

Whether CEO are Paid Large Compensation Packages? — Empirical Evidence from Listed Companies in China

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Abstract. Using data from Chinese A-share listed companies, this paper empirically finds that, on average, CEO compensation is also increasing in China, while the pay gap between CEOs and ordinary employees is also widening. We find that CEO compensation exceeds the expected pay level or reasonable pay level, which means it is difficult to say that CEOs' excess pay is 100% reasonable. We also find that an increase in CEO compensation is beneficial to firms' financial performance and R&D innovation, which suggests that the compensation contracts of listed firms are still highly applicable to a certain extent, and that the theory of optimal compensation contracts is still useful in mitigating agency conflicts between shareholders and executives.

Keywords: CEO Compensation, Excess Compensation, Chinese listed companies.

1. Introduction

Executive compensation is a complicated and controversial subject. First of all, it is a core issue of corporate governance, because an effective compensation system is of great significance for reducing transaction costs and increasing firm value [1]. Furthermore, since the mid-1970s, the CEO compensation level has grown dramatically, and the pay differentials between CEO and average workers also widened. This is demonstrated by data: CEO compensation has grown 940% since 1978 (Mishel and Wolfe, 2019), and CEO-to-worker pay ratio has reached 320: 1 [2]. Huge executive compensation packages not only connect with shareholders' interests, but also relate to distributive justice.

Managerial compensation has been rising consistently over the past few years, and the high compensation incentives granted to managers by some enterprises have triggered extensive discussions in the community, while China's rules aimed at restraining the compensation levels of managers in state-owned enterprises were also introduced in 2009 and 2014, respectively. High management or CEO salaries may cause social injustice and social controversy, which has drawn the attention of the Chinese government. So, does CEO compensation of Chinese listed companies increasing year by year like in the west countries?

This paper will first detailly shed light on the reasons why CEO compensation is high, and then statistically calculate CEO compensation of Chinese listed companies and compare the gap between CEO compensation and ordinary employees' salary. We also calculated CEOs' excess compensation to judge whether the increase in CEO compensation is justified. After that, we examine the economic consequences of large CEO compensation packages.

The rest of the paper proceeds as follows. Section 2 presents the relevant literature on the reasons for large CEO compensation. Section 3 describes our data and methodology. Section 4 provides empirical results. Section 5 discuss the economic consequences of large CEO compensation packages, and Section 6 concludes.

2. Literature review

Large CEO compensation packages could be explained by the following reasons. Firstly, the high-level CEO pay could be attributed to the equilibrium of scarce supply and increasing demand for talented CEOs' service in competitive market. Secondly, high incentives are provided to mitigate the agent problem and compensate for bearing risk. Therefore, CEO compensation, for the most part, is

within the reasonable range, but when CEO managerial power is large, CEOs are highly likely to be overpaid.

2.1. Supply and demand view under competitive business environment

Following the principle of supply and demand, when supply (CEO ability and efforts) is scarce, while demand is large even incremental, the price equilibrium will remain at a high level. The limited supply has been expounded by Reinhardt [3]: the supply of gifted executives is scarce, even in the country with a large corps of highly educated people, so the market for executive talent is highly competitive. Therefore, for the purpose of attracting and retaining talented executives, the directors are usually willing to pay a higher compensation than their peer groups. Ultimately, the more gifted executives are sorted into larger organizations and receive the higher pay. The data from Lazear and Gibbs [4] indicates that for every 10% increase in firm size (measured by stock price), executive pay typically rises by about 1%.

2.2. Principal-agent model view

The principal-agent model shows the conflict between two parties (CEO-agent, BOD-principal). This conflict manifests itself in the failure that executives who only enjoy residual control rights may not work for the interests of shareholders [5] It is usually seemed as a kind of moral hazard problem. Proper incentives for managers are requisite, which could help ameliorate moral hazard problem by better aligning the agent's interests with those of principal. CEO, as an agent, is risk averse, so higher compensation needs to be given to compensate this risk. In an optimal contract, CEO pay is expected to meet the standard that achieves the balance between incentive gain and risk they bear, and the control the fluctuation range of compensation simultaneously [6].

