchment hypothesis consider that increased executive shareholding endows managers with greater corporate control, which, due to the weakened external restraints from other shareholders and the market, tempts the managers to pursue private benefits and deviate from the corporate goal of value maximization. Equity-based incentives are a type of long-term incentives, and thus their relationship with the scale of corporate M&A is challenging to determine. Based on the cited information, this study hypothesizes the following:

Hypotheses 3a. *Corporations with higher executive shareholding are more likely to expand through M&A.*

Hypotheses 3b. *Corporations with lower executive shareholding are more likely to expand through M&A (competing hypotheses).*

Hypotheses 4. *Executive shareholding exhibits a nonsignificant effect on the scale of corporate expansion through M&A.*

3. Data and Summary Statistic

3.1. Sample Selection and Data Sources

The investigated sample consists of public companies listed in the Stock "A" markets at Shanghai and Shenzhen Stock Exchanges in China from 2011 to 2013. The reason for choosing this time interval is as follows: (1) it was necessary to avoid the impact of the share-sharing reform of China's capital market, which began exploratory attempts in the 1990s, and was basically completed in 2008; (2) since the new accounting standards were implemented in 2007, and the implementation effect required an adaptation period, the data after 2009 can guarantee the consistency and stability of accounting

standards; (3) in 2010, The State Council issued "The Opinions of the State Council on Promoting Mergers and Acquisitions of Enterprise", which accelerated the strategic adjustment of the layout and structure of the state-owned economy, promoted the development of the non-public economy and small and medium-sized enterprises, and had a significant impact on the M&A behaviors of listed companies. Therefore, we chose the year 2010 as the starting year. (4) Since the time period required for M&A transaction is relatively long, about 6–24 months, the sample that has completed the merger and reorganization in 2013 was selected to avoid the deviation caused by failure samples.

We obtained original data from the China Stock Market and Accounting Research (CSMAR) database. Data missing from the CSMAR database were accounted for through manually collected information from the announcements of listed companies on the CNINFO website. The following sample-exclusion criteria were followed, resulting in the identification of 952 valid samples (from a total total 2856 firm-year observations): (1) eliminate ST (special treatment) and *ST corporations, (2) eliminate corporations that experienced change in actual control, (3) eliminate listed corporations in the financial industry, and (4) eliminate corporations with noticeable anomalies in data or insufficient data disclosure.

The M&A data of the included samples from 2011 and 2013 were collected for further screening and processing according to the following criteria: (1) the transaction must be listed as a "success"; (2) the listed corporations must act as the "buyer" in the M&A; (3) the types of M&A are asset acquisition, merger, and takeover bid; (4) the targets are assets, equities, and assets and equities; and (5) if numerous mergers and acquisitions occurred in 1 year, the annual amount of cash involved in the M&A is the sum of the amounts for all the M&A.

This study follows the variable operating methods already studied for listed companies (Wadhwa and Kotha 2006) and considers a one-year lag period for some variables. The data time range is 2010–2013 for a total of 4 years. All variables are winsorized at the 1% level to avoid outlier influence.

3.2. Variable Selection and Definition

As described, the dependent variables in the present study include propensity to engage in M&A-based expansion and the scale of M&A-based expansion, and these variables are measured based on the methods proposed in the work of Jiang et al. (2011). Propensity to engage in M&A-based expansion is used to assess a corporation's relative inclinations toward general expansion or M&A-based expansion when a choice between the two is present. A dummy variable for whether the scale of M&A-based expansion is greater than that of general expansion is set up as follows:

$$CE_{it} = \begin{cases} 0, & \text{if } MAE_{it} < GE_{it} \\ 1, & \text{if } MAE_{it} > GE_{it} \end{cases} \quad (1)$$

The variable CE_{it} represents the expansion propensity of corporation i in the year t. In the event that the scale of M&A-based expansion is greater than that of general expansion, corporation i is more inclined to choose M&A-based expansion, and $CE_{it} = 1$; conversely, if the scale of M&A-based expansion is smaller than that of general expansion, corporation i is more inclined to choose general expansion, and $CE_{it} = 0$.

The scale of general expansion is defined as GE, which is measured as follows:

$$GE_{it} = (BFI_{it} - SFI_{it})/TS_{it} * 100\% \quad (2)$$

where GE_{it} represents the scale of general expansion of corporation i in the year t; BFI_{it} represents the cash corporation i paid in the year t for the construction of fixed assets and for intangible assets; SFI_{it} represents the net cash return corporation i received in the year t for the sale of fixed assets and intangible assets; and TS_{it} represents the total assets of corporation i at the start of year t.

