

Executive Compensation, Executive Pay Gap and Firm Performance—Based on the Empirical Research of Listed Companies in China

Wu Qian

School of Economics and Management, Guangxi Normal University, Guilin, China

Abstract: *As one of the important means of motivating employees, salary has a very important impact on the performance of enterprises, as the core managers of enterprises, the working attitude and enthusiasm are directly related to the survival and development of enterprises. Different companies have different treatment standards and salary mechanisms for the same position, and the treatment standards of each senior management in the company are obviously different. This paper uses all listed companies in China from 2015 to 2020 as a sample and conducts empirical research. Two models were established to analyze the impact of executive compensation and executive pay gap on company performance. After putting forward hypotheses, design variables, empirical analysis and robustness test, it is concluded that the executive compensation and the executive pay gap of the company has a significant positive correlation with the company's performance, and increasing the salary of executives within a reasonable range and reasonably expanding the remuneration difference will help mobilize the work initiative of the company's senior management team. Thereby improving the company's performance.*

Keywords: *Executive team, Executive compensation, Executive pay gap, Business performance*

1. Introduction

In this high-tech era of rapid economic development, human capital has become the most critical resource. The development and growth of the company depends on the concerted efforts of all personnel, and a reasonable remuneration mechanism can encourage the employees to work hard and take the initiative to create value for the company, so as to achieve their own maximum value. Company bosses expect to use compensation to meet the material needs and psychological requirements of employees, thereby inspire, induce and improve employees' work behavior, and create an excellent company culture and enhance corporate brand value. Thereby improving the company's performance. Senior managers are the key decision-makers of the company, and their salaries are inextricably linked to the survival of the company. On the one hand, the salary of senior managers is directly related to the company's profits, on the other hand, salary is also the work income of senior managers, and the salary level is directly determined the standard of living of individuals as well as families. Therefore, how to let senior managers be satisfied on the salary issue, willing to work actively for the enterprise, and at the same time meet the needs of life, salary management has become a very important issue in enterprise governance. Based on the data of listed companies in China from 2015 to 2020, this paper empirically analyzes the impact of executive compensation and executive pay gap on enterprise performance, and provides a certain reference for corporate governance.

2. Theoretical analysis and research hypotheses

2.1 Executive compensation and corporate performance

Executive compensation is under the principal-agency theory, in which shareholders resolve conflicts of interest with managers through incentive mechanisms, so as to maximize the value of the company. Remuneration is divided into economic remuneration and non-economic remuneration, economic remuneration mainly composed of basic remuneration, variable remuneration and indirect social welfare; non-economic remuneration, also known as internal compensation or incentive compensation, is mainly composed of satisfying work, social status, and humanistic care. By reading the existing literature, domestic and foreign scholars have different opinions on the relationship between executive compensation and firm performance. Ma Huipeng (2018) conducted an empirical test of 710 listed

companies in the A-share market from 2010 to 2015, and the results showed that when executive compensation is low, corporate performance is positively correlated with executive compensation, and when executive compensation is high, corporate performance is negatively correlated with executive compensation^[1]. Lan Songmin and Dai Jianhua (2015) took the 2010-2012 annual performance of Shanghai and Shenzhen media enterprises as a sample to conduct an empirical study on the correlation between executive pay and company performance of media enterprises Executive pay is negatively correlated with company performance, but it is not significant^[2] However, Hou Yi (2020) took the data of Shanghai and Shenzhen A-share listed companies from 2014 to 2018 as a sample, and conducted an empirical study on the impact of executive monetary compensation and non-monetary compensation on corporate performance, and the results showed that both monetary and non-monetary compensation of executives had a significant positive impact on corporate performance^[3]. Liu Yuying (2021) took the data of China's ChiNext listed companies from 2016 to 2018 as a sample, first divided executive incentives into two aspects, remuneration and equity incentives, and further tested according to the different samples of equity nature, and concluded that both executive compensation and executive equity incentives can significantly improve corporate performance^[4] Based on the above analysis, this paper proposes the first hypothesis:

H1: There is a positive correlation between executive compensation and firm performance.

2.2 Executive pay gap and enterprise performance

there are two main views on the relationship between the two among domestic and foreign scholars: one view is based on the tournament theory, which believes that the salary gap between managers is a very common positive phenomenon, and the gap means that lower-paid executives can also get higher pay if they work hard, therefore The wage difference can effectively stimulate the enthusiasm of low-paid employees, improve the company's performance, and create a positive atmosphere of "you catch up" within the company, thereby creating a good corporate culture and promoting the rapid development of the company. Another view is based on behavior, which suggests that teamwork improves a company's performance. Although the pay gap between executives reflects their ability to earn high salaries, [5] of performance.

