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Equity Incentives, Pay Gap and the Cost of Equity Capital: Evidence from Chinese Listed Companies

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Abstract: This study explores the effects of equity incentives on the cost of equity capital from the perspective of pay gap, which has not received much attention in research on Chinese listed companies. We find that the implementation of the equity incentive plan has a significantly positive effect on the pay gap in enterprise. By dividing enterprise pay gap into the internal executive pay gap and the executive-employee pay gap, we find that under the influence of equity incentives, firms with large internal executive pay gap have a significantly lower cost of equity capital according to tournament theory; however, the executive-employee pay gap has a significantly positive effect with the cost of equity capital, which is consistent with behavioral theory's prediction. Furthermore, we find that the enterprises' ownership and regions' development level are playing an important role in the effect that equity incentives act upon the cost of equity capital. The findings make incremental contributions on studying the economic consequences of China's equity incentive plan, and we quest the implications of these findings for reforming Chinese

remuneration distribution system and adding some new empirical evidence for regulating pay gap theories applied in Chinese listed companies research.

JEL Code: G34, J31, J33, J38

Key Words: Equity Incentives; Pay Gap; the Cost of Equity Capital

1. Introduction

The question "Are you happy?" has recently become synonymous with people's livelihood issues. The "2011-2012 Chinese Happiness Well-off Index" showed that income remains the most influential factor on public happiness and that higher wages have become the most effective way to raise public happiness. All above indicate that fairness and efficiency of income distribution is gaining more attention, in light of China's multiple compensation system reforms and the introduction of the listed corporation equity incentive mechanism. Historically, China's income distribution reform has moved from egalitarianism, to prioritizing efficiency and considering fairness, and finally to a focus on fairness. Lifelong job security and equal shares in state-owned enterprises (SOEs) began to disappear during the "Reform and Opening up" and the enterprise internal pay gap (the income disparity between workers) appeared from 1978.

In September, 1999, the Fourth Plenary Session of the Chinese Party's 15 passed the "Central Committee of the Communist Party of China about the Reform of State-Owned Enterprises and the Development of Certain Major Issue Decisions," which clearly put forward the idea of pegging income to the operating performance of enterprise managers. When "Interim Measures for Operating Performance Evaluation of Central Enterprise Managers" came into force on January 1, 2004, the yearly salary incentive method began for the executives of the central government's directly controlled enterprises and a long-term incentive mechanism was introduced. The pay gap[1]therefore gradually expanded within enterprises. Table 1 shows that the absolute

[1] This paper combines the internal executive pay gap and in the term pay gap. The internal executive pay gap describes the income disparity between senior executives while the executive-employee pay gap depicts that

average remuneration gap between the executives and staff of China's listed companies increased nearly three times between 2007 and 2013, from RMB58,625 to RMB145,410. The internal executive pay gap increased 2.5 times, from RMB135,104 to RMB332,947. The average executive remuneration annual growth rate was 15%, whereas that of the general staff was 12%. The executive-employee pay gap's annual growth rate was 16.9%, which was slightly lower than the internal executive pay gap's annual growth rate of 17.6%. We can conclude that although the pay levels of both executives and employees grow steadily, executive pay has a larger base and grows faster, illustrating the phenomenon of an increasing pay gap within enterprises.

As the pay gap in domestic enterprises continued to grow, the government emphasized both efficiency and fairness, creating apparent contradictions in the corporate pay reform policy. The "Listed Company Equity Incentive Management Approach" was implemented in China on December 31, 2005, to try to improve the country's long-term inadequate executive incentive condition. In 2012, 118 Chinese listed companies issued the first equity incentive plan (without amendments). However, the public frequently questioned listed company executives' astronomical salaries. On February 6, 2009, the Ministry of Finance issued the "Compensation Management Approach of State-Owned Financial Enterprises and State Holding Companies" draft, which suggested restrictions on executives' excessive incentives and unreasonably high salaries.

Policy contradictions are bound to affect the influence of reforms on the incentive pay system. As one of the most important enterprise management systems, the implementation of the executive compensation incentive system faces two competing goals, to reduce moral problems and to provide effective incentives. For historical and institutional reasons, government regulations and social justice in China have always suppressed the executive pay incentive system. However, the implementation of incentive stock options helps companies to attract talented people and unites the interests of management and shareholders, which is an effective incentive and widens the pay gap.

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between senior executives and normal employees.

Table 1: Pay gaps in Chinese listed companies from the year 2007 to 2013

Year	Executive average pay		Employee average pay		Executive-employee pay gap		Internal executive pay gap	
	Mean	St. d	Mean	St. d	Mean	St. d	Mean	St. d
2007	95936.498	99298.400	37311.971	32033.116	58624.527	87681.861	135104.129	159831.373
2008	106975.918	95539.931	39780.399	31497.005	67195.519	82523.103	159973.661	220536.490
2009	144185.128	176902.789	48403.945	40411.853	95781.183	161524.096	253870.523	1126468.356
2010	156620.817	154760.454	55883.613	43090.721	100737.204	135105.987	249880.219	427963.702
2011	172398.653	170707.532	58645.550	45530.873	113753.103	154081.169	267983.132	475658.283
2012	195494.815	193597.126	63767.774	46485.654	131727.040	177526.043	303637.248	385984.442
2013	218185.659	207917.311	72775.785	55817.632	145409.874	188476.325	332946.967	396172.487

Note: Our calculated results are shown in table 1 according to the CSMAR database, the unit is RMB.

Related studies have been based on two opposing doctrines, tournament theory and behavioral theory. Tournament theory treats managers as competitors, the pay gap as the tournament prize money and sorts bonuses according to marginal output, increasing promotion incentives when monitor costs drop. The theory assumes that expanding the pay gap is conducive to improved performance, reflecting the efficiency of income distribution. Behavioral theory considers the psychosocial and socio-political environments. It emphasizes fairness when considering income distribution and advocates for narrowing the pay gap and encouraging cooperation. It suggests that a smaller pay gap helps to improve the level of performance.

Tournament theory is supported by most empirical domestic studies considering an enterprise reform policy environment favoring efficiency (Lin et al., 2003; Chen and Zhang, 2006; Zhang, 2008; Zhou and Zhu, 2010). However, as economic reform has deepened and fairness has become a priority, some scholars have noticed behavioral theory's role in incentive payment. Bu et al. (2010) use behavioral theory to study executive pay equity issues in a comprehensive, quantitative manner. Rao and Huang (2012) find empirical evidence that pay inequities can have a negative effect on a company's future performance from the perspective of fair executive pay, supporting behavioral theory. These studies on the uncertain relationship between the pay gap and corporate performance may also partly explain the contradictory nature of the current remuneration policy. We can see that the pay gap phenomenon is difficult to explain with a single theory. Most previous studies consider only one aspect of the pay gap, so do not fully investigate samples, restricting the effects on corporate performance that could be explored and ignoring the lingering endogenous relationship. The conclusions drawn are therefore not convincing, even for those studies that use a method other than ordinary least squares for testing their proposed models.

