งานวิจัยเกี่ยวกับผลกระทบของ Peer Compensation Reference Effect ต่อการตัดสินใจลงทุนของผู้บริหารตามมุมมองของประสิทธิภาพการลงทุน

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บทคัดย่อ

สัญญาค่าตอบแทนผู้บริหารมีความสำคัญต่อการประสานงานผลประโยชน์ของทุกฝ่ายและบรรเทาปัญหาหลัก-ตัวแทน ผู้จัดการไม่มีเหตุผลอย่างสมบูรณ์ พวกเขามักจะมองหาจุดอ้างอิงสำหรับการวิเคราะห์และตัดสินเมื่อทำการตัดสินใจ ผลกระทบจากจุดอ้างอิงภายนอกของสัญญาค่าตอบแทนผู้บริหารมักส่งผลต่อพฤติกรรมการลงทุนของผู้บริหาร การศึกษานี้ใช้ข้อมูลทางการเงินของบริษัทจดทะเบียนใน A-share ของจีนในปี พ.ศ. 2555-2559 เป็นตัวอย่างเพื่อตรวจสอบการมีอยู่ของผลกระทบจากจุดอ้างอิงของค่าตอบแทนผู้บริหารภายนอกในอุตสาหกรรมเดียวกัน และวิเคราะห์ผลกระทบของจุดอ้างอิง

ค่าตอบแทนภายนอกที่มีต่อประสิทธิภาพการลงทุน ข้อสรุปการวิจัยต่อไปนี้ได้มาจากการวิเคราะห์เชิงประจักษ์ ประการแรก มีความสัมพันธ์เชิงบวกระหว่างค่าตอบแทนผู้บริหารและค่าตอบแทนผู้บริหารในอุตสาหกรรมเดียวกัน ผู้บริหารแสดงความพึงพอใจทางเศรษฐกิจและสังคมที่แข็งแกร่ง และการเปลี่ยนแปลงในค่าตอบแทนผู้บริหารได้รับผลกระทบจากระดับค่าตอบแทนของผู้บริหารองค์กรในอุตสาหกรรมเดียวกัน สิทธิ์ในทรัพย์สินเดียวกัน และระดับเดียวกัน ประการที่สอง ผลกระทบจากจุดอ้างอิงภายนอกของค่าตอบแทนผู้บริหารทำให้ประสิทธิภาพการลงทุนลดลง เมื่อระดับเงินเดือนของผู้บริหารต่ำกว่าบริษัทในอุตสาหกรรมเดียวกัน มีสิทธิในทรัพย์สินเท่ากันและมีขนาดใกล้เคียงกัน จะทำให้เกิดการลงทุนต่ำและการลงทุนมากเกินไป ซึ่งจะทำให้ประสิทธิภาพการลงทุนลดลงอย่างมาก

คำสำคัญ: เงินเดือนผู้บริหาร, ประสิทธิภาพการลงทุน, จุดอ้างอิงเงินเดือนภายนอก

The Impact of Peer Compensation Reference Effect on the Efficiency of Executive Investment Decisions

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Abstract

The executive compensation contract is essential for coordinating the interests of all parties and alleviating the principal-agent problem. Managers are not completely rational. They often look for a certain reference point for analysis and judgment when making decisions. The external reference point effect of the executive compensation contract is often Affect the investment behavior of executives. This study uses the 2012-2016 financial data of Chinese A-share listed companies as a sample to verify the

existence of the reference point effect of external executive compensation in the same industry, and analyze the impact of external compensation reference points on investment efficiency. The following research conclusions are obtained through empirical analysis. First, there is a positive correlation between executive compensation and executive compensation in the same industry. Executives show strong economic and social preferences, and changes in executive compensation are affected by the level of compensation of corporate executives of the same industry, same property rights, and a similar scale. Second, the external reference point effect of executive compensation weakens investment efficiency. When the salary level of executives is lower than that of companies in the same industry, with the same property rights and similar scale, it will cause underinvestment and overinvestment, which will significantly reduce investment efficiency.