The scale of M&A-based expansion, MAE, is measured as follows:

$$MAE_{it} = ma_{it} / TS_{it} * 100\% \quad (3)$$

where MAE_{it} represents the scale of M&A-based expansion of corporation i in the year t, and ma_{it} represents the cash sum for the M&A operation or operations corporation i engaged in in the year t.

The independent variables include short-term incentives, for which compensation-based incentives are used as a proxy variable, and long-term incentives, for which equity-based incentives are used as a proxy variable. The data of each high-ranking executive of the sample corporations from the CSMAR database, including the executives' salaries and stock shares, are quantified and encoded. These values are then used in numerical calculations. The positions examined are core decision-makers in each corporation, such as the chairperson, general manager, assistant to the general manager, vice general manager, and department directors. The value of compensation-based executive incentives (TMTSA) is measured by calculating the mean of the salaries of high-ranking executives, followed by calculation of the natural logarithm of the mean. In this study, only the spot shares held by high-ranking executives are considered; options and numbers of shares are neglected. The value of equity-based executive incentives (TMTST) is measured as the ratio of total number of shares held by high-ranking executives to total share capital.

To control latent factors that affect a corporation's choice of expansion method, and to improve the quality of the model, this study consults similar studies for numerous other variables that can affect corporate behaviors in M&A. As shown in Table 1, these variables include the data year, type of industry, size of corporation, a corporation's age, innovation performance, number of follow-on offerings, and refinancing demands.

Table 1. Measurement of control variables.

Variable	Code	Measuring Method
Data year	YEAR	The year 2011is used as the base period for two dummy variables.
Industry	FIN	Per the *Guidelines for the Industry Classification of Listed Companies* (2012) issued by CSRC, the agricultural, forestry, husbandry, and fishery industries (type A) are used as the base period for 16 dummy variables. The financial (type J) and education (type P) industries are excluded.
Firm size	FS	The year-end total assets are used as the proxy variable, *LN* (unit: million RMB), for corporation size.
Firm age	FA	*Ln* (from time established to 2016).
Innovation performance	IPOR	Number of patent applications per million RMB.
Second offerings	SEOS	Number of follow-on offerings in the past 5 years, including public issuances and nonpublic issuances.
Refinancing demands	REFD	The cash-flow gap is used as the proxy variable for the standardization of total assets at the end of year (Shyam-Sunder 1999). Cash-flow gap = increase in long-term investment + increase in fixed asset investment + increase in working capital + dividends − cash flow from operating activities + financing expenses.

Panel A (see Table 2a) reports the summary statistics of regional distribution. Approximately 50% are mainly located in Guangdong Province (518, 18%), Jiangsu Province (300, 10.5%), Zhejiang Province (297, 10.4%), and Beijing (9.2%). The main reasons are: (1) the above-mentioned areas are the most dynamic areas of private economy (including Pearl River Delta, Yangtze River Delta) and

state-owned enterprise development (Beijing); (2) China's stock exchanges are located in Shanghai and Shenzhen, and the financial resources spillover effect is obvious.

Table 2. Summary Statistics.

(a) Panel A Regional Distribution of Samples					
Region	**No.**	**%**	**Region**	**No.**	**%**
Anhui	120	4.2	**Liaoning**	66	2.3
Beijing	262	9.2	**Inner Mongolia**	12	0.4
Fujian	102	3.6	**Ningxia**	6	0.2
Gansu	18	0.6	**Qinghai**	6	0.2
Guangdong	518	18.1	**Shandong**	198	6.9
Guangxi	15	0.5	**Shanxi**	30	1.1
Guizhou	15	0.5	**Shannxi**	42	1.5
Hainan	21	0.7	**Shanghai**	174	6.1
Hebei	42	1.5	**Sichuan**	102	3.6
Henan	114	4.0	**Tianjin**	27	0.9
Heilongjiang	12	0.4	**Tibet**	12	0.4
Hubei	93	3.3	**Xinjiang**	18	0.6
Hunan	89	3.1	**Yunnan**	30	1.1
Jilin	33	1.2	**Zhejiang**	297	10.4
Jiangsu	300	10.5	**Chongqing**	32	1.1
Jiangxi	48	1.7	**Total**	2856	100.0

(b) Panel B Ownership Distribution of Samples		
Ownership	**No.**	**%**
State-owned	827	28.86%
	97	3.38%
Private	1909	66.61%
others	23	0.80%
total	2866	1