This study investigates the effect of equity incentives on the cost of equity capital from the perspective of the pay gap. We focus on whether the equity incentive plan as a new corporate governance mechanism can inhibit agency problems when the pay gap expands, which may affect the cost of listed companies' equity capital.

Bebchuk et al. (2011) regard CEO pay slice (CPS) as a useful tool to reflect a company's performance and management level. CPS is often accompanied by large agency problems, which can cause severe information asymmetry and result in risk. Easley and O'Hara (2004) point out that information asymmetry risk is not distributed,

but promotes adverse selection behavior in investors, namely that they raise the price of capital (corporate financing costs) to protect themselves. Ashbaugh et al. (2004) lay the foundations of the theory that corporate governance influences the cost of capital. They conclude from four dimensions of corporate governance that a good corporate governance mechanism can make the principal effectively supervise the agent's behavior, reducing the risk of information asymmetry and thus decreasing the cost of equity capital. The risk prevention capacity of different investors has a large effect on China's capital market. Jiang (2009) finds that the cost of equity capital in Chinese listed companies is more sensitive to the corporate governance level than to the cost of debt financing. We can infer from the above studies that the pay gap reflects the corporate governance level and can trigger agency problems, increasing the information asymmetry risk. Investors tend to improve the expected return (enterprise's equity capital cost) for self-protection, to reduce the cost of the risk premium. Can equity incentives inhibit agent risk and thus reduce the equity cost of listed companies?

This paper provides empirical evidence for the first time of the influence that the implementation of China's equity incentive plan has on the enterprise internal pay gap, and inspects how equity incentives affects shareholders' expected investment return rate from the perspective of the pay gap. Our research provides empirical evidence for income distribution reform policy makers and provides valuable recommendations for investors to better comprehend the implementation of the equity incentive plan.

The rest of the paper is organized as follows. Section II develops the hypotheses. Section III describes the research design. Section IV investigates the main cross-sectional effect of equity incentives and two kinds of remuneration gap on the cost of equity and presents the results of our robustness tests. Section V provides further analysis on the effect after considering different corporate natures and area distributions. Finally, Section VI discusses the contributions and concludes the paper.

2. Hypothesis Development

Changes in the form of compensation reflect the changes in the economic and distribution systems. The diversification of incentive methods also reflects the efforts of the government and enterprise owners to solve the agency problem. The compensation mechanism in China has experienced two stages of change with

economic reforms. China changed from a planned economy to a market economy, establishing a modern enterprise system and a manager market, and diversifying from the fixed salary contract as the main enterprise compensation mechanism. In 1992, approved by the State Council, the Shanghai government issued the "Enterprise Manager Annual Salary Trial Procedures," marking a new start to the enterprise managers' incentive system in China. In September 1994, the Shenzhen government implemented the "Trial Measures for Enterprise Chairman and General Manager Annual Salary System." In September, 1999, the Fourth Plenary Session of the Chinese Party's 15 passed the "Decision of the Central Committee of The Communist Party of China on Major Issues Concerning the Reform and Development of State-Owned Enterprises," which dictated that management income should be decided by business performance. This stage of corporate compensation transformation established a basic reform idea and the main direction for its implementation. The second stage of transformation began on January 1, 2004. The State-Owned Assets Supervision and Administration Commission initiated the "Interim Measures for Operating Performance Evaluation of Central Enterprise Managers," which implemented an annual salary incentive assessment for executives from 189 central government controlled enterprises and gradually introduced a long-term incentive mechanism. On December 31, 2005, the "Listed Company Equity Incentive Management Approach" was implemented, marking the maturation and refinement of the compensation reform.

The establishment of the socialist market economic system and the perfection of a modern corporate governance mechanism created an unprecedented opportunity for the reform of Chinese senior executives' remuneration. The introduction of equity incentive measures, in particular, was bound to increase the possibility that executives would act to maximize value for shareholders. Some companies did not completely remove the traditional determinants of SOEs, such as the dual identity of SOE executives and the lack of an SOE executive market. However, we can see from the remuneration system changes detailed above that China has gradually established remuneration structures based on efficiency goals. The current executive compensation system emphasizes the economic income, the floating proportion of executive compensation has gradually increased, and the executive compensation structure has increasingly diversified, all of which may result in a greater pay gap. The above discussions lead to our first hypothesis:

Hypothesis 1. The enterprise pay gap is gradually expanding as the implementation of equity incentives impelling continuously.

Mehran (1995) presents evidence that managers are motivated more by incentives than by salary level and that blindly raising the pay level results in a ratcheting effect and simply increases business costs. The pay gap has an obvious role in motivating managers to improve business performance. Lazear and Rosen (1981) propose the earliest basic model of tournament theory, the rank order tournaments model, which contains only two risk neutral agents. They believe that the tournament theory model can make the client more accurately monitor agent behavior, reducing the cost of risk and creating more effective incentives. Subsequent studies generally support the core conclusion of tournament theory: increasing the pay gap to a certain extent is conducive to incentivizing the agent behavior (Green and Stockey, 1983; Krakel, 2005; Kale et al., 2009). Lin (2003), Chen and Zhang (2006) and Lu (2007) empirically test whether tournament theory can be applied to the Chinese enterprise management pay gap.

Will the expansion of the internal executive pay gap under tournament theory necessarily motivate management to improve performance? Kale et al. (2009) believe that corporate performance depends on the result of the efforts of the entire executive team and that the incentives brought by the widening pay gap are subject to some extent to non-CEO executives' attitudes and behaviors towards the pay gap. Kini and Williams (2012) use the executive pay gap as a substitution variable for tournament motivation and find that the degree of incentive correlates significantly and positively with corporate risk. Therefore, the greater the pay gap, the more executives are willing to take greater risks and implement radical strategies to win a higher office position. Lin et al. (2013) conclude that technology companies that emphasize teamwork should be cautious about using tournament incentives, because an excessive pay gap affects team harmony and does not necessarily enhance business performance, when the cash incentives trade-off, performance baseline and top management team criterion of reciprocity are taken into account. They also note that compared to market performance, accounting performance has higher sensitivity to tournament incentives.