Zhang Zhengtang (2007) summarized and analyzed behavior theory, emphasizing teamwork to create performance, and the pay gap will adversely affect teamwork, so the larger the pay gap, the lower the performance of the enterprise. Diane (2014) argues that the more evenly paid executives are, the smaller the pay gap, indicating greater unity within executives and thus improving business performance. However, Tao Wenli (2021) conducted an empirical study on the relationship between executives' salary and remuneration differences and company performance by selecting China's A-share listed companies from 2012 to 2019 as a sample, it turns out that the larger the pay gap within executives, the more it can stimulate increased corporate performance. Li Qian and Jiao Hao (2021) selected A-share manufacturing companies in Shanghai and Shenzhen from 2011 to 2016 as a sample to examine the correlation between the salary difference within management and the company's performance, and the results showed that the remuneration within the management was displayed The relationship between the difference and the company's performance shows an inverted "U" curve, that is, when the salary difference within the management is greater, the company's performance shows a trend of first rising and then declining.^[6] Shi Xinyue (2021) took listed companies in China's metal industry from 2013 to 2018 as the research object, and conducted an empirical analysis of the relationship between executive pay gap and enterprise performance, and the research results showed that the compensation between executives was carried out The difference has a significant positive impact on the company's performance^[7] Based on the above analysis, this paper proposes a second hypothesis:

H2: There is a positive correlation between executive pay gaps and firm performance.

3. Study design

3.1 Sample selection and data sources

This paper selects China Shanghai and Shenzhen A-share listed companies from 2015 to 2020 as a sample, ascreens and preprocesses the samples as follows: excluding the financial industry, insurance industry, ST, *ST and samples with missing data^[8] Finally, through screening and preprocessing, 19390 valid observation data were obtained. The financial data, executive compensation data, and other relevant data required for this paper are obtained from the Cathay Security Database and the company's reports.

3.2 Variable picking

3.2.1 The variable being explained

The interpreted variable is enterprise performance, in management, the measures of enterprise performance mainly include return on net assets, return on total assets, return on total assets, Tobin Q, EPS, net equity margin, etc. From a financial point of view, the assets of enterprises are relatively easy to manipulate, while the net assets are relatively fair, so this article preferentially chooses the return on equity (ROE) indicator to measure.

3.2.2 Explanatory variables

The first explanatory variable is executive compensation (pay), because monetary compensation accounts for the largest proportion of economic compensation, this paper uses monetary compensation to measure executive compensation.

The second explanatory variable is the executive pay gap, where the pay differential between core and non-core managers refers to their average pay difference. The average salary of a company's core managers is subtracted from the total salary of the company's top management minus the total salary of the company's top three executives, and then the difference in salary of the company's management is measured by their average salary. This paper draws on Xu Nan et al.'s research on the executive pay gap, and the specific calculation method is listed below:

$$\text{Average compensation of core managers} = \text{total compensation of the top three executives} / 3^{[9]}$$

$$\text{Average compensation of non-core managers} = (\text{total executive compensation} - \text{total compensation of the top three executives}) / (\text{number of executives} - 3)^{[9]}$$

$$\text{Executive pay gap} = \text{LN} (\text{average compensation of core managers} - \text{average compensation of non-core managers})^{[9]}$$

3.2.3 Control variables

In the process of continuous operation of enterprises, many factors will have different impacts on enterprise performance, and the industry and scale of enterprises vary greatly, so on the basis of reference to existing research, the control variables shown in Table 1 are also selected:

Table 1: Variable descriptions

The variable type	symbol	Variable definitions
The variable being explained	roe	Corporate Performance = Return on Net Assets (Net Profit / Average Net Assets)
Explanatory variables	pay	Remuneration of executives = the total remuneration of directors, supervisors and senior management
	Pay gap	Executive pay gap = LN (average core executive compensation - average non-core executive compensation)
Control variables	size	Business size = LN (natural logarithm of total assets)
	board	Board size = LN (number of board members)
	tobin-q	Tobin-q = company market capitalization / total assets
	lev	Gearing ratio = total liabilities / total assets
	growth	Growth = Growth rate of operating income (total operating income of the current year - total operating income of the previous year) / total operating income of the previous year
	industry	Industry dummy variables
year	Annual dummy variable	

In order to study the impact of executive compensation on firm performance, this paper establishes a model (1), which is as follows:

$$\text{roe} = \beta_0 + \beta_1 \text{pay} + \beta_2 \text{size} + \beta_3 \text{board} + \beta_4 \text{tobin-q} + \beta_5 \text{lev} + \beta_6 \text{growth} + \sum \text{industry} + \sum \text{year} + \varepsilon \quad (1)$$

