SELF-INTEREST OR WIN-WIN: DETERMINANTS OF EXECUTIVE COMPENSATION IN CHINA

Zhen Chen, Fei Guo**

Abstract

This paper studies the determinants of executive compensation in listed firms in China between 2002 and 2005. There is significantly positive elasticity of compensation to scale. Moreover, corporate performance is positively related to the elasticity of compensation to scale. We find that both agency theory and managerialism hold true in Chinese listed companies. Compensation contract is the result of the game by stockholders and managers.

Keywords: Managerialism, Agency Executive Compensation Contract, Chinese Firms, Firm Size

* *School of Accounting, Zhongnan University of Economics and Law*

1. Introduction

The determinants of executive compensation have been intensively examined in the context of developed countries[41]. However, there is little evidence concerning China. Given China's second largest economy in the world and its distinctive ownership and governance settings, it would be interesting to see what factors influence top management pay in China. As managers have the opportunity and incentives to act in their own interests at the cost of shareholders, thus an optimal compensation arrangement must be in position to align the interests of managers and shareholders (Jensen & Meckling, 1976; Eisenhardt, 1989; Beatty & Zajac, 1994), or proper governance mechanisms are designed to decrease managerial opportunism (Fama, 1980; Fama & Jensen, 1983; Shleifer & Vishny, 1986).

Holmstrom (1979) is based on the maximization of stockholders'interests and realization of agency theory of principle-agent incentive. It built classical model of principle-agent theory. But we cannot find evidence of the existence of firms scale index in top executive compensation contracts. In fact, based on maximization of agents interest, managerialism provides theoretical support for the existence of firm scale in compensation contracts. Empirical research in home and broad found that the scale factor almost existed in firms top executive compensation contracts. It is difficult to explain stockholders inability to find or discipline executives' self-interested behavior. The only explanation is that the existence of scale factor also agrees with stockholders interests. In China, there is always one largest stockholder in many listed companies. Ways of designation of top executives enable stockholders to influence the affairs of firms. At the same time, the dis-functioning mechanism of monitoring and penalty enable top executives to maximize their own interests.

Based on existent relevant research, this paper uses normative research methods to find the theoretical support for existence of scale factor in top executive compensation contracts. On the other hand, we provide empirical evidence for the existence of agency theory and managerialism in top executive contracts.

Which theory applies for top executive contracts in Chinese listed companies? There is no relevant research in China. The following part is literature review and theoretical analysis. The third part is the relation between scale and top executive compensation. The final part is research conclusion and suggestions.

2. Literature Review

Managerial power approach posits that powerful executives can influence the compensation decisions made by the board of directors or the compensation committee (Finkelstein & Hambrick, 1989). The primary sources of executive power include the executive's structural power based on formal organizational hierarchy, ownership power, expertise power associated with executives' ability to deal with task environments, and personal prestige power perceived by external constituencies (Finkelstein, 1992).

[41] See Murphy (1999) for an excellent review of the empirical evidences on top management pay mostly in the developed countries. See Sun, Zhao and Yang (2010) for a thorough review on executive compensation in Asia.

In the past twenty or thirty years, the development of information economics and game theory has enabled many economists to make great progress in the normative and empirical research in agency problem. The principle-agent theory came into existence and develops very quickly. The principle-agent theory was founded by Ross(1973), Holmstrom (1979) and Grossman & Hart(1986). This theory set up the model to analyze agency problem. The above mentioned research almost comes from the analysis of mathematical models to resolve the problem of conflict between principle and agent. The standard theory of principle-agent stems from formal model and the model consists of objective function and constraint function. The objective function is to maximize stockholders interests and constraint function is incentive-compatible restraint and agent participating restraint. To resolve the model of principle-agent, we can get general conclusion about the theory of principle-agent. For example, Holmstrom (1979) set up classical theoretical model of principle-agent.

Cost theory and the theory of principle-agent are premised upon the relation between principle and agent. The theory of principle-agent gets the optimum resolution from the design of a series of models to deduction. Based on the reduction of agency costs, cost theory does some research on agency problem.