The role of the equity incentive plan gains prominence when the tournament incentive is distorted by an increasing executive pay gap. Laffont and Tirole (1988) point out that management compensation is dependent on an enterprise's value and current profits. Equity usually accounts for a large proportion of executive compensation, because equity can motivate managers to be concerned about both current profits and the enterprise's future value. Shareholders cannot design a complete contract to regulate the behavior of business operators because of information asymmetry. The most effective way to regulate their behavior is to grant them stock, thereby improving access to effective information and reducing the agency cost. As long as capital markets are not completely inefficient, equity incentives will function to a certain extent and shareholders can form an effective judgment using share prices and relevant information. Liao (2011) uses high-tech companies as samples and discovers that equity incentives (such as stock options, restricted stock and executive shareholding) are significantly related to the voluntary disclosure of company intangible assets information. Good corporate governance can make equity incentives have a positive effect on information disclosure, which suggests that corporate governance and the incentive mechanism have a complementary relationship. Equity incentives can effectively restrict managers from deviating from behavior that maximizes value for shareholders, under certain constraints such as fixed supervision costs. The risk of information asymmetry is reduced, investors' adverse selection behavior is lessened and the cost of equity drops.

However, the previous executive shareholding system in China is different from a formal equity incentive plan. The level of traditional executive shareholding is low and the incentive effect is limited. The goal of this shareholding system is unclear. It belongs to the internal employee stock ownership plan and is guaranteed by some special operating mechanisms. It is therefore more of a welfare compensation and gain depends on previous performance levels rather than future performance goals. Further, Chinese law stipulates that executives in tenure cannot exchange the shares that they hold in their own companies. The consequence of these differences is that although executives have the right to a portion of their firm's surplus, the incentive effect of this is almost zero.

Behavioral theory emphasizes equal payment from a psychological perspective, whereas tournament theory suggests expanding the pay gap to enhance motivation. Behavioral theory believes that the psychosocial and socio-political environments

have a major effect on the pay gap between different levels and determine whether individuals are self-serving or collectivist in an organization. The pay gap may make people with lower payment feel that the situation is unfair, especially if different rewards are given for the same position, and they may harm the interests of better paid employees to satisfy their psychological balance. Behavioral theory studies focus on the effect of the compensation gap on team cooperation. They partly explain the influence of the pay gap on corporate performance using social comparison theory and organizational political theory. Behavioral theory stresses fairness in organizations and advocates that the pay gap should be narrowed to develop a steady cohesion and thus improve enterprise performance (Akerlof and Yellen, 1988; Pfeffer and Langton, 1993).

Chinese civilization has stressed equality, harmony and collectivism since ancient times. Confucius said that "the gentleman to justice for," namely that fairness should be judged on moral rather than efficiency grounds. When someone's personal desire is not satisfied, they tend to feel that injustice has been done. Ideas such as "home and everything" and "harmony is precious" reflect a humanized society in China. The maintenance of interpersonal harmony is considered to be indispensable in an organization. The main melody of contemporary Chinese society is still the spirit of collectivism, advocating "sacrifice" for everybody, which is embodied by teamwork and a narrow pay gap. Liao et al. (2006) use the Gini coefficient to measure the income rationality level of Chinese enterprises and conclude that from the perspective of the wage distribution, China is still an equalitarian society. Zhang (2008) considers that in general, the wage gap between Chinese senior management teams and ordinary workers does not have a significant effect on future organizational performance. The above shows that the irrational thinking regarding egalitarian practice still exists in SOEs. The old plain equalitarian belief that inequality, rather than want, is the cause of trouble is manipulating enterprise management teams.

Most listed companies in China are restructured from SOEs. They have not completely removed the influence of SOE compensation decisions and equality is still an important basis for payment policy making. When state shareholders make payment decisions, they are conducted in line with the claims advocated by behavioral theory, rather than efficiency as emphasized by internal tournament theory. The atmosphere of fairness and solidarity therefore tends to result in a narrow pay gap. In China, behavioral theory is more suitable for understanding the pay gap between

executives and staff. The executive-employee pay gap is much larger than the internal executive pay gap. An excessive pay gap may give employees a feeling of unfairness and they even may even feel exploited. Employees are the main force of a company and policy practitioners and play a decisive role in realizing performance targets. When an undesirable mood is brought to work, it will negatively influence efficiency and damage business performance. The implementation of the equity incentive plan is bound to cause a widening in the income difference between executives and employees, which is in conflict with the cultural tradition and the political system in China. Shareholders and investors may worry about disharmony in the company and the consequent management risks, and they may improve the expected return rate so as to increase the cost of equity. The expanding pay gap may lead to executive power increasing and may cause shareholders' supervision problems and result in management self-interest behavior, which will likely aggravate the information asymmetry risk. Shareholders and investors therefore have to improve the expected rate of return on their investment and the equity cost will rise accordingly. In conclusion, we assume that:

Hypothesis 2. The interaction of equity incentives and internal executive pay gap is negatively associated with the cost of equity capital, which is in line with the expectation of tournament theory; while under behavioral theory's prediction, the interaction of equity incentives and the executive-employee pay gap is more likely to raise the cost of equity capital.

3. Research Design

According to hypothesis 1, we establish a regression model (1) to investigate whether the implementation of an equity incentive plan is an important factor for an increasing salary gap.

$$LnWG^{1,2}_{i,t} = \alpha_i + \gamma_t + \beta_1 Incent_{i,t-1} + \beta_2 ACT_{i,t-1} + \beta_3 Incent_{i,t-1} \times ACT_{i,t-1} + \beta control\text{var}iables + \sum_{i=2}^{20} \lambda_i Industry_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

According to hypothesis 2, we establish a regression model (2) to examine the effect that equity incentives and pay gap have together on the cost of equity.

$$\begin{aligned}\mathrm{Re}_{i,t} = {} & \alpha_i + \gamma_t + \beta_1 Incent_{i,t-1} + \beta_2 ACT_{i,t-1} + \beta_3 Incent_{i,t-1} \times ACT_{i,t-1} + \beta_4 LnWG^{1,2}{}_{i,t-1} \\ & + \beta_5 Incent_{i,t-1} \times ACT_{i,t-1} \times LnWG^{1,2}{}_{i,t-1} + \beta control\text{variables} + \sum_{i=2}^{20} \lambda_i Industry_{i,t-1} + \varepsilon_{i,t}\end{aligned} \quad (2)$$

In our regression equation, the compensation gap is represented by WG. We divide WG into the internal corporate executive pay gap (WG^1) and the executive-employee compensation gap (WG^2). Using Eriksson (1999), Lin Jun et al. (2003) and Chen and Zhang (2006), WG^1 = the top three executive average pay – the rest executive average pay and WG^2 = all the executive average pay – all employees average pay. And we define in this paper that, the executive pay = executives annual cash compensation and bonuses + the number of executives holding × the stock price at the end of the year.