2.3. CEOs' managerial power influence their own compensation level

According to "managerial power approach (MPA)" [7], a large CEO compensation package is not only considered as a remedy to the agency problem, but also per se an agency problem. To put it in another way, rent extraction phenomenon occurs because CEO, as an agent, is highly possible to hold exorbitant managerial power to grab super-normal profits than they would get under arm's length bargaining. Firstly, Insider directors may occupy executive positions, so they are motivated to design the compensation to benefit executives, which is also profitable to themselves. Secondly, executive groups may bribe directors to gain their support, so executives may have considerable effects over the board [7]. In addition, based on the findings from Choe et al. [8], CEO power only leads to wealth transfer from shareholders to the CEO instead of distortion in efficiency, so there is low cost to directors to accept CEO's compensation requirements.

3. Data and methodology

3.1. Data source

We use Chinese A-share listed companies as our sample. All necessary data are retrieved from the China Stock Market and Accounting Research Database (CSMAR). In particular, the following data are taken from annual reports of listed companies: assets, revenue, leverage, age, book-to-market ratio, Tobin's Q-value.

3.2. Methodology

From the research methodology, this paper mainly uses statistical analysis of data and econometric regression analysis.

We first statistically calculate CEO compensation of Chinese listed companies and compare the gap between CEO compensation and ordinary employees' compensation.

We then calculated CEOs' excess compensation to judge whether the increase in CEO compensation is justified. The measure of excess compensation draws on the research of Core [9]. First, the model (1) is regressed using the sample data to obtain the regression coefficients of each variable and fit the expected CEO pay (LnExpectedpay). Second, the residual difference between the CEO's actual pay and the expected pay, i.e., the CEO's excess pay, is calculated and is denoted as Overpay, where LnCEOpay is the natural logarithm of the CEO pay, Size is the natural logarithm of enterprise size, ROA is return on assets, Lev is financial leverage, BM is book-to-market ratio, Year is a year dummy, Ind is an industry dummy, and Area is a dummy for the region where the enterprise is located (east, central, and west of China).

$$\text{LnCEOpay}_{it} = \alpha_0 + \alpha_1 \text{Size}_{it} + \alpha_2 \text{ROA}_{it} + \alpha_3 \text{Lev}_{it} + \alpha_4 \text{BM}_{it} + \text{Year} + \text{Ind} + \text{Area} + \varepsilon_{it} \quad (1)$$

$$\text{Overpay}_{it} = \text{LnCEOpay}_{it} - \text{LnExpectedpay}_{it} \quad (2)$$

We also examine the economic consequences of large CEO compensation packages using econometric regression methods. we use an OLS regression to estimate the following equation:

$$\text{ROA}_{i,t+1} / \text{Lnpatent}_{i,t+1} = \alpha_0 + \alpha_1 \text{LnCEOpay}_{it} + \alpha_2 \text{Size}_{it} + \alpha_3 \text{Lev}_{it} + \alpha_4 \text{Cash}_{it} + \alpha_5 \text{Age}_{it} + \alpha_6 \text{Growth}_{it} + \alpha_7 \text{Tobinq}_{it} + \text{Year} + \text{Firm} + \varepsilon_{it} \quad (3)$$

Where for company *i* and year *t*, the dependent variable ROA is the Return on Assets, Lnpatent is the total number of patents filed by companies per year, the key explanatory variable LnCEOpay represents the natural logarithm of the CEO's actual pay. We lag all independent variables by one year in the regression to alleviate concerns over potential reverse causality. Control variables include firm size (Size), financial leverage (Lev), cash balances over total assets (Cash), company age (Age), Revenue growth rate (Growth), Tobin's Q-value (Tobinq). In addition, we also control for firm fixed effects Firm and year fixed effects Year. ε_{it} denotes the residual term.