In order to study the impact of executive pay gap on firm performance, this paper establishes a model (2), which is as follows:

$$\text{roe} = \beta_0 + \beta_1 \text{pay gap} + \beta_2 \text{size} + \beta_3 \text{board} + \beta_4 \text{tobin-q} + \beta_5 \text{lev} + \beta_6 \text{growth} + \sum \text{industry} + \sum \text{year} + \varepsilon \quad (2)$$

4. Empirical analysis

4.1 Descriptive statistics

Through the screening of sample data, outliers, and missing values, the descriptive data of each variable is obtained, and is displayed in Table 2:

Table 2: Descriptive statistical analysis of each variable

variable	average value	standard deviation	minimum	maximum
pay	6284254	6616542	11905	140402300
pay gap	13.18	0.750	8.286	17.07
roe	0.0506	1.305	-174.89	8.715
board	8.424	1.661	1	17
size	22.23	1.341	15.98	28.64
tobinq	2.225	5.891	0.674	729.6
lev	0.419	0.316	0.00836	28.55
growth	0.429	14.52	-1.309	1,878

As shown in Table 2, the maximum value of executive compensation is 140402300 yuan, the minimum value is 6616542 yuan, and the average value is 6284254 yuan, which is a large difference; The maximum value of the executive pay gap is 17.07, the minimum value is 8.286, and the average value is 13.18, indicating that the difference in executive pay of enterprises in China is more significant ; The maximum value of enterprise performance is 8.715, the minimum value is -174.89472, and the average value is 0.0506, which shows that the performance of listed companies in China varies greatly, which may be affected by the external economic environment or the internal organizational structure; it can be seen that the gap between executive pay and executive pay has a greater impact on enterprise performance.

4.2 Correlation analysis

Next, we performed a correlation analysis of the individual variables, and their relationship is shown in Table 3 below. As can be seen from Table 3, the correlation between the remuneration of senior management and the company's performance is 0.022 and is significant at the level of 1%, indicating that there is a significant positive relationship between the remuneration of the company's management and the company's performance. The correlation between management compensation differential and company performance is 0.025, and it is significant at the level of 1%, indicating that there is a significant positive correlation between the company's management compensation difference and the company's performance, and when the management compensation difference is large, it can motivate lower-paid managers to work harder to improve the company's performance. Hypothesis 2 is validated.

Table 3: Correlation analysis of variables

	roe	pay	paygap	board	size	tobinq	lev	growth
roe	1	-	-	-	-	-	-	-
pay	0.022***	1	-	-	-	-	-	-
paygap	0.025***	0.704***	1	-	-	-	-	-
board	0.00700	0.187***	0.119***	1	-	-	-	-
size	0.015**	0.446***	0.387***	0.282***	1	-	-	-
tobinq	-0.00400	-0.033***	-0.041***	-0.050***	-0.163***	1	-	-
lev	-0.04***	0.116***	0.073***	0.088***	0.295***	0.034***	1	-
growth	0.00200	0.064***	0.017**	0.028***	0.034***	-0.00200	0.016**	1

Note: ***, **, and * indicate statistical significance levels of 1%, 5%, and 10%, respectively

4.3 Analysis of regression results

As shown in Table 4, executive pay is significantly positive at the 1% level, indicating a positive correlation between executive pay and firm performance, hypothesis 1 validated. Therefore, increasing executive compensation can let them see their ability to earn high salaries, enhance the work motivation of managers, make the interests of managers and shareholders tend to be aligned, and actively create value for enterprises while pursuing their own interests and realizing personal value, which can improve

corporate performance and promote the good and sustainable development of enterprises.

Table 4: Regression results for model (1) and (2)

variables	(1)	(2)
Pay/pay gap	0.000*** (5.89)	0.025*** (3.05)
board	0.002 (1.04)	0.003 (1.28)
size	0.042*** (5.22)	0.041*** (5.19)
tobinq	0.000 (0.04)	0.000 (0.06)
lev	-0.400*** (-4.03)	-0.397*** (-3.91)
growth	0.000 (0.72)	0.000 (1.01)
Constant	-0.759*** (-4.43)	-1.065*** (-6.14)
Observations	18,617	18,608
R-squared	0.003	0.003
year	yes	yes
industry	yes	yes

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively;

The paygap is also significantly positive at the 1% level, indicating that the paygap has a significant positive impact on corporate performance, hypothesis 2 is validated. Therefore, this paper supports the championship theory, arguing that the existence of executive pay gap is a normal phenomenon in modern corporate governance, and that appropriate executive pay gap can motivate lower-paid executives to work hard, form a good working atmosphere within the company, create a positive corporate culture, and improve corporate performance.