(c) Panel C Year and Industry Distribution of Samples			
Year	**2011**	**2012**	**2013**
Industry	No. (%)	No. (%)	No. (%)
farming, forestry, husbandry and fishing (A)	17 (1.7)	15 (1.6)	15 (1.6)
Mining (B)	23 (2.4)	20 (2.1)	21 (2.2)
Manufacturing (C)	649 (68.2)	663 (69.6)	662 (69.5)
Electricity/heat/gas water production and supply (D)	17 (1.7)	18 (1.9)	19 (2)
Construction (E)	20 (2)	25 (2.6)	25 (2.6)
Wholesale and retail (F)	40 (4.2)	37 (3.9)	38 (4)
Transportation, storage, and post (G)	27 (2.8)	26 (2.7)	26 (2.7)
Accommodation and catering (H)	5 (0.5)	5 (0.5)	5 (0.5)
Information transmission/software and information technology services (I)	77 (8)	68 (7)	68 (7)
Real estate (K)	36 (3.7)	39 (4.1)	35 (3.7)
Rental and business services (L)	9 (0.9)	6 (0.6)	7 (0.7)
Scientific Research and Technology Services (M)	6 (0.6)	6 (0.6)	6 (0.6)
water conservancy/environment and public facilities management (N)	3(0.3)	12 (1.3)	12 (1.3)
Residential services, repairs and other services (O)	7 (0.7)	0 (0)	0 (0)
Health and social affairs (Q)	2 (0.2)	2 (0.2)	2 (0.2)
Culture, sports and entertainment (R)	8 (0.8)	8 (0.8)	8 (0.8)
Others (S)	6 (0.6)	2 (0.2)	3 (0.3)

According to the ownership distribution of sample data in Panel B (see Table 2b), private enterprises account for 66.6% of the total sample. State-owned enterprises account for about 29%, while foreign investment and other accumulations are less than 5%, which shows that the ownership of listed companies in our country is dominated by private enterprises.

Panel C (see Table 2c) is the Year and Industry Distribution of Samples. (1) Of the 17 industries covered in this study, manufacturing is the main industry, far more so than other industries, and the number of samples is gradually increasing, accounting for nearly 70% of the total. (2) In recent years, China's environmental protection policies have been issued intensively, increasing financial support in water conservancy, renewable energy, energy conservation and environmental protection, and air management (PM 2.5), and the number of enterprises in the water conservancy, environmental and public facilities management industries has increased significantly. (3) Since 2012, the sample number of residential services, repairs and other services has been zero; (4) from 2011 to 2012, manufacturing, electricity/heat/gas water production and supply, construction, information transmission/software and information technology services, real estate, water conservancy/environment and public facilities management increased, while the rest of the industries remained unchanged or even decreased from the previous year. From 2012 to 2013, only the sample number mining industry, electricity/heat/gas and water production and supply industry, wholesale and retail industry and comprehensive increased, while the rest of the industries were flat or even decreased from the previous year, indicating that the sample enterprises achieved industrial transformation through mergers and acquisitions, but the proportion was not high.

3.3. Econometric MODEL

The data used for this study span from 2011 to 2013, and some of the samples may be excluded owing to faulty data. For example, some corporations might not be listed or may have been delisted, some data may be missing, or the samples might not fully satisfy the inclusion criteria. Some new samples added may be considered unbalanced panel data because they represent initial public offerings or corporations that engaged in M&A in a certain year. Discrepancies are also observed in the distribution characteristics of dependent variables (i.e., propensity to engage in M&A-based expansion and the scale of M&A-based expansion), for which different econometric models are required for estimations.

The propensity to engage in M&A-based expansion is a dichotomous variable (between zero and one), which requires a Probit model for analysis and prediction. As shown in Equation (1):

$$Q_i = \alpha + \beta X_i \tag{4}$$

where: Q_i means the linear combination of company i (explanatory variable), which is a normally distributed random variable. The probability that the company i trends to expand through M&A behavior is:

$$P_i(y = 1|X_i) = P_i(y = 1|x_{i1}, x_{i2}, \ldots x_{ik}) \tag{5}$$

Thus, we can obtain:

$$Q_i = \alpha + \beta X_{\,i,t-1} + \gamma Z_{\,i,t-1} + \varepsilon_{\,i,t} \tag{6}$$

where: $X_{\,i,t-1}$ means TMTST/TMTSA, $Z_{\,i,t-1}$ means control variable.