Keywords: Executive salary, Investment efficiency, Salary external reference point

Introduction

Based on the demands of shareholders and executives for their respective best interests and the reality of information asymmetry, executive compensation contracts are crucial to coordinating the interests of all parties and alleviating principal-agent problems. In 1979, Kahneman and Tversky first propose the concept of reference point. They believe that the psychological reference standard (reference point) of people in making decisions often takes precedence over other factors. People make final decisions by comparing the difference between psychological expectations and actual gains and losses. Gabaix and Landier (2008) believe that based on the existence of transmission effects in the same industry, when the salary of some corporate executives increases, other companies will follow suit and make corresponding salary changes. To identify external reference points more accurately, Albuquerque et al. (2013) use the influencing factor matching method to compare corporate executive compensation and salary reference benchmarks to verify whether the compensation contract reference points exist. The reference benchmarks are the same year, the same industry, and the scale. Median executive compensation of similar companies. And Zhao Ying (2016) adds the characteristics of corporate property rights with Chinese characteristics and identified the external salary reference point from four dimensions: corporate property rights, region, scale,

and industry. Besides, regarding the impact of the salary reference point effect on the behavior of executives. Seo et al. (2015) and Franzoni (2012) find that executives are highly concerned about relative salary, and when they find that their salary is lower than the industry salary, they will adjust their income through mergers and acquisitions.

Because people are not completely rational, they often look for certain reference points for analysis and judgment when making decisions. The salary level of executives among companies in the same industry has always been an important reference benchmark. Due to the manager's free-market theory, executives will look for the salary of executives of the same industry to compare their salaries (Fang, 2009). To better understand the effect of salary reference point, that is, the impact of the salary reference point on executive behavior choices, this article selects investment behavior as the entry point. First of all, the investment decision is not only one of the three important decisions of a company, but it also directly affects the other two decisions of the company (financing and dividend distribution decisions), so investment behavior is very important to the development of the company. Secondly, underinvestment and overinvestment are common in China. Tseng (2012) investigates the impact of the split-share structure reform on agency problems and finds a decrease in investment-cash flow sensitivity after the reform of

the split-share structure, which is evidence for a decrease in agency problems in China's listed firms after this reform. Bhat et al. (2020) investigate how short-term debt and debt capacity help firms to make efficient financing decisions and reduce underinvestment problem. How to improve the efficiency of corporate investment has always been an important issue that academic research is eager to solve. Shareholders believe that compensation incentives can enable executives to give priority to the company's interests, make correct investment decisions, and improve the efficiency of investment. However, inefficient investment and high management compensation often coexist. Therefore, in the context of the low investment efficiency of Chinese companies and the unfair executive compensation system, this study examines the external reference point effect of executive compensation contracts and their impact on executive investment behavior.

Theoretical Summary and Research Hypothesis

1. The external reference point effect of executive compensation

Due to the existence of information asymmetry, it is difficult to unify the obligations performed by managers and the wishes of shareholders. To alleviate the principal-agent problem, shareholders have tried many methods (Griffin, 2014). Compared with other methods (such as third-party supervision), it is more

efficient and lower cost to give executive compensation incentives (Armstrong & Green, 2013). Therefore, to solve the negative impact of the principal-agent problem, the optimal contract theory has attracted much attention. In the process of formulating executive compensation contracts, the psychological factors of the parties to the contract are crucial to the signing of the contract. Because people are not only rational but also emotional, managers will show strong economic and social preferences when signing contracts. Specifically, they tend to not only pay attention to their salary but also to care about the gap between their salary and other people's salary, which makes the formulation of the salary contract should pay attention to the manager's fair preference (Otto & Bolle, 2015).

Some companies tend to choose the salary level of their competing companies as a reference standard to protect and attract talents (Bizjak et al., 2008; Faulkender & Yang, 2013), even some companies' compensation committees use large-scale, Companies with high salaries are benchmarks. Although there are many ways to choose a salary concerning benchmarks, the same industry, and similar scale are often the best choices (Sigler & Carolina, 2011; Albuquerque et al., 2013). Based on China's special national conditions, the difference between state-owned listed companies and non-state-owned listed companies cannot be ignored. Zhao (2016), Luo and Fan (2018)

find that the nature of property rights has a significant impact on the reference point effect of executive compensation. Therefore, based on the above analysis, this study believes that the design of executive compensation contracts often takes into account the executive's psychological expectations of fairness, and refers to the level of executive compensation of companies in the same industry, with the same property rights and similar scale. Based on this, hypothesis 1:

Hypothesis 1: There is an external reference point effect in the executive compensation contract, that is, the executive compensation is positively correlated with the compensation of the same industry, the same property rights, and the similar scale of the corporate executives.