Incent represents equity incentives. Before the enterprise shareholding system reform, executives held restricted shares in their own companies, which could not be traded in the secondary market and the role of managerial shareholding was different from that in Western countries. However, previous studies on the governance function of equity incentives always equate the broader sponsor shares and senior executives holding shares as a form of equity incentive and ignore the effect of stock options, so the resulting empirical results are less robust and unpersuasive. We therefore intend to distinguish the nature of executive shareholding after the share reform. Following Bergstresser and Philippon (2006), we use the following to calculate the equity and options ratio in CEO total compensation:

$$\mathrm{Incent}_{i,t} = \frac{1\% \times \mathrm{Price}_{i,t} \times \left(\mathrm{Shares}_{i,t} + \mathrm{Options}_{i,t}\right)}{1\% \times \mathrm{Price}_{i,t} \times \left(\mathrm{Shares}_{i,t} + \mathrm{Options}_{i,t}\right) + \mathrm{Cashpay}_{i,t}} \quad (3)$$

where $Price_{i,t}$ is firm i's closing stock price at the end of year t, $Shares_{i,t}$ and $Options_{i,t}$ are respectively the number of shares and options held by the CEO at year t in firm I, and $Cashpay_{i,t}$ is the CEO's cash compensation, including salary and various allowances.

If the listed company starts to implement the equity incentive plan, then the ACT value is 1, otherwise 0. The cross-multiplication item Incent × ACT is the formal incentive and removes general executive shareholding.

Re is the cost of equity. We use the discounted residual income OJN model to calculate the cost of equity, which is proposed by Ohlson and Juettner-Nauroth (2005) based on a clean surplus hypothesis. The calculation is as follows:

$$r_{OJN} = A + \sqrt{A^2 + \frac{eps_1}{P_0} \times \left[\frac{eps_2 - eps_1}{eps_1} - (\gamma - 1) \right]}, \quad (4)$$

$$A = \frac{1}{2}\left(\gamma - 1 + \frac{dps_1}{P_0} \right), \quad (5)$$

Where r_{OJN} stands is the cost of equity, P_0 is the base period stock price, eps is the net income per share forecast by securities analysts, dps is the expected dividends per share, γ is the long term growth rate and calculated as:

$$\gamma = \lim_{t \to \infty} \frac{eps_t}{eps_{t-1}}. \quad (6)$$

The advantages of the OJN model are that it is directly related to profitability but not dividends, it need not estimate the book value and return on equity, and it does not make assumptions about dividend payments, but rather takes into account the long-term earnings growth rate and short-term growth rate. Calculated in accordance with Gode and Mohanram's (2003) risk premium (cost of equity minus risk free rate) approach and taking into account the effects of inflation, it can be considered that $\gamma - 1 = r_f - 3\%$（r_f equals the average value of 10-year Treasury Bonds rates）.

The control variables are then chosen. For model (1), we use previous relevant studies regarding the factors affecting the pay gap (Lin et al., 2003; Chen and Zhang, 2006; Zhou and Zhu, 2010) and choose ownership concentration (HI), staff size (LnWorker), proportion of independent directors (IND), two duty syncretic (Two), ultimate controller type (State), return on assets (ROA), asset-liability ratio (Lev), company size (Size), company locations (Area) and industry (Industry) as control variables. For model (2), we draw on research findings regarding the cost of equity (Ye and Lu, 2004; Zeng and Lu, 2006; Jiang, 2009), and select market risk (Beta), asset-liability ratio (Lev), book-to-market ratio (B/M), company size (Size), growth (Growth), liquidity (Turnover) and industry (Industry) as control variables in the analysis of the relationship between the cost of equity and the equity incentive effect.

Table 2: Variable definitions

Variable name	Code	Definition
Cost of Equity Capital	R_e	Calculated according to OJN model
Equity Incentive	Incent	The ratio of equity and options to CEO's total compensation
Implementation of Equity Incentive Program Or NOT	ACT	If equity incentive is implemented = 1, otherwise 0
Internal Executives Pay Gap	WG[1]	The top three executives' average pay – the rest of the executives' average pay
Executive-employee Pay Gap	WG[2]	All executive average pay – average staff pay
Ownership Concentration	HI	The squares of the top five shareholders' shareholding
Staff Size	LnWorker	The natural logarithm of total staff
Proportion of Independent Directors	IND	The proportion of the total number of independent directors to the board of directors
Two Roles Combination	Two	If the chairman of the board is the CEO = 1; otherwise = 0
Return on Total Assets	ROA	The percentage of net profit to average total assets
Market Risk	Beta	The systemic risk of the stock market
Company Size	Size	The natural logarithm of total assets
Asset-Liability Ratio	Lev	The ratio of debt to assets
Book-to-Market Ratio	B/M	Book-to-market ratio of the owner's equity
Growth	Growth	Operating income growth rate
Liquidity	Turnover	The stock turnover rate
Ultimate Controller	State	State-controlled is 1, otherwise 0
Industry[2]	Industry	If the company belongs to the industry I = 1, otherwise = 0
Area[3]	Area	If the company belongs to the eastern region = 1; central or western region = 0

As the pay gap and company performance may influence each other in the empirical process and the equity incentive plan has a hysteresis effect, we use all of the explanatory variables' measured values from the last year. As the equity limited sales period and the exercise waiting period are usually 1 to 3 years, and the "Equity Incentive Measures" was implemented at the end of 2005, CEOs from listed companies that issued the equity incentive plan can only exercise from 2007. We therefore select only listed companies that meet our requirements between 2007 and 2012 and collect the data for the independent variables and control variables from 2006 to 2011. We eliminate companies with missing data, finance and insurance companies, "Special Treatment" listed companies and companies with a negative salary gap or a negative equity capital cost. We winsorize 1% of the main variables during data processing to eliminate the influence of extreme values. We then set up

[2] This paper classifies industry samples in accordance with the "Listed Corporation Industry Classification Guidance" issued by the China Securities Regulatory Commission in 2001. The manufacturing industry is divided into small classes (not including the wood furniture manufacturing industry) according to the secondary subsidiary. The other industries are divided (not including the finance and insurance industry) are according to the main 20 categories. If samples belong to the category, take 1, otherwise 0.