Holmstrom (1979) classical theoretical model began to do some research on top executive compensation. Firms outcome is dependent on the behavior of top executives and random state Top executives behavior and real outcome are unobservable and they cannot become the basic variable of top executive incentive contract. So they must be reflected by the mechanism of measurement. Under conditions of incentive constraint for top executives, we can get equilibrium resolution. Under standard theoretical model of principle-agent, top executive compensation is only the function of performance index and is not related to firms other characteristics. If top executive compensation is related to firms scale, top executive can get more compensation by changing firms scale and then this greatly increases firms' agency costs (Baker, Jensen and Murphy, 1988). Gomez-Mejia, Tosi and Hinkin (1987) found that performance is important for compensation contracts in companies controlled by owners and scale is significant for compensation contracts in firms controlled by managers. So, existence of scale factor in compensation contracts naturally connects with managerialism. Rosen (1982,1992) explained the phenomenon for more compensation in larger firms by using cloning model. He thought that larger firms had more hierarchy and more subordinates and the caliber of managers can greatly influence firms performance. Larger firms had impetus and ability to employ best CEOs. At the same time, larger firms with more hierarchy and more subordinates magnified the ability of CEOs and larger firms CEOs got more compensation. Banker and Hall (1998) classified firms by scale factor and studied the relation between firms scale and top executives marginal labor production rate. They found that firms scale was monotonically increasing with marginal labor production rate. Cuzick (1985) evidenced that firms scale was positively related to contribution rate by using non-parametric tests. Teddy and Peter (2002) compared the firm performance for top executive and that for firm the same executive worked before. They found that top executive whose performance was better was more likely to work for a relatively larger company. The compensation for which he was paid was significantly related to the performance he had work for the previous company. Obviously, the research result is not only based on the interests of top executives.

The existence of scale factor in top executive compensation contract is based on managerialism. The famous model is Baumol (1959) which was hypothesized on the maximization of sales. Baumo thought that the objective of managers was to maximize the sales. Firms sales greater than the threshold is a constraint condition. When the firms sales meet the needs of stockholders not to dismiss top executives and the firms are not taken over by markets, top executives are more likely to maximize the scale. Managerialism discusses top executives compensation from the perspective of top executives (Marris, 1964; William, 1985; Herman, 1981 and Aoki 1984). The view of managerialism is that top executive compensation is determined by the scale and less determined by firm's performance. The existence of scale factor in compensation contract stems from the self-interests of top executives. When there is not enough constraint from stockholders and outside markets, top executives are more likely to expand the firm scale than to increase profits.

Why top executives court scale is that they exert influence on scale more easily than on the corporate performance. They are more inclined to include scale in their own compensation contract. Kroll, Simmons and Wright (1990) found that corporate mergers could greatly increase the scale of firms. So, corporate takeovers are the objective of top executives. Top executives can get more compensation by the increase of scale even though the corporate performance deteriorates after mergers. At the same time, top executives are risk-averse. The hope for scale enables the portfolio of their compensation to separate from corporate performance to greatest extent. The compensation connects with stable scale factor to reduce their own risk of compensation (Dyl, 1998; Kroll, Wright and Theorathorn, 1993; McEachern, 1975). Furthermore, the expansion of scale gives top

executives more compensation, thus increasing the rigidity of compensation. So, managerialism is able to provide explanation for non-performance index of scale factor in top executives' compensation contracts.

3. Hypothesis Development

Empirical study in home and broad found that scale is an important factor in top executive compensation and is significantly positively related to compensation (Cosh and Hughs, 1997; Conyon, 1997; Zhou 2000; Kaplan 1994; Kato 1997). Baker, Jensen and Murphy (1988) studied the relation between sales scale and CEO cash compensation in 1973-1983 U.S. firms and found that the relation was significantly positive and that the elasticity of compensation to scale was 0.3. Kostiuk (1990) studied the 1968-1981 U.S. firms and the elasticity of yearly compensation plus bonus to sales scale was about 0.02-0.25. Murphy (1985) used more general compensation such as deferred compensation and stock option, and the elasticity of compensation to scale was 0.3. So, we can get following hypothesis:

Hypothesis 1: The elasticity of compensation to scale is positive in top executive compensation contract in Chinese listed companies.