2. The impact of peer compensation reference point effect on investment efficiency

When executives make investment decisions, executives can adjust their own economic and psychological effects through two different investment behaviors: passive conservative demand and active expansion demand. On the one hand, the excessive investment provides managers with more opportunities to increase personal income. This is due to investing in new projects, giving executives more controllable resources. First, managers

can purchase a large number of fixed assets to increase the scale of the company. Because of the positive effect of company size and executive compensation, executives can use large-scale investments to quickly increase personal compensation in the short term (Scharfstein & Stein, 2000; Conyon & Murphy, 2000). Besides, continuous investment in new projects means that executives can use these resources to increase private income, such as on-the-job consumption (Arikan & Stulz, 2016). On the other hand, under-investment is a manifestation of managerial sabotage. Managers are not completely rational. When executives find that the salary is lower than the industry average or other directors of the company, they will feel jealous. This unfair psychological hint makes them less motivated to work and expect to work in a comfortable state. This state of laziness and passive work can cause underinvestment (Bertrand & Mullainathan, 2003). According to the above analysis, if executives find that other executives with similar positions and abilities are paid higher than themselves through comparison, they will have unfairness and jealousy and take some actions to make up for their losses; and when they find that their pay is higher than or equal to others Senior executives will feel satisfied with the level of salary, and repay the company with positive actions to improve investment efficiency. This leads to hypothesis 2 of this research:

Hypothesis 2: When the level of executive compensation is lower than that of the same industry, with the same property rights and similar scale, the external reference point of executive compensation is negatively correlated with investment efficiency.

Research design

1. Sample selection and data collected

This study uses the financial data of China's A-share listed companies from 2012 to 2016 as a sample. First, the samples are screened as follows: 1) Exclude listed companies in the financial and insurance industry; 2) Exclude *ST, ST, and PT listed companies (ST, ST, and PT-shares refer to a-shares of companies whose net profit has been negative for two consecutive years after listing. So, don't use these shares for reference.); 3) Eliminate samples of companies that have not disclosed or disclosed that executive compensation is zero; 4) Eliminate sample companies with missing data on other variables; 5) To eliminate the influence of extreme values on the research, the data on main variables are within 0-1% And 99%-100% of the samples are processed by Winsorize. After the above screening and adjustment of the data, the final sample size is 7,996. Besides, this study uses Excel2010 and Stata12.0 to sort out, analyze, and statistically test all data to verify the hypothesis.

The data in this article comes from *Guotaian* CSMAR (China Economic and Financial Research) and WIND databases (A financial data and analysis tool service provider. In the international market, 75% of the qualified foreign institutional investors (QFII) approved by the China Securities Regulatory Commission are Wind Information customers).

2. Variable definition

2.1 Dependent variable

To examine whether the reference point of the executive compensation contract exists, that is, whether the executive compensation is affected by the external reference point, this study takes the change of executive compensation (CEP) as the dependent variable. When measuring changes in executive compensation, this study refers to the calculation method of compensation changes in the study of Wu and Wu (2010), because the relative indicators of executive compensation changes can be used to measure executive compensation changes, which can more rigorously and scientifically reflect executives The law of salary changes is the ratio of the difference between the average of this year's senior management's salary and the average of the previous year's senior management's salary divided by the average of the previous year's senior management's salary represents the change of senior

management's salary.

Regarding the measurement of efficiency investment, Richardson (2006) first proposed the calculation model of investment efficiency, which has since been highly recognized by the academic community. Therefore, this study refers to Richardson's efficiency model to calculate efficiency investment. Richardson divides investment expenditures (It) into two parts: maintenance investment expenditures and unexpected investment expenditures (Ie). The maintenance investment expenditure consists of normal capital expenditure (Im) and expected investment expenditure (Ip). Based on this, the formula is proposed: It=Im+Ip+Ie=Im+If, and the other side of the equation, (If) is the estimated value of the total newly added investment. The new investment is the inefficient investment (Ie) and the expected investment (Ip). Therefore, you can use the estimated total investment value If as the explained variable, and use last year's investment-related data to regress the total investment cost this year, so that the residual is the total inefficient investment. The specific calculation process is as follows: The first step is to use the model to return the expected total investment of the enterprise. In the second step, the investment efficiency index is obtained by subtracting the expected total investment from the enterprise investment. The investment model is as follows (Formula 1):

$$INV_{i,t} = \alpha_0 + \alpha_1 GROW_{i,t-1} + \alpha_2 LEV_{i,t-1} + \alpha_3 CASH_{i,t-1} + \alpha_4 AGE_{i,t-1} + \alpha_5 SIZE_{i,t-1} + \alpha_6 RET_{i,t-1} + \alpha_7 INV_{i,t-1} + \sum \beta_t YEAR_t + \sum \gamma_i INDU_i + \varepsilon_{i,t}$$