[3] The specific area division can be referenced to the database of Chinese economic statistics division standard.

the unbalanced panel data and obtain 4099 valid measurements. The sample data are gathered from the CSMAR database and the CCER database. The annual distribution of the sample is shown in Table 3.

Table 3: Sample distribution

Year	2006	2007	2008	2009	2010	2011	2012	Total
Total number of samples	513	528	625	538	689	595	611	4099
Number of equity incentive samples	44	13	60	18	70	114	118	437

4. Empirical Analysis

A. Descriptive Statistics and Correlation Matrix

Before testing our assumptions, we perform a general descriptive statistical analysis (Table 4) and correlation coefficient test (Table 5) of the major variables.

Table 4: Descriptive statistics of the main variables

Panel A：Overall Sample Statistics				
	R_e	Incent	$LnWG^1$	$LnWG^2$
Min	0.122%	0	0.134	4.773
Max	34.733%	1	12.058	16.351
Mean	7.774%	0.158	9.499	12.019
Standard deviation	3.539	0.397	2.337	1.129
Panel B：Group Mean Testing				
	R_e	Incent	$LnWG^1$	$LnWG^2$
Sample mean of ACT=1	8.677%	0.256	10.564	15.877
Sample mean of ACT=0	7.659%	0.149	9.398	11.980
Mean T-test	1.952^{*}	2.841^{**}	5.364^{***}	8.961^{***}
Mann-Whitney Test	3.314^{*}	5.011^{***}	7.453^{***}	11.013^{***}

Note: *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

We can see from Panel A of Table 4 that from 2007 to 2012, the sample companies' cost of equity varies widely. The difference between the maximum and the minimum is 34.611%, reflecting a tremendous difference in risk between different companies. There are extreme values in both the internal executive pay gap and the executive-employee pay gap. The executive-employee pay gap is significantly higher

than the pay gap between internal executives, indicating that serious income gaps and differentiation exist in Chinese enterprises.

Panel B of Table 4 splits the sample into whether the equity incentive plan is implemented or not. We can see that the average cost of equity in the sample companies that implement the equity incentive plan is 1% higher at the 10% significance level than that of the sample companies who do not carry out the equity incentive plan. The mean equity incentive and pay gap for the sample companies that implement the equity incentive plan are significantly higher than those of sample companies without equity incentives. These results illustrate that the implementation of the equity incentive plan raises the level of equity incentives, causing the compensation gap to widen further, which has a positive effect on the equity cost of listed companies. However, whether the positive effect is caused by the increase in the internal executive pay gap or by the executive-employee salary gap requires further empirical testing.

Table 5 reports the test results of correlation coefficients between the variables. Panel A introduces the correlations between the main variables. The correlations between equity incentives and the equity cost, and between equity incentives and the enterprise internal pay gap are positive but very weak. The internal executive pay gap and equity cost have a negative correlation at the 5% significance level. The correlation between the executive-employee compensation gap and equity cost is positive at the 1% significance level. All of the correlations agree with our assumptions and illustrate that we should look at the difference between the internal pay gaps in the two kinds of enterprises, as they are likely to have non-conforming influences on equity cost. In Table 5, Panel B and C, we can see that the absolute value of the variable correlation coefficients are all below 30% in both models and that most of the correlation coefficients between the control variables are under 10%, which shows a weak correlation between the control variables and explains the relative independence of the variables.

Table 5: Pearson correlation test results

Panel A: The main variables correlation coefficient matrix

	R_e	Incent	ACT	LnWG[1]	LnWG[2]
R_e	1				
Incent	0.042*	1			
ACT	0.021	0.061*	1		
LnWG[1]	-0.011**	0.043**	0.033	1	
LnWG[2]	0.105***	0.126***	0.025	0.126**	1

Panel B: Model (1) control variables correlation coefficient matrix

	HI	LnWorker	IND	Two	State	ROA	Lev	Size
HI	1							
LnWorker	-0.021	1						
IND	0.012**	0.021	1					
Two	0.115*	0.065	-0.127*	1				
State	0.051***	0.271**	0.142	0.128	1			
ROA	0.041*	0.032*	0.112**	0.022	0.208	1		
Lev	0.141**	0.021	0.001**	0.101	-0.008**	-0.124	1	
Size	0.136*	0.042***	0.024**	0.026*	0.137	0.023*	0.011***	1

Panel C: Model (2) control variables correlation coefficient matrix

	Beta	Size	Lev	B/M	Growth	Turnover	State
Beta	1						
Size	-0.052**	1					
Lev	-0.011	0.069	1				
B/M	0.012**	0.041	0.041	1			
Growth	-0.125	0.206*	0.025*	-0.157**	1		
Turnover	-0.031***	0.032**	0.211*	0.103***	0.148***	1	
State	0.024*	0.024	0.032	0.201*	0.041**	0.208*	1

Note: *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

B. Multiple Regression Analysis

1. The Effect of the Equity Incentive on Pay Gap

We carry out a Hausman test on model (1) using the unbalanced panel data analysis. The result shows that the fixed effect model is superior to the stochastic model in avoiding the influence of different variance. We therefore use the fixed effect model to test the effect of implementing equity incentive acts on the pay gap, using the generalized least squares (GLS) method. The results are shown in Table 6.

Model (1) mainly inspects whether equity incentive is one of the important factors that affects salary gap. Judging from the regression results, Incent has a positive effect on $LnWG^1$ at a 10% significance level and on $LnWG^2$ at a 5% significance level. When the dummy variable equity incentive plan implementation (ACT) is added, Incent×ACT has a positive correlation with both $LnWG^1$ and $LnWG^2$ at a 1% significance level. The effects of implementing the compensation policy on Chinese enterprises are therefore emerging gradually, especially as some CEOs receive more and more equity after the enactment of the "Listed Company Equity Incentive Management Approach." It has become not only an important source of their income, but also increases the bargaining chips in pay negotiations. China's bear capital market situation over the past five years provides a good opportunity to reduce the cost of equity incentive implementation and improve the incentive premium space, and boost the development of equity incentives in China. We can also see from Table 6 that compared to the listed corporations that have not carried out the equity incentive plan, the stock and option ratio of total executive compensation has a more significant positive influence on both the internal executive pay gap and the executive-employee pay gap in companies that have implemented the plan, as was expected.