As the corporate performance increases, is the elasticity of compensation to scale constant, increasing or decreasing? Now, there is no study about this. If corporate performance is positively related to the elasticity of compensation to scale, the reduction of corporate performance will result in decrease in the elasticity of compensation to scale. This will restrain corporate managers from abandoning corporate performance to some extent and seeking to expand the firm scale. If corporate performance is negatively related to the elasticity of compensation to scale, the reduction of corporate performance will result in increase in the elasticity of compensation to scale. This will induce corporate managers to abandon corporate performance and seek to expand scale.

Hypothesis 2: Corporate performance in Chinese listed companies is positively related to the elasticity of compensation to scale.

4. Sample, data and empirical method

4.1 Sample selection

Chinese listed companies are required to disclose executives' compensation in details in their annual reports since financial year 2001[42]. However, compensation information are inconsistent across firms in their 2001 annual reports, so we choose year 2002 as the starting period[43]. The sample in our study is about A-share listed companies in Shanghai and Shenzhen stock exchange. Our data are from CSMAR data base, Chinese Securities Journal, and Juchao.com. Eviews is used for regression analysis. In our sample period annual grants of stock options are extremely infrequent and can be ignored for the construction of the executive compensation measure.

4.2 Research model

The first model is as follows:

$$Lnpay=b0+b1*lnSize+b2*PER+b3*Industry+b4*Zone+b5*CEO+b6*OUT+b7*Hb+b8*Top+b9*Y1+b10*Y2+b11*Y3+\varepsilon \quad (1)$$

The dependent variable *Lnpay* is logarithm of the total of top three executives' compensation in 2002-2005 year financial statements. The independent variable *Lnsize* is corporate scale. This paper uses total assets and core revenues as the scale respectively in 2001-2004 year financial statements.

It is well known that accounting performance, share prices, industry and region all affect top executive compensation. So, we include these variables as control variables. P is corporate market performance represented by the closing price. PER is accounting performance represented by earnings per share. Zone is the region in which the firm is registered. Industry is the one the firm operates in. Our study uses Zone and Industry as control variables to control the effect of zone and industry on top executive compensation.

Chen (2006) found that duality, percentage of independent directors and percentage of largest shareholding are significantly related to top executive's compensation. So, these variables are

[42] All listed firms in China have the same financial year, from January 1 to December 31. Annual reports are to be publicly disclosed between January 1 and April 30 during the next financial year.

[43] The disclosure of executive compensation information is regulated by the "Regulation for the Content and Format of Public Firms' Information Disclosure, No. 2: Content and Format of Annual Reports". The regulation has been constantly amended since 1998. In the 1998 version, the regulation does not require listed firms to disclose executive compensation information in their annual reports. The 2001 amended version, however, requires listed firms to report the sum of total compensation for the top three highest-paid management and the top three highest-paid board members (including executive board members). The same terms hold in the 2003 amended version. In the Dec., 2005 amended version, listed firms are required to report each individual board member's and top management's total compensation. This more stringent disclosure rule is maintained in the 2007 amended version as well.

also included as control variables. CEO is dummy variable whether general manager is also the board chair. When CEO is also chair, CEO is one otherwise CEO is zero. OUT represents the percentage of independent directors. Top1 is the percentage of largest stockholder shares.

Year includes three dummy variables such as Y1, Y2, and Y3. If year is 2002, then Y1=1, otherwise Y1=0. If year is 2003, then Y2=1, otherwise Y2=0. If year is 2004, then Y3=1, otherwise Y3=0.

We can differentiate both sides of the equation 1 and get b1, the elasticity of compensation to scale. When b1 is significantly positive, the logarithm of corporate scale is positively related to the logarithm of top executive compensation. So, the elasticity of scale to compensation exists.