4. Result

4.1. Baseline results

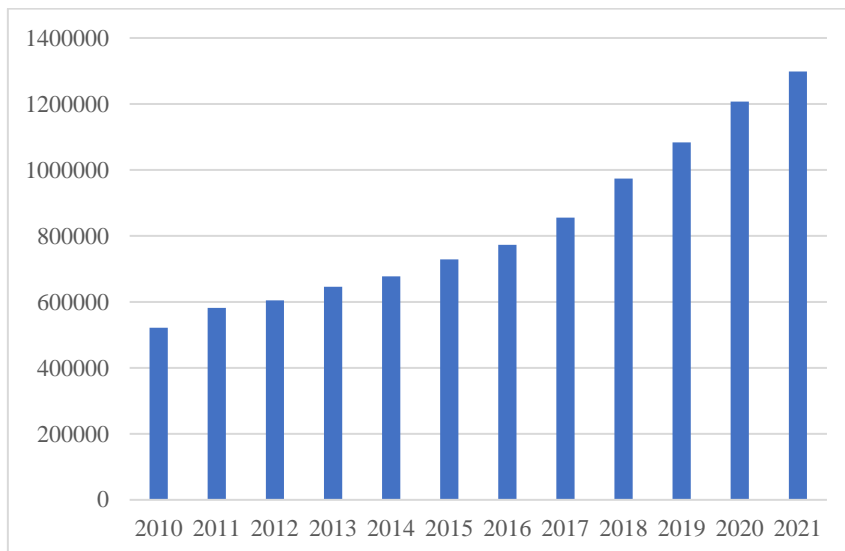


Figure 1. CEO compensation in Chinese A-share listed companies

This paper first examines the changes of CEO compensation in Chinese A-share listed companies, which mainly consists of monetary compensation and equity incentives, and only after 2006 did Chinese listed companies start to implement management equity incentive programs. At present, the number of listed companies implementing management equity incentive programs is relatively small, and the proportion of executive shareholding in the total share capital of listed companies is very low. Therefore, this paper adopts the total annual monetary compensation of CEOs to measure CEO compensation. Figure 1 shows that from 2010 to 2021, CEO compensation of Chinese listed

companies is increasing year by year, indicating that CEO are paid large compensation packages in China.

We also focus on the change in the difference between CEO compensation and average employee salary in Chinese listed companies. Calculating the difference between “cash paid to employees” and “total annual remuneration of directors, supervisors and senior executives”, and then divide by the number of employees to get the average remuneration of employees. In Figure 2, gap1 reflects the difference between CEO and employee compensation: from 2010 onwards, the value of gap1 has been getting bigger and bigger, and the gap has been expanding significantly in recent years. It indicates that the compensation gap between CEOs and ordinary employees in Chinese listed companies is widening.

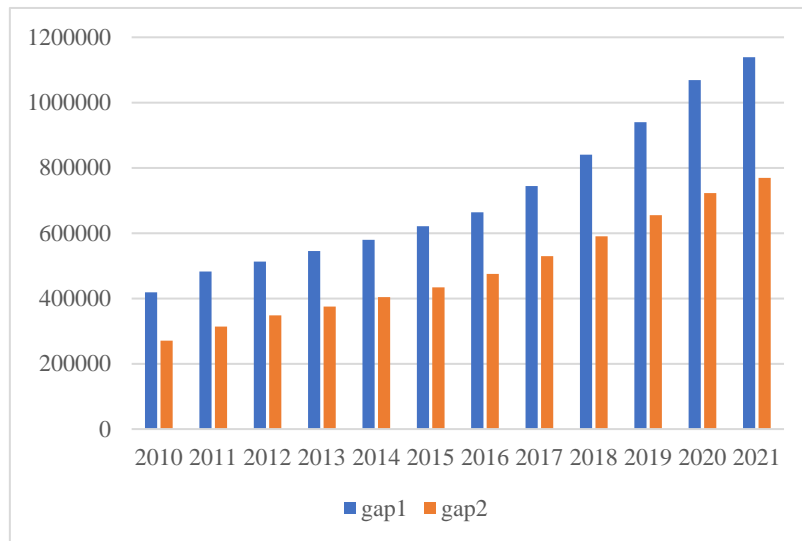


Figure 2. The gap between CEO/ executive compensation and employee salary

The entire executive compensation is increasing too. This paper also examines the difference between average executive compensation and average employee pay. Specifically, average executive compensation is equal to total senior management compensation divided by the number of executives. Unlike the U.S., Chinese firms have smaller equity payment coverage and payment ratios. Therefore, this paper adopts the total annual monetary compensation of executives to measure executive compensation. The difference between executive and employee compensation is captured by gap2 in Figure 2: from 2010 onwards, the value of gap2 has been almost increasing, suggesting that the pay gap between executives and ordinary employees in Chinese listed companies has also been widening.