Table 6: The regression results for model (1)

Dep.	$LnWG^1$		$LnWG^2$	
	β	T	β	T
Incent	6.032*	13.016	10.055**	22.776
ACT	0.049	1.587	0.032	1.476
Incent×ACT	7.105***	18.406	13.122***	25.066
HI	-1.018***	-4.669	-0.134**	-2.673
IND	1.022**	2.511	0.031***	2.842
Two	1.703**	2.241	1.014***	3.313
LnWorker	-1.041	-1.884	-3.042***	-7.953
ROA	0.081**	2.175	0.072**	1.995
Lev	1.759**	2.975	1.325***	3.635
State	-0.442***	-5.003	-0.105***	-3.823
Size	1.415***	7.852	1.549***	8.254
Area	3.441***	4.214	3.988***	7.365
Industry	Control		Control	
Year	Control		Control	
Hausman	27.105***		33.896***	
Wald chi^2	136.615***		187.125***	
Adjusted R^2	0.323		0.294	
No. of Obs.	4099		4099	

Note: T value of the regression coefficient is corrected by the White heteroscedasticity robust. The intercept term is not reported in the table. The variance inflation factor (VIF value) of each variable is less than 3, meaning that the multicollinearity is not serious. *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

The coefficients of the ownership concentration (HI) are significantly negative, meaning that the higher the ownership concentration is, the lower the internal executive and executive-employee pay gaps are. The proportion of independent directors (IND) has a significant positive correlation with the enterprise pay gap, showing that when the independent director system plays a good role in corporate governance, there is a tendency to expand the pay gap between internal executives to strengthen the incentives. The management is encouraged to overcome lazy, "hitchhiking" behavior and the executive-employee pay gap widens further. The correlation between the variable Two and the enterprise pay gap is positive at the 1% significance level, which shows that when CEOs' power is strengthened, they use that power to increase their own compensation, thus increasing their income compared to other executives and expanding the pay gap relative to ordinary staff. The correlation

coeffcient between LnWorker and $LnWG^2$ is significantly negative. More employees and more ranks and positions will make shareholders and managers of enterprises pay more attention to employee appeals for fairness and thus reduce the pay gap accordingly to meet the expectations of behavioral theory. ROA and Lev, which reflect a company's financial performance, have significantly positive correlations with the enterprise pay gap, showing that Chinese listed corporations have been aware of the role of the pay gap in corporate governance and have put the performance indicators into the remuneration setting standard. When a firm's final controller is the state, the enterprise pay gap is smaller, which suggests that the SOEs pay more attention to distributive justice and the policy of equalitarianism reduces the salary gap. The larger the scale of an enterprise (Size), the bigger the pay gap, because the marginal output of the top management team and staff becomes more and more difficult to supervise and the board has to expand the pay gap to create strong incentive tournaments. We find that the pay gap in the eastern coastal area is larger, reflecting that the competition there is more intense and the larger pay gap resulting from the incentive approach is more likely to be accepted. This conclusion could be a useful complement to relevant domestic studies.

2. The Effect of the Equity Incentive and Pay Gap on the Cost of Equity

We aim to investigate the effects of the interactions between equity incentives and the pay gap on the cost of equity. We find that the fixed effect model is better than the random effect model by the Hausman test. We therefore use the unbalanced panel data and the fixed effects GLS method to analyze regression model (2). Some studies have found an endogenous relationship between the pay gap and company performance (Lu, 2009; Liu and Sun, 2010). The pay gap affects an enterprise's performance and the enterprise's performance also plays a decisive role on the pay gap. We use a 2-Stage Least Squares (2SLS) estimation to enhance the robustness test, improve the credibility of regression and avoid the endogenous effect that may exist in the inspection results, as there are many connections between the cost of equity capital and enterprise performance, and this study involves a discussion of the relationship between the pay gap and the cost of equity. The test results are shown in Table 7.

Table 7: The regression results for model (2)

Dep.: R_e	GLS Regression				2SLS Regression			
	β	T	β	T	β	T	β	T
Incent	0.011	1.267	0.114	1.581	0.082	1.389	0.097	1.424
ACT	0.001	0.021	0.001	0.016	0.001	0.018	0.001	0.019
Incent×ACT	0.035*	1.652	0.073**	1.972	0.087*	1.699	0.116**	1.974
LnWG[1]	-0.201*	-1.713			-0.257**	-1.998		
Incent×LnWG[1]	-0.101*	-1.681			-0.089*	-1.724		
Incent×ACT×LnWG[1]	-0.569**	-2.021			-0.541**	-2.246		
LnWG[2]			0.574**	2.124			0.646**	2.425
Incent×LnWG[2]			0.210*	1.645			0.212*	1.693
Incent×ACT×LnWG[2]			0.611***	3.664			0.779***	4.081
Beta	0.009	1.619	0.032*	1.904	0.008*	1.681	0.073**	2.131
Size	0.413**	2.653	0.453***	2.724	0.412***	2.690	0.510***	2.894
B/M	0.063**	3.634	0.104***	3.879	0.066***	3.922	0.110***	4.161
Lev	-0.096	-1.240	-0.008*	-1.651	-0.043*	-1.812	-0.031**	-1.926
Growth	0.140**	4.154	0.151***	4.086	0.201***	4.126	0.331***	5.103
Turnover	-1.019	-1.213	-1.201*	-1.721	-0.021*	-1.735	-0.012**	-1.902
State	0.001	0.112	0.001***	2.901	0.001	0.173	0.001**	2.040
Area	-0.023**	-2.544	0.021	0.014	-0.011**	-2.053	0.011	0.115
Industry	Control		Control		Control		Control	
Year	Control		Control		Control		Control	
Hausman	89.545***		91.335***		82.301***		95.921***	
Wald chi[2]	164.330***		26630.289***		181.221***		33011.652***	
Adjusted R^2	0.363		0.236		0.346		0.397	
No. of Obs.	4099		4099		4099		4099	

Note: T value of the regression coefficient is corrected by the White heteroscedasticity robust. The intercept term is not reported in the table. The variance inflation factor (VIF value) of each variable was less than 3, which means that the multicollinearity is not serious. *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

The regression results in Table 7 support our research hypothesis. Specifically, the interaction of Incent×ACT×LnWG[1] is negatively correlated with the cost of equity at a statistical significance level of 5%. The significance level is higher than that of the interaction Incent×LnWG[1], which illustrates, in support of tournament theory, that the implementation of the equity incentive plan in a listed corporation produces a huge "tournament prize". A reduction in executives' negative behavior is forced, effectively lowering the supervision cost for shareholders and the risk of information asymmetry, thus inhibiting the cost of the equity capital. The coefficient of interaction Incent×ACT×LnWG[2] is significantly positive at the 1% significance level, which is higher than the level of interaction Incent×LnWG[2]. The staff's feeling of injustice will rise significantly with the increase in the executive-employee pay gap, producing negative emotions that may prevent enterprise performance goals from being reached. Shareholders or investors must then raise the cost of equity capital to meet the expected rate of return. This conclusion is consistent with behavioral theory. There are no significant differences in the 2SLS regression results after controlling for endogeneity, which indicates that the regression results are robust.