The second model is as follows and we classify the model into two models,

$$Lnpay=b0+b1*PER*lnsize+b2*EPS+b3*Industry+b4*Zone+b5*CEO+b6*OUT+b7*Hb+b8*Top1+b9*Y1+b10*Y2+b11*Y3+\varepsilon \quad (2.1)$$

$$Lnpay=b0+b1*EPS*lnsize+b2*PER+b3*Industry+b4*Zone+b5*CEO+b6*OUT+b7*Hb+b8*Top1+b9*Y1+b10*Y2+b11*Y3+\varepsilon \quad (2.2)$$

We can also differentiate both sides of the equation (2-1) and (2-2) and get the elasticity of scale to compensation, *b1*PER* and *b1*EPS*. If b1 is significantly positive, as performance PER and EPS increase, *b1*PER* and *b1*EPS* also increase. So, when the corporate performance increases, the elasticity of scale and compensation also increases. If b1 is significantly negative, as performance PER and EPS increase, *b1*PER*和*b1*EPS* decrease. So, when the corporate performance increases, the elasticity of scale and compensation decreases.

4.3 Correlation matrix

Table 1 is correlation matrix among the various variables.

Table 1. Correlation matrix

	LNPAY	*LNASSET*	*ASSET* LNASSET*	*EPS* LNASSET*	*P* LNASSET*	*LNINCOME*	*INCOME* LNINCOME*	*EPS* LNINCOME*	*P* LNINCOME*
LNPAY	1	0.283**	0.0767	0.174	0.055	0.308	0.065	0.175	0.069
LNASSET		1	0.361	0.277	-0.005	0.802	0.289	0.278	0.010
ASSET LNASSET*			1	0.058	-0.020	0.282	0.968	0.059	-0.017
EPS LNASSET*				1	0.331	0.342	0.057	0.998	0.345
*PER*LNASSET*					1	0.052	-0.017	0.333	0.997
LNINCOME						1	0.265	0.342	0.103
INCOME LNINCOME*							1	0.061	-0.009
EPS LNINCOME*								1	0.347
*PER*LNINCOME*									1

Note: * , ** statistically significant at 10% and 5% level(two-tailed tests)
From above table 1, we can see that LNPAY, the logarithm of top executive compensation is positively related to LNINCOME, the logarithm of core revenues. It shows that there is more likely to have positive elasticity of compensation to scale.

5. Results and analysis

The results of regression models (1), (2-1) and (2-2) are as follows:

Table 2. Regression results

	Model(1)	model(1)	Model(2-1)	model(2-1)	Model(2-2)	model(2-2)
Intercept	6.882*** （24.47）	7.962*** (39.61)	11.266*** (146.62)	11.304*** (146.03)	11.251**** （146.38）	11.308*** （145.93）
LNASSET	0.216*** （16.27）					
LNINCOME		0.168*** (17.88)				
ASSET LNASSET*						
INCOME LNINCOME*						
EPS LNASSET*				0.012*** (10.13)		
*PER*LNASSET*			0.001*** (9.61)			
EPS LNINCOME*						0.013*** （10.07）
PER LNINCOME*					0.002*** （10.27）	
PER	0.0344*** （11.11）	0.029*** (9.68)		0.025*** (7.85)		0.024*** (7.76)
EPS	0.114*** （4.70）	0.086*** (3.50)	0.212*** (8.83)		0.203*** （8.37）	
ZONE	3.54E-05*** （15.37）	3.33E-5*** (14.44)	3.88E-5*** (16.50)	3.93E-5 (5.87)	3.84E-5** (16.33)	3.93E-5*** (16.69)
INDUSTRY	2.44E-05*** （4.99）	4.10E-5*** (8.36)	2.84E-5*** (5.67)	2.94E-5 (5.87)	2.90E-5*** (5.80)	2.93E-5*** (5.85)
CEO	0.098*** （2.69）	0.108*** (2.99)	0.083** (2.23)	0.084** (2.25)	0.085* (2.26)	0.085* (2.27)
OUT	0.321*** （3.05）	0.319*** (3.03)	0.340*** (9.41)	0.343*** (3.17)	0.335*** (3.10)	0.340*** (3.14)
TOP1	-0.006*** （-9.37）	-0.006*** (-9.67)	-0.004*** (-6.44)	-0.004*** (-6.36)	-0.004*** (-6.54)	-0.004*** (-6.36)
HB	0.258*** （6.85）	0.276*** (6.99)	0.379*** (9.41)	0.384*** (9.53)	0.377*** (9.37)	0.383*** (9.50)
Y1	0.265*** （6.85）	0.245*** (6.34)	0.262*** (6.01)	0.248*** (6.23)	0.266*** (6.71)	0.247*** (6.19)
Y2	0.482*** （10.50）	0.427*** (9.34)	0.481*** (10.25)	0.457*** (9.70)	0.485*** (10.38)	0.455*** (9.65)
Y3	0.691*** （14.10）	0.608*** (12.42)	0.706*** (14.08)	0.673*** (13.36)	0.713*** (14.30)	0.671*** (13.30)
Adjusted R^2	0.26	0.27	0.23	0.27	0.23	0.22
D-W	2.03	2.03	2.01	2.03	2.01	2.00
F	138.51	143.82	123.05	138.79	124.05	120.70