4.2. Whether the increase in CEO compensation is justified

Hill et al. [10] define excess compensation as the difference between actual pay and justified pay, which involves the optimal pay contract theory and managerial power theory. Calculating the average value of CEO's excess pay in each year using model (1) and model (2), we can find that the average value of CEO's excess pay in almost all years is greater than 0, indicating that CEO's pay exceeds the expected pay level or justified pay level. On the one hand, excess pay is an effective pay incentive to encourage CEOs to work more conscientiously. On the other hand, excess pay may also be the result of managers' power manipulation or the CEO's power rent-seeking. It is difficult to say that it is 100% reasonable for CEOs to receive excess pay.

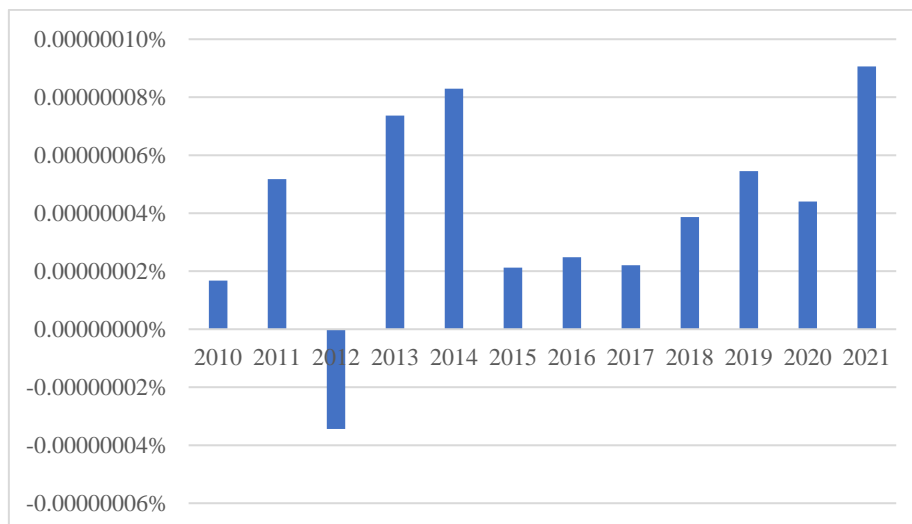


Figure 3. CEO's excess compensation in Chinese A-share listed companies

We also examined whether the executive team as a whole, including the CEO, received excess compensation. Again, based on the above model we can calculate the excess compensation of executives each year, and interestingly, the excess compensation of the entire executive team including the CEO is less than 0, which indicates that the executive team as a whole does not receive excess compensation. China encourages CEOs to obtain high compensation, but then controls the overall size of the executive team's pay at listed companies. This may be related to China's political objectives and institutional requirements.