The scale of M&A-based expansion is a limited dependent variable exhibiting left truncation (Meng et al. 2013). That is, the samples' scales of M&A-based expansion are distributed within a range of positive numbers with a relative concentration of zero. To address this limited dependent variable problem, this study adopts the classic Tobit model (Heckman 1979).

$$Y_{i,t} = \alpha + \beta X_{\,i,t-1} + Z_{\,i,t-1} + \varepsilon_{\,i,t} \tag{7}$$

$$Y_{i,t} = \begin{cases} 0, & \text{if } MA_{i,t} = 0 \\ y*, & \text{if } MA_{i,t} > 0 \end{cases} \quad (8)$$

where: $X_{i,t-1}$ means TMTST/TMTSA, $Z_{i,t-1}$ means control variable.

Because corporate M&A involves a cycle of 6–12 months[1] or longer from disclosure to completion, decisions for M&A are usually affected by the independent variables from the previous fiscal year. For this reason, the closing balances from the previous accounting period are used for independent variables.

All statistical tests are carried out using Statas software.

4. Empirical Analysis and Results

4.1. Descriptive Statistics and Correlation Analysis Results for the Variables

Table 3 reveals the descriptive statistics and correlation analysis results of the major variables. The mean of the scale of M&A-based expansion (MAE) is 0.025, indicating that only 8% of the sample corporations are inclined to choose M&A as the means for expansion. This is in accordance with the observations of Jiang et al. (2011), suggesting that listed corporations in China tend to choose self-invested expansion when considering the propensity and scale of expansion. This study also calculates the Pearson correlation coefficient and variance inflation factor of the variables, but no multicollinearity is observed in the results.

Table 3. Means, standard deviations, and correlations (N = 2823).

	MAE	CE	FS	FA	IPOR	REFD	SEOS	TMTST	TMTSA
CE	0.463 **	1							
FS	−0.018	−0.017	1						
FA	−0.005	−0.007	.008	1					
IPOR	−0.030	−0.054 **	−0.069 **	−0.142 **	1				
REFD	−0.018	−0.078 **	0.097 **	0.076 **	−0.102 **	1			
SEOS	0.032	0.078 **	0.088 **	0.236 **	−0.119 **	0.181 **	1		
TMTST	−0.016	−0.008	−0.136 **	−0.311 **	0.214 **	−0.214 **	−0.273 **	1	
TMTSA	−0.038 *	0.004	0.222 **	0.108 **	−0.089 **	−0.144 **	0.166 **	−0.221 **	1
Mean	0.025	0.080	11567	2.397	0.008	0.179	0.320	0.206	3.188
S. D.	0.143	0.279	57489	0.512	0.016	0.159	0.591	0.243	0.608

Note: * $p < 0.05$, ** $p < 0.01$.

4.2. The Influence of Executive Incentives on M&A Propensity

The influence of executive incentives on M&A propensity is tested using regression analysis with Models 1–4, and the results are reported in Tables 4 and 5. Model 1 is used to examine the influence of control variables on M&A propensity; the results indicate that the duration of a corporation's existence significantly affects M&A propensity ($\beta = -0.248$, $p < 0.01$). Corporations with a shorter history appear more likely to expand through M&A, whereas corporations with longer histories are more likely to expand through their own investments. The results suggest that innovation performance is negatively correlated with M&A propensity; this finding contradicts, who argue that a corporation with a competent research and development department is more likely to engage in M&A-based expansion. Refinancing demands inhibit M&A propensity ($\beta = -0.954$, $p < 0.01$). The number of follow-on offerings corresponds with significantly greater M&A propensity ($\beta = 0.314$, $p < 0.001$), suggesting that corporations that have issued multiple follow-on offerings in the past 5 years are highly likely to expand through M&A. Model 2 increases short-term incentives (i.e., executive compensations)

[1] Per the regulations of the CSRC and individual stock exchanges, M&A of listed corporations are subject to a series of administrative or internal procedures from the disclosure of information to completion. The procedures can become even more complicated if the M&A involve major asset reorganization, stock issuance, asset purchase, or reorganization of state-owned assets.

while controlling the control variables. The results suggest that compensation-based incentives significantly and negatively correlate with M&A propensity ($\beta = -0.189$, $p < 0.05$). That is, low executive compensations lead to stronger inclinations toward M&A-based expansion, whereas high executive compensations result in stronger inclinations toward expansion through the corporations' own investments. These observations provide statistical support for Hypothesis 1-1. Model 3 indicates that long-term incentives, or executive shareholding, increases M&A propensity (significance level = 0.1), which supports Hypothesis 2-1a. Hypothesis 2-1b is therefore unsupported. Model 4 encompasses all independent variables and control variables, and the results indicate that the effect and significance of both compensation-based and equity-based executive incentives are stable.