Note: * , ** and *** statistically significant at 10%, 5% and 1% level respectively.(two-tailed tests)

From the regression results of model (1), we can see that the coefficient of LNASSET is 0.216 and statistically significant at 1% level. If LNASSET is replaced by LNINCOME and we run the regression again, the coefficient of LNINCOME is 0.168 and statistically significant at 1% level. The hypothesis I holds true. The regression results show that the asset elasticity of compensation to

scale is 0.216 and that sales elasticity of compensation to scale is 0.168 in Chinese listed companies. The elasticity is lower than that in U.S. firms studied by Murphy (1985) and Baker, Jensen & Murphy (1988). But the result is consistent with the findings by Kostiuk (1990). The study by Kostiuk found that the elasticity of compensation to scale was about 0.02-0.25 in 73 U.S. large firms.

From the regression results of model (2-1) and (2-2), we can see that the coefficient of *EPS*LNASSET* is about 0.012 and significant at 1% level. If accounting performance is replaced by market performance, the coefficient of *P*LNASSET* is about 0.002 and significant at 1% level. If we replace scale by core revenues, the coefficient of *EPS*LNINCOME* is about 0.013 and significant at 1% level. If accounting performance is replaced by market performance, the coefficient of *P*LNINCOME* is about 0.002 and significant at 1% level. The above results show that both accounting performance and market performance increase, so does the elasticity of compensation to scale. In other words, when corporate performance decreases, so does the elasticity of compensation to scale. Hypothesis II also holds true.

6. Summary and conclusions

From the data in 2002-2005 Chinese listed firms, the paper studies the scale factor in top executive compensation contracts and finds that the elasticity of compensation to scale is about 0.168. Both accounting performance and market performance increase, so does the elasticity of compensation to scale. In other words, Both accounting performance and market performance decrease, so does the elasticity of compensation to scale. The corporate performance is significantly positively related to the elasticity of compensation to scale in Chinese top executive compensation contracts. So, top executives must take account of the decrease in the elasticity of compensation to scale caused by the reduction of corporate performance. The relation between corporate performance and the elasticity of compensation to scale is consistent with the view of agency theory in Chinese listed companies'compensation contracts.

Ming, Zhang and Zhen, Chen (2005b) found that corporate scale was positively related to accounting performance. In fact, the expansion of scale will improve the corporate performance. Zhen, Chen (2006) also found that the increase in the weight of scale could improve future corporate performance. The reason for the coexistence of managerialism and agency theory is the result of the game between stockholders and managers. Both sides in the game compromise to some extent and the interests of both sides are included in compensation contracts. So, the coexistence of managerialism and agency theory is the equilibrium point between the both sides in the game.