In addition, the article examines the correlation of other control factors to the company's performance. The correlation coefficients between the company's asset-liability ratio and corporate performance are -0.4 and -0.397, respectively, which are significant at the level of 1%, which indicates that the company's asset-liability ratio has a clear negative correlation with the company's performance. Since the gearing ratio is a measure of a company's solvency, when the gearing ratio increases, the company's performance decreases. The correlation coefficients between company size and enterprise performance are 0.042 and 0.041, respectively, which are also significant at the 1% level, indicating that there is a positive correlation between company size and business performance.

4.4 Robustness test

In order to improve the robustness of the results of this study, this paper proposes a method of replacing the return on net assets (ROE) with the ROA, and reverts the two models Regression was carried out and the results are shown in Table 5 below:

Table 5: Regression results for model (1) and (2)

variables	(1)	(2)
pay/pay gap	0.000*** (10.98)	0.012*** (12.45)
board	-0.001 (-1.13)	-0.000 (-0.47)
size	0.011*** (9.42)	0.011*** (9.43)
tobinq	0.001*** (3.03)	0.001*** (3.01)
lev	-0.192*** (-17.34)	-0.191*** (-17.11)
growth	0.000 (0.20)	0.000 (0.74)
Constant	-0.131*** (-5.75)	-0.288*** (-15.61)
Observations	18,659	18,650
R-squared	0.189	0.190
year	be	be
industry	be	be

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively;

From the above table, it can be seen that when ROA is used instead of ROE to measure corporate performance, there is still a significant positive correlation between executive pay and executive pay gap and corporate performance, so the above conclusion is confirmed.

5. Research conclusions and implications

5.1 Research conclusions

This paper takes all listed companies in China from 2015 to 2020 as a sample, two models were constructed to examine the impact of executive pay and executive pay gap on firm performance. After formulating hypotheses, design variables, empirical analysis, and robustness testing, it was concluded that executive compensation has a significant positive impact on corporate performance and improves executives' performance. Salary can let them see their ability to earn high salary, stimulate the enthusiasm of executives, promote long-term investment in the enterprise, avoid short-term behavior, and enable them to actively create value for the enterprise while pursuing their own interests and realizing personal value, which can improve corporate performance and promote the good and sustainable development of enterprises. The executive pay gap also has a significant positive impact on corporate performance, and the executive pay gap is a normal phenomenon in modern corporate governance, and an appropriate executive pay gap can motivate lower-paid executives to work hard and create a good working environment within the company, create a positive corporate culture and promote the improvement of the company's performance.

5.2 Contribution and enlightenment

The theoretical contribution of this paper is mainly that most of the existing research is based on a specific industry or a specific company, studying the relationship between executive pay and company performance or the relationship between executive pay gap and company performance. Therefore, the theoretical research on the relationship between executive compensation, executive pay gap and enterprise performance is enriched.

This paper also has corresponding practical significance, and draws the following management enlightenments:

First, enterprises should introduce the concept of performance evaluation in the process of salary management, take the work performance of executives as the guide, and establish a suitable performance evaluation system according to their own conditions. The setting of performance indicators should consider diversification, combine financial indicators with non-financial indicators, and design from three aspects: all-round, whole-process and full-coverage, which can not only prevent the short-term behavior of enterprises, but also reasonably evaluate the business performance of enterprises. The use of performance evaluation tools for listed companies in China is still relatively weak, and a perfect index system has not been established, which limits the depth, breadth and intensity of performance evaluation, in order to comprehensively improve the performance management level of enterprises, it is necessary to build a scientific evaluation index system, explore the means of evaluation, accelerate the implementation of evaluation indicators, so that financial supervision, audit supervision, social supervision and other supervision systems play their due role. Continuously improve the evaluation index system and standards.

Second, enterprises should develop a compensation system that is in line with their own corporate strategy, organizational structure and corporate culture. The remuneration system refers to the organic unity formed by the interrelated and mutually reinforcing factors in the remuneration. The establishment of a personalized compensation system is closely related to the company's strategy, which can make the work and actions of employees better promote the competition and survival of the enterprise, so as to drive the company's performance higher than the average of peers. To design a reasonable remuneration system, it is necessary to consider macro factors such as the supply and demand of the labor market outside the enterprise, the organizational strategy factors within the enterprise, and the education level, working years, experience, professional skills, performance and personal development potential of executives. Enterprise managers can innovate compensation management from the three levels of strategy, system and technology, so as to enhance the competitive advantage of enterprises.

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