When the explanatory variable is the executive-employee pay gap (WG[2]), the ultimate controller variable (State) has a positive effect on the cost of equity capital at the 1% level of significance, whereas when the explanatory variable is the internal executive pay gap (WG[1]), its coefficient is not significant. In Chinese enterprises, expanding the pay gap through incentive compensation is very limited in SOEs or state holding enterprises. Some of these enterprises belong to monopoly industries and equity incentives are not appropriate for their executives. Shareholders are concerned that executives will take advantages as their stake increases and they are likely to raise the required rate of return to avoid the risk of instability caused by the increasing executive-employee pay gap. When the explanatory variable is the internal executive pay gap (WG[1]), the variable Area has a negative effect on the cost of equity at the 1% level of significance, whereas when the explanatory variable is the executive-employee pay gap (WG[2]), the coefficient of the variable Area is not significant. The Chinese income gap has a close relationship with the distribution of area. The listed corporations from eastern coastal areas face fierce competition compared to the central and western areas. They need to expand the internal executive pay gap by using equity incentives, raising the "tournament bonus" to motivate executives to improve business performance. When the increased performance is

reflected in higher stock prices, the cost of equity will naturally decline with the reduction in risk to shareholders' expected return.

The results above show that the diverse nature of enterprises and regional differences will also have an effect on equity incentives and corporate pay gap. Shareholders' judgment of future earnings will be influenced, resulting in a lowered equity capital cost. We will discuss this further.

5. Further Research

We investigate how the interaction between pay gaps in different enterprises and equity incentives affects the cost of equity capital from the perspective of enterprise nature. We divide the sample by the characteristic State, into SOEs and non-state-owned enterprises (NSOEs) and analyze each group using a GLS regression. The regression results are shown in Table 8.

Table 8: The influence of different enterprise characteristics

Dep.: R_e	State-controlled				Non State-controlled			
	β	T	β	T	β	T	β	T
Incent	0.002*	1.667	0.004*	1.758	0.001*	1.719	0.002*	1.804
ACT	0.001	0.011	0.001	0.012	0.001	0.021	0.001	0.009
Incent×ACT	0.015*	1.802	0.023*	1.852	0.087*	1.911	0.076*	1.901
$LnWG^1$	-0.201	-0.403			-0.117**	-2.418		
Incent×$LnWG^1$	-0.011	-0.213			-0.010*	-1.671		
Incent×ACT×$LnWG^1$	-0.569	-0.621			-0.312***	-5.647		
$LnWG^2$			0.024**	1.991			0.046*	1.725
Incent×$LnWG^2$			0.012*	1.703			0.013	0.272
Incent×ACT×$LnWG^2$			0.041**	2.262			0.079*	1.881
Beta	0.019*	1.669	0.131*	1.924	0.011*	1.672	0.173**	2.251
Size	0.013*	1.653	0.053***	2.674	0.212***	2.677	0.515***	4.894
B/M	0.061***	3.131	0.074***	3.573	0.161***	5.922	0.180***	6.161
Lev	-0.036	-1.240	-0.018*	-1.622	-0.213*	-1.804	-0.031**	-2.026
Growth	0.116***	3.124	0.121***	4.064	0.221***	4.324	0.351***	5.523
Turnover	-0.019	-1.201	-0.101*	-1.733	-0.024*	-1.774	-0.072**	-2.207
Industry	Control		Control		Control		Control	
Year	Control		Control		Control		Control	
Hausman	49.542***		61.325***		52.201***		75.911***	
Wald chi^2	134.320***		16130.189***		141.261***		21231.512***	
Adjusted R^2	0.263		0.306		0.317		0.396	
No. of Obs.	1907		1907		2192		2192	

Note: T value of the regression coefficient is corrected by the White heteroscedasticity robust. The intercept term is not reported in the table. *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

In the SOEs, the interaction coefficient of Incent×ACT×$LnWG^1$ is negative but not significant. SOEs emphasize fairness due to policy pressure and equity incentives and the internal executive pay gap are too small to have an inhibitory effect on the cost of equity. The interaction coefficient of Incent×ACT×$LnWG^2$ is positively related to the cost of equity and the interaction effects of a formal equity incentive has a higher significance level. Equity incentives and the pay gap between executives and

employees therefore have a complementary effect on the cost of equity in SOEs. When the executives' equity incentives are higher, the income gap between executives and employees is larger. The equalitarian legacy is prevalent in SOES, which easily leads to more dissatisfied staff and thus passive work slowdown. Productivity is damaged, increasing the risk in the enterprise's performance and leading to a rise in shareholders' expected rate of return.

In contrast to the SOEs, the NSOEs' interaction Incent×ACT×LnWG[1] is significantly negatively correlated with the cost of equity. There is a substitute relationship between formal equity incentives and the internal executive pay gap on the effect of reducing the cost of equity capital. NSOEs pay more attention to staff talents and advocate competition. Long-term incentive applications like equity incentives are conducive to retaining talented people and to reducing the supervision cost to shareholders. Executives therefore maximize shareholders' interests and the cost of equity capital is thus suppressed. Increasing the internal executive pay gap can therefore strengthen incentives, enhance competition and improve enterprise performance, meeting shareholders' or investors' required return rate and thus reducing the cost of equity. The coefficient of interaction Incent×ACT×LnWG[2] is positive at the 10% significance level. The positive interaction effect of executive-employee pay gap and formal equity incentives on the cost of equity is limited in NSOEs compared to SOEs, because employees who are in a competitive environment work hard for a huge "championship prize," although they may complain about the unreasonable income gap. This potential business risk might make shareholders or investors reserve their expectations on the possible return rate, which is reflected in the high cost of equity.

Table 9 reports the GLS regression results for the sample firms from the eastern coastal areas and the sample firms from central and western regions. The coefficient of interaction Incent×ACT×LnWG[1] is significantly negative in the eastern coastal area samples and statistically higher than that of samples in the central and western regions. The interaction between formal equity incentives and the internal executive pay gap has a more effective influence on the cost of equity in the eastern coastal companies than in the central and western region companies. The eastern coastal region is at the forefront of China's reform and opening up. Equity incentives and other corporate governance means will be accepted and implemented better here. These enterprises need a larger pay gap to strengthen incentives in response to the

fierce competition, fast company growth and talent mobility in the region. A strong incentive can reduce shareholder supervision costs to a certain extent and reduce the risk of information asymmetry, thus lessening adverse selection behavior by investors and suppressing the cost of equity capital.