Refernces

7. Alchian A. and Demsetz H., 1972, Production, Information Costs and Economic Organization, American Economic Review 62, pp.777-795.
8. Aoki M., 1984, The Cooperative Game Theory of the Firm, Oxford: Clarendon Press.
9. Baker George P and Hall BJ, 1998, CEO Incentives and Firm Size, NBER Working Paper No. 6868, December 1998.
10. Baker, George P., Jensen, Michael C.and Murphy, Kevin J., 1988, Compensation And Incentives: Practice vs.Theory, Journal of Finance 43, pp.593-616.
11. Baumol W J, 1959, Business behavior, Value and Growth, New York, Macmillan.
12. Beneish, M. 1999. Incentives and Penalties Related to Earnings Overstatements that Violate GAAP. The Accounting Review 74, pp. 425-457.
13. Berle A A and Means G C, 1932, The Modern Corporation and Private Property, New York. Macmillan.
14. Conyon, M., 1997, Corporate Governance and Executive Compensation, International Journal of Industrial Organization 15, pp.493-510.
15. Cosh, A. and A. Hughes, 1997, Executive Remuneration, Executive Dismissal and Institutional Shareholdings, International Journal of Industrial Organization15, pp.469-492.
16. Cuzick, J, 1985,A Wilcoxon-Type Test for Trend, Statistics in Medicine, Vol. 4, pp. 87-90.
17. Dechow, P, R. Sloan and A. Sweeney. 1996. Causes and Consequences of Earnings Manipulations: An Analysis of Firms Subject to Enforcement Actions by the SEC. Contemporary Accounting Research 13, pp. 1-36.
18. Devers, C. E., Cannella, A. A. J. R., Reilly, G. P., & Yoder, M. E. 2007. Executive compensation: A multidisciplinary review of recent developments. Journal of Management 33: 1016–1072.
19. Fama E F and Jensen M C, 1983, Separation of Ownership and Control, Journal of Law and Economics, 26, pp.301-325.
20. Firth, Michael, Peter M. Y. Fung, and Oliver M. Rui. 2007. How ownership and corporate governance influence chief executive pay in China's listed firms. Journal of Business Research 60: 776-785.
21. Gomez-Mejia L R., Henry Tosi; Timothy Hinkin, 1987. Managerial Control, Performance and Executive Compensation, The Academy of Management Journal 30, pp. 51-70.
22. Grossman S J and Hart O D, 1986, The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration, Journal of Political Economy 94, pp. 691-719.
23. Holmstrom.Bengt, 1979, Moral Hazards and Observability, Bell Journal of Economics 10. pp. 74-91.
24. Jensen M and Meckling W, 1976, Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure, Journal of Financial and Economics 3, pp.305-360.

25. Kaplan, S., 1997, Top Executive Incentives in Germany, Japan and the US: A Comparison, Working Paper, University of Chicago.
26. Kaplan, S., 1994, Top executive rewards and firm performance: A comparison of Japan and United States, Journal of Political Economy 102, pp. 510-546.
27. Kato, T., 1997, Chief Executive Compensation and Corporate Groups in Japan: New Evidence from Micro Data, International Journal of Industrial Organization 15, pp.455-467.
28. Kostiuk, P. F., 1990, Firm size and executive compensation, The Journal of Human Resources 25, pp.90-105.
29. Kroll, Mark; Simmons, Susan A.; Wright, Peter, 1990, Determinants of Chief Executive Officer Compensation Following Major Acquisitions, Journal of Business Research 20, pp349-366.
30. Larner, Robert J, 1966, Ownership and Control in the 200 Largest Non-financial Corporations, 1929 and 1963, American Economic Review, Sep66 Part 1 of 2, Vol. 56 Issue 4, pp777-787
31. Marris R, 1964, The Economic Theory of Managerial Capitalism, Macmillan, London.
32. Murphy, K.J., 1985, Corporate performance and managerial remuneration: an empirical analysis, Journal of Accounting and Economics 7, pp.11-42.
33. Niskanen, William A., 1968, The Peculiar Economics of Bureaucracy, American Economic Review 58, pp293-305.
34. Rosen, S., 1982, Authority, control and the distribution of earnings, The Bell Journal of Economics 13, pp. 311-323.
35. Rosen, S., 1992, Contracts and the Market for Executives, NBER Working Paper No. 3542, December 1990.
36. Ross S A, 1973, The Principal's Problem, American Economic Review 62, pp.134-139.
37. Sunny Li Sun & Xia Zhao & Haibin Yang, 2010, Executive compensation in Asia: A critical review and outlook.
38. Asia Pacific Journal of Management 27, pp.775–802.
39. Teddy Oetomo and Peter L. Swan, 2002, Is it ability or size alone which explains high executive pay in large firms? New evidence on the 'cloning' hypothesis, working paper.
40. Williamson O E, 1967, Hierarchical Control and Optimum Firm Size, Journal of Political Economy 75, pp.123-138.