(Formula 1)

Among them, INVi,t is the total newly added investment in period t, and INVi,t-1 is the total investment in period t-1, GROW represents the growth opportunity of the company in period t-1; LEV represents the solvency of the company in period t-1; CASH Represents cash holdings in t-1 period; AGE represents the listing years of the company in t-1 period; SIZE represents the size of the company in t-1 period; RET represents the stock return rate in t-1 period; YEAR is the annual control variable, and INDU represents the industry control variable.

2.2 Independent variables

External Remuneration Reference Points (ERP) refer to Brookman and Thistle (2013), Li Wei'an et al. (2010). First, using propensity score matching (PSM) to match companies with the same industry, same property rights, and similar scales Then, compare the matched mid-value of executive compensation with the average of the top three compensations of the company's executive team, and use the difference as a continuous external reference point variable (ERP1). Besides, when the average salary of the top three executives of the company in t-1 is less than the median salary of the matched

executives, the dummy variable (ERP2) of the external salary reference point is set to 1; If it is greater than the matched median salary, ERP2 takes the value 0.

2.3 Control variables

Regarding hypothesis 1 of this study, to verify whether the reference point of the executive compensation contract exists, the explained variable of the study is Change in Executive Pay (CEP), so this study refers to Luo and Yang (2018) In the research, select variables such as changes in company performance (DROA), changes in growth (DGROW), changes in financial leverage (DLEV), and changes in company size (DSIZE) to control corporate characteristics. Because of the improvement of performance, the expansion of the company's scale, and the increase of corporate operating income, it indicates that the behavior of executives will have a positive impact on the company, which will lead to an increase in executive compensation. Besides, this research refers to the research of Quan et al. (2010) and selects variables such as the nature of property rights (STATE), the independence of the board of directors (IDI), the integration of two positions (DUAL), and the shareholding ratio of the largest shareholder (TOP). Control the interference of other factors in corporate governance. Because the executives of state-owned enterprises have strict

administrative promotion standards, they have clear guidelines for salary management. The larger the scale of independent directors and the more concentrated corporate equity, the more conducive to salary growth. Besides, when the directors and managers are the same person, executive compensation will directly affect their interests, so their decisions will directly affect the company's executive compensation strategy.

Regarding Hypothesis 2 of this study, to verify the impact of the salary contract reference point effect on investment efficiency, this study refers to the research of Xia and Qiu (2014) and selects company size (SIZE), solvency (LEV), and corporate property rights (STATE), company listing years (AGE), return on assets (ROA), free cash flow (FCF), size of the board of supervisors (MONI), and size of independent directors (IDI) are control variables. Specifically, these variables are selected because large-scale enterprises face more investment opportunities; and the limited financing of small-scale enterprises will restrict investment opportunities. And companies with high debt ratios have many capital constraints when making investment decisions. Besides, state-owned enterprises and private enterprises have different resources, and there will be differences in investment behavior. Because companies will experience different growth cycles, companies will have different needs for investment behavior in different growth cycles. At the same

time, different operating conditions determine the different decision-making behaviors of enterprises. The more free cash flow a company has, the more autonomy it has in making investment decisions. The greater the number of supervisors and independent directors, the stricter the supervision of company managers. At the same time, independent directors possess professional knowledge, which is conducive to improving investment efficiency.

Table 1. Description of each variable

Variable category	Variable name	Variable symbol	Variable description
Dependent variable	The change of executive compensation	CEP	(The average salary of executives this year minus the average salary of executives of the previous year) / The average salary of executives of the previous year
	Investment efficiency	INV	Formula (1) absolute value of regression residual value
Independent variable	External reference point	ERP1	The difference between the natural logarithm of the average salary of the executives in the same industry, the same property rights, and the similar scale of the company in t-1
		ERP2	The salary of senior executives in year t-1 is lower than the average of the salary