Table 4. Results of regression analyses on mergers and acquisitions (M&A) propensity.

	Model 1	Model 2	Model 3	Model 4
		Control variables		
YEAR	Include	Include	Include	Include
IND	Include	Include	Include	Include
FS	0.000	0.000	0.000	0.000
FA	−0.248 **	−0.227 ***	−0.232 **	−0.221 ***
IPOR	−9.147 *	−8.446 *	−8.423 *	−8.487 *
REFD	−0.954 **	−1.194 ***	−1.370 ***	−1.420 ***
SEOS	0.314 ***	0.280 ***	0.259 ***	0.284 ***
		Predictor variables		
TMTSA		−0.189 *		−0.230 **
TMTST			0.388 +	0.172 +
Model Indices	Wald = 79.17 ***	Wald = 87.19 ***	Wald = 80.31 ***	Wald = 101.72 ***
Obs	2823	2823	2823	2823

Note: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. Results of regression analyses on M&A scales.

	Model 5	Model 6	Model 7	Model 8
		Control variables		
YEAR	Include	Include	Include	Include
IND	Include	Include	Include	Include
FS	0.000	0.000	0.000	0.000
FA	−0.028	−0.144	−0.026	−0.197
IPOR	−1.650 *	−0.433	−1.334 *	−0.203
REFD	−0.077	−0.068	−0.070	−0.040 *
SEOS	0.055	0.074	0.057	0.008
		Predictor Variables		
TMTSA		−0.015 **		−0.016 ***
TMTST			−0.011	−0.014
Model Indices	Wald = 61.80 ***	Wald = 67.86 ***	Wald = 57.33 ***	Wald = 55.38 ***
Obs	2854	2854	2854	2854

Note: $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.3. Influence of Executive Incentives on the Scale of M&A

Models 5–8 are used to determine the Tobit results for the influence of executive incentives on the scale of M&A. In Model 5, only innovation performance exhibits a significant and negative correlation with the scale of M&A ($\beta = 0.314$, $p < 0.001$), suggesting that corporations with lower innovation performance tend to undertake larger-scale M&A. According to Model 6, compensation-based executive

incentives are significantly and negatively correlated with the scale of M&A ($\beta = -0.015$, $p < 0.01$), suggesting that lower executive compensations in listed corporations may be associated with greater scales of M&A. Thus, Hypothesis 1-2 receives statistical support. Model 7 reveals that equity-based executive incentives exhibit no significant correlation with the scale of M&A, thus supporting Hypothesis 2-2. In Model 8, the scale of M&A is adopted as a dependent variable and all independent variables and control variables are included; the results indicate that the effects and significance of both compensation-based and equity-based executive incentives are unchanged.

4.4. Robustness Test

In the investigation on M&A propensity, the Tobit method with corporation−year two-dimensional unbiased clustering standard error proposed by Petersen is employed for a robustness test, and the results match those determined using the conventional Tobit model. The problem of sample self-selection may exist in the estimations of M&A propensity; that is, there may be no difference between the corporations choosing or not choosing to expand through M&A.

After consulting the related literature for estimation methods, the present study chooses the two-step Heckman method to resolve the sample self-selection problem stemming from the limited dependent variables. In this method, the probability model (Probit regression) is first estimated to determine whether a corporation decides to expand through M&A, and the estimated probability value is used to calculate the Mills lambda. After sample selection bias is controlled in the first step, the scale of M&A-based expansion is estimated in the second step.

The results reveal a nonsignificant P value, indicating that serious sample self-selection is not present in the samples. The regression results of the two-step Heckman method exhibit no noticeable deviation from the Tobit results for which two-dimensional standard errors are corrected. In sum, the preceding analyses suggest that the distributions of dependent variables (the propensity and scale of M&A-based expansion) are significantly different; in addition, although the econometric models chosen for estimation are different, all display high robustness. Therefore, the results of this study are deemed reliable.

5. Discussion

5.1. Results Analysis

This paper presents empirical evidence on the beneficial distribution mechanism of M&A behaviors through identifying the relationship between compensation of top executives and M&A behaviors. The investigated sample consists of 952 public companies (form a total of 2856 firm-year observations) listed in the Stock "A" markets at Shanghai and Shenzhen Stock Exchanges in China from 2011 to 2013. The compensation of top executives in divided into short-term (salary incentive based) and long-term (equity incentive based) for the in-depth comparison and analysis of propensity and scale of M&A.