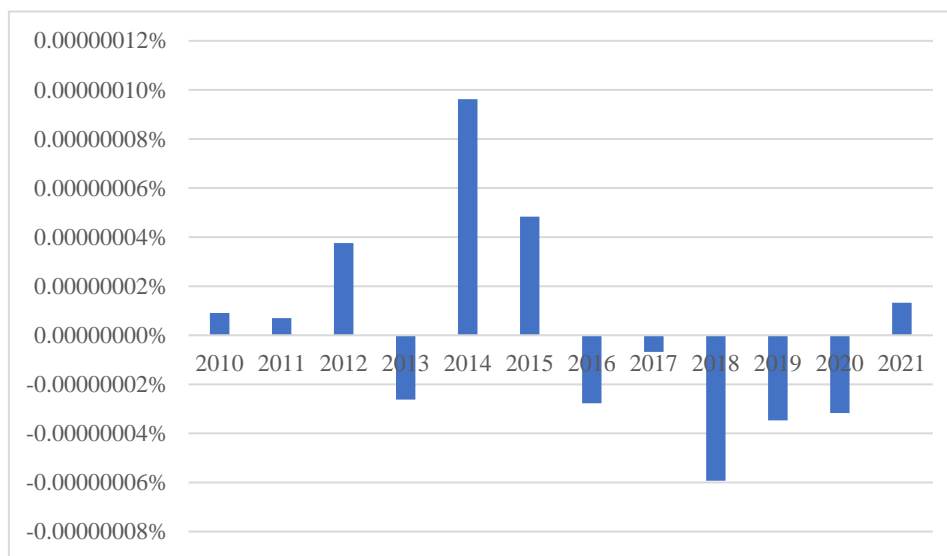


Figure 4. Executives' excess compensation in Chinese A-share listed companies

5. Discussion

The principal-agent model shows the conflict between two parties (CEO-agent, BOD-principal). This conflict manifests itself in the failure that executives who only enjoy residual control rights may not work for the interests of shareholders [5]. It is usually seemed as a kind of moral hazard problem. One example is the failure of China's SOE reform at the end of 20 century. Executives were vested with more decision rights to improve firms' performance, but their earnings were still low and irrelevant to their performance. Consequently, they had no motivation to fight for the companies, so most SOEs were bankrupt or privatized for two decades. Given this lesson, proper incentives for managers are requisite. That could help ameliorate moral hazard problem by better aligning the agent's interests with those of principal. So, does large CEO compensation packages bring more

benefit to companies (Return on Assets, i.e. ROA & total number of patents filed by companies per year)?

The results in Table 1 show that an increase in CEO compensation significantly increases a firm's ROA as well as the number of patent applications in the following year. This suggests that an increase in CEO pay is beneficial to firms' financial performance and R&D innovation.

Table 1. The economic consequences of large CEO compensation packages

	(1)	(2)
	F.ROA	F. Lnpatent
LnCEOpay	0.004** (2.47)	0.024* (1.80)
Size	0.011** (2.00)	0.302*** (5.59)
Lev	0.083*** (31.14)	0.306 (1.53)
Cash	0.299*** (8.09)	-0.060 (-0.19)
Age	-0.047 (-1.03)	0.580* (1.80)
Growth	0.000 (0.10)	-0.015 (-0.95)
Tobinq	0.006*** (4.78)	-0.033* (-1.81)
Intercept	-0.183 (-1.09)	-5.393*** (-3.72)
Obs	25083	2480
Firm FE	Yes	Yes
Year FE	Yes	Yes
R ²	0.260	0.821

Note: Numbers in brackets are t-values. *, **, *** denote statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

In recent years, the phenomenon of astronomical remuneration of executives of listed companies, which has been constantly exposed by the media, has become the focus of public attention. The public's skepticism about executive compensation has intensified, and the validity of the executive compensation contract has been put into a big question mark. The results of this paper found that the relationship between CEO compensation and corporate performance of listed companies is still very strong. There is still a significant positive correlation between CEO compensation and corporate performance of listed companies, indicating that the compensation contract of listed companies is still highly applicable to a certain extent, and the theory of optimal compensation contracts is still useful in mitigating the agency conflicts between shareholders and executives.

6. Summary

Increased CEO compensation has become an international phenomenon. Unlike Western countries, China is committed to the pursuit of “common wealth” and social equity. So, is CEO compensation also increasing in Chinese listed companies, and is the compensation gap between CEOs and ordinary employees also widening?

Using data from Chinese A-share listed companies, this paper empirically finds that, on average, CEO pay is also increasing in China, while the pay gap between CEOs and ordinary employees is also widening. We find that CEO pay exceeds the expected pay level or reasonable pay level, which means it is difficult to say that CEOs' excess pay is 100% reasonable. We also find that an increase in CEO compensation is beneficial to firms' financial performance and R&D innovation, which

suggests that the compensation contracts of listed firms are still highly applicable to a certain extent, and that the theory of optimal compensation contracts is still useful in mitigating agency conflicts between shareholders and executives.

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