However, the coefficient of interaction Incent×ACT×LnWG^2 is positive and the significance level is statistically higher in the sample firms from the central and western regions than that of samples from the eastern coastal areas. The results show that the interaction between equity incentives and the executive-employee pay gap in the listed corporations from the central and western regions is more likely to cause a rise in the cost of equity than in the corporations from the eastern coastal areas. The development of the central and western regions is relatively slow due to the geographical environment and other macro factors. It is difficult for these enterprises to get timely access to market information, the labor market is underdeveloped and talent is scarse due to the lack of competitiveness. It is difficult to persuade employees there to accept new things and they are often willing remain in poverty and devote themselves to spiritual things. Therefore, a merely passable business performance is acceptable there. Equity incentives will increase the income gap between executives and employees, breaking the traditional equalitarianism ideals. Employees may have a serious sense of injustice and the original harmonious atmosphere may be affected by the change. Under this situation, shareholders may increase the expected rate of return to avoid investment risk, causing the cost of equity capital of enterprises in the central and western regions to rise.

Table 9: The effect of regional differences

Dep.: R_e	The Eastern Coastal Areas				The Central and Western Regions			
	β	T	β	T	β	T	β	T
Incent	0.013*	1.662	0.024*	1.958	0.021*	1.709	0.032*	1.854
ACT	0.001	0.012	0.001	0.011	0.001	0.010	0.001	0.009
Incent×ACT	0.014*	1.801	0.022*	1.851	0.089*	1.913	0.077*	1.931
$LnWG^1$	-0.312**	-2.343			-0.059*	-1.657		
Incent×$LnWG^1$	-0.012*	-1.711			-0.210	-1.172		
Incent×ACT×$LnWG^1$	-0.582***	-3.621			-0.041*	-1.746		
$LnWG^2$			0.346*	1.725			0.074***	4.679
Incent×$LnWG^2$			0.011*	1.683			0.013*	1.711
Incent×ACT×$LnWG^2$			0.279**	2.181			0.114***	6.764
Beta	0.028*	1.660	0.133*	1.824	0.021*	1.692	0.103**	2.141
Size	0.023*	1.673	0.063***	3.674	0.201***	2.871	0.315***	4.784
B/M	0.051***	3.132	0.054***	2.673	0.153***	5.421	0.178***	6.101
Lev	-0.016	-1.211	-0.028*	-1.672	-0.221*	-1.850	-0.031**	-2.026
Growth	0.106***	3.134	0.134***	5.564	0.201***	4.324	0.255***	5.523
Turnover	-0.029	-1.311	-0.121*	-1.783	-0.034*	-1.773	-0.070**	-2.265
Industry	Control		Control		Control		Control	
Year	Control		Control		Control		Control	
Hausman	55.742***		63.631***		57.261***		95.907***	
Wald chi^2	231.321***		15150.180***		251.521***		19831.573***	
Adjusted R^2	0.213		0.286		0.370		0.347	
No. of Obs.	2138		2138		1961		1961	

Note: T value of the regression coefficient is corrected by the White heteroscedasticity robust. The intercept term is not reported in the table. *, **, and *** denote significance levels of 0.1, 0.05, and 0.01 respectively.

We summarize the regression results in Table 10. An enterprise's nature and the differences between areas must be considered when we explain the effects of equity incentives and the pay gap.

Table 10: The application of the compensation gap theory

Tournament Theory	Behavioral Theory
WG^1 of NSOEs	WG^2 of SOEs
WG^2 of The Eastern Coastal Areas Enterprises	WG^1 of The Central and Western Regions Enterprises

6. Conclusions

Since it was approved at the end of 2005, China's listed corporations have adopted the equity incentive plan. At the same time, the income gap between Chinese dwellers has expanded. Company executives' astronomical salaries have often been the subject of vocal, unrelenting criticism by the media and the public. However, we should consider that China's equity incentive system has only just begun. There is still a considerable distance for our executives to catch up with the executive incomes in Western developed countries and the expanding of the pay gap is inevitable at the current pace of economic and social development. The experience and achievements of China's reform and opening up show that this is the only way to stimulate the enthusiasm of employees and thus guarantee and create productivity. Therefore, we must look objectively at the pay gap within the enterprises in China and scientifically analyze its effects and the economic consequences of its interactions with equity incentives. The results of this investigation have corporate value and important practical significance for protecting the interests of shareholders and investors.

Listed Chinese corporations are the objects of our study, and we establish an unbalanced panel data model to study whether equity incentives have an effect on the cost of equity, using different enterprise pay gaps. We conclude that the implementation of equity incentives not only expands the pay gap between executives and staff, but also deepens the internal executive pay gap. Equity incentives bring more generous "tournament bonuses," prompting executives to try their best to meet the maximum interests of shareholders, and reduce the cost of equity, which is consistent with the assumption of tournament theory. The expansion of the executive-employee pay gap destroys the united, harmonious atmosphere of enterprises at the psychological level, which manifests as a low work efficiency and a decline in performance. Shareholders will therefore inevitably lift the necessary rate of return to avoid investment risks, which conforms to the predictions of behavioral theory.

In light of the heterogeneity in Chinese enterprises and the different salary levels in the area, we investigate further. The sample enterprises are divided by their natures, into SOEs and NSOEs. The interaction between the executive-employee pay gap and equity incentives in SOEs has a significant positive effect on the cost of equity under the influence of the execution of an equity incentive plan. The interaction between the internal executive pay gap and equity incentives in NSOEs effectively inhibits the cost of equity. The sample enterprises are then divided according to area difference. We find that in the listed companies in the central and western regions, the interaction between the internal executive pay gap and equity incentives significantly raises the cost of equity under the influence of the implementation of an equity incentive plan. In the eastern coastal areas, the interaction between the executive-employee pay gap and equity incentives reduces the cost of equity. Therefore, we believe that it is more scientific and reasonable to interpret the different attribute samples based on different theories of pay gap.

Our research provides a useful perspective for studying the effectiveness of the current equity incentive plan. It has important significance for correctly understanding the factors and influence of pay gap inside enterprises. It also provides a useful reference for the improvement of the compensation systems in Chinese listed companies. China is the largest socialist economy and transition economy. Our study not only adds a new perspective to the study of the protection of Chinese investors' benefits and investment enthusiasm, but it also puts forward new proposals regarding the applicability of the two competitive theory hypotheses.

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