The results are as presented in Figure 1 and suggest that short- and long-term incentives involve different mechanisms for top executives, and exhibit significantly different effects on the M&A behaviors of listed corporations. We mainly find that M&A behaviors serve as a beneficial distribution mechanism for insufficient compensation of top executives and alleviates the agency problem. Therefore, lower compensations of top executives promote M&A propensity and significantly affect the scale of M&A.

Consistent with the previous research (Tang et al. 2020; Zhou et al. 2020), executive compensation has a complicated effect on M&A behaviors. When the short-term incentives are insufficient, M&A behaviors serve as a beneficial compensatory mechanism. Thus, lack of executives' incentive promotes the propensity to engage in M&A and significantly affects the scale of M&A. Regarding long-term incentives, M&A behaviors serve as a beneficial creation mechanism. Shareholding of executives promotes M&A propensity, which increase values of their holdings through stock price increasing after M&A, and does not significantly affect the scale of M&A. These results provide indications that compensation contracts can be set in a way that does not maximize firm value, which is supported by

Abudy et al. (2020). The increase in value is greater for firms with weaker corporate governance and smaller for firms that grant a greater portion of equity-based compensation to their executives.

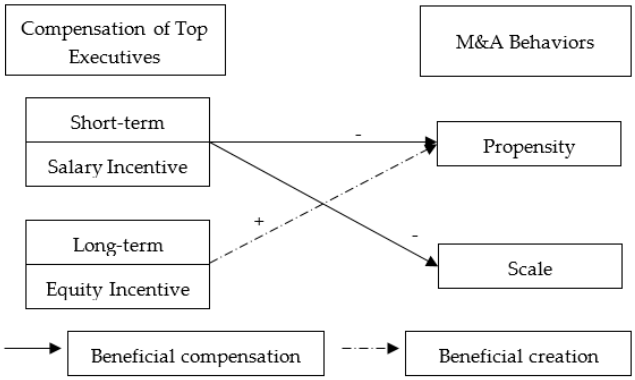

Figure 1. Compensation of Top Executives and M&A Behaviors.

5.2. Implications

This study tests the driving forces behind M&A. From the perspective of listed corporations, M&A represent external acquisition of resources, and the operations are affected by innovation performance. Empirical evidence suggests that innovation performance is negatively correlated with M&A propensity: that is, lower corporate innovation performance corresponds with a greater scale of M&A. Therefore, corporations with low innovation performance are more inclined to choose M&A as a method by which to obtain external resources. The number of follow-on offerings can also promote M&A in listed corporations, which confirms that the overconfident financing behaviors of managers and their opportunistic, self-interested motivations are primary driving forces behind repeated M&A operations of listed corporations.

The design of executive-incentive mechanisms in listed corporations substantially affects the scope of the M&A market in China. In view of the on-going strategy of intensifying M&A for the development of the real economy, the crucial nature of increasing executive incentives in listed corporations cannot be overemphasized. However, in the process of promoting executive incentives, attention should be paid to the synergy between short- and long-term incentives to achieve balance in the number and scale of M&A.

5.3. Limitations and Future Research

Based on the findings regarding the relationship between executive incentives and the number and scale of M&A, future studies should investigate whether executive-incentive mechanisms effectively promote the development of the real economy through M&A. Such studies may establish a model that contributes to corporate innovation, globalization, and corporate social responsibility. The present study offers a valuable theoretical foundation and empirical support for China's national strategy of strengthening executive incentives in listed corporations to stimulate M&A and the real economy. As noted by Brzozowski et al. (2018), entrepreneurial behavior of executives greatly affect the M&A behaviors, which is not tested in this research. Future studies should take entrepreneurial behavior of executives into consideration and test the related mechanism.

6. Conclusions

This study empirically examines the relationship between executive compensation and mergers and acquisitions (M&A) behaviors by identifying the influence of short- and long-term intensive on the propensity and scale of M&A. When the short-term incentive is insufficient, M&A behaviors serve as a beneficial compensation mechanism. Thus, lack of executives' incentive promotes the propensity to engage in M&A and significantly affects the scale of M&A. With regard to long-term incentives,

M&A behaviors serve as a beneficial creation mechanism. Shareholding of executives promotes M&A propensity, and does not significantly affect the scale of M&A. This study significantly contributes to research in M&A behaviors by revealing the beneficial distribution.

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