Variable category	Variable name	Variable symbol	Variable description
			of senior executives of companies with the same property rights and similar scale in the same industry, the value is 1, otherwise it is 0
Control variable	Changes in company performance	DROA	The difference between the company's performance this year and the company's performance in the previous year, where the company's performance is the return on assets of the current year
	Changes in company size	DSIZE	The natural logarithm of the difference between the total assets at the end of the current year and the total assets at the end of the previous year
	Changes in financial leverage	DLEV	The difference between the asset-liability ratio of this year and the asset-liability ratio of the previous year
	Changes in growth	DGROW	The difference between this year's operating income growth rate and the previous year's operating income growth rate
	The largest shareholder	TOP	Shareholding ratio of the largest shareholder this year
	Corporate property rights	STATE	The final controller is a state-owned enterprise with a value of 1, otherwise it is 0

Variable category	Variable name	Variable symbol	Variable description
	The integration of two positions	DUAL	Whether the CEO also serves as the chairman of the board, if yes, take 1, otherwise take 0
	Size of independent directors	IDI	The ratio of the number of independent directors to the total number of board members
	Company size	SIZE	Natural logarithm of total assets
	Solvency	LEV	Annual average total liabilities/annual average total assets
	Company listing years	AGE	The natural logarithm of the company's listing time
	Return on Assets	ROA	Net profit rate of total assets; net profit/average balance of total assets
	Free cash flow	FCF	Operating activities after deduction of maintenance investment (depreciation, amortization) Gold flow minus expected investment level
	Size of the board of supervisors	MONI	Number of members of the board of supervisors
	Year	YEAR	Annual dummy variable
	Industry	INDU	Industry dummy variables

3. Model construction

To verify Hypothesis 1: To verify the external reference point effect of executive compensation, model 1 is constructed.

The control variable is selected for a period of lag, because the changes in executive compensation will be affected by the company's operations and profitability in the past year.

$$CEP_{i,t} = \alpha_0 + \alpha_1 ERP_{i,t-1} + \alpha_2 DROA_{i,t-1} + \alpha_3 DSIZE_{i,t-1} + \alpha_4 DLEV_{i,t-1} + \alpha_5 DGROW_{i,t-1} + \alpha_6 TOP_{i,t} + \alpha_7 STATE_{i,t} + \alpha_8 DUAL_{i,t} + \alpha_9 IDI_{i,t} + \sum \beta_t YEAR_t + \sum \gamma_i INDU_i + \varepsilon_{i,t}$$

(Formula 2)

To verify Hypothesis 2: In order to verify the impact of the external reference point effect of executive compensation on inefficient investment, model 2 is constructed.

$$INV_{i,t} = \alpha_0 + \alpha_1 ERP_{i,t-1} + \alpha_2 SIZE_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 STATE_{i,t} + \alpha_5 AGE_{i,t} + \alpha_6 ROA_{i,t} + \alpha_7 FCF_{i,t} + \alpha_8 MONI_{i,t} + \alpha_9 IDI_{i,t} + \sum \beta_t YEAR_t + \sum \gamma_i INDU_i + \varepsilon_{i,t}$$

(Formula 3)

Empirical analysis

1. Descriptive statistical analysis

The descriptive statistics of the full sample are shown in Table 2. The maximum change in executive compensation (CEP) is 23.9842, which is 119.44 times the average value of 0.2008, and its variance is 0.7398, which shows the changes in executive compensation between different samples. There is a very big difference. The maximum value of investment efficiency (INV) is

1.0157, which is 725.5 times the minimum value of 0.0014, and its variance is 0.1627. It can be seen that there are great differences in the intensity of investment efficiency between samples. The number of samples with underinvestment is 4,516, accounting for 56.56% of the total sample. It can be seen that underinvestment is more common among listed companies in China. Regarding the external reference point (ERP) of the executive compensation contract, the maximum value of continuous variables is 2.2414, the median value is 0.7439, and the average value is 0.8037. It can be seen that the difference between the external reference point and corporate executive compensation is the most significant. Only 241 samples have negative external reference points, accounting for 3.01% of the sample. That is, only 241 samples of external executives of the same industry, size, and property rights have lower salary levels than those of the company. Under the circumstances, the external compensation benchmark of the company is greater than the compensation of the corporate executives.

Table 2. Descriptive statistics of all variables

variable	sample size	min	max	mean	median	standard deviation
CEP	7996	-0.9321	23.9842	0.2008	0.0707	0.7398
INV	7996	0.0014	1.0157	0.1498	0.1055	0.1627
ERP1	7996	-0.2707	2.2414	0.8037	0.7439	0.4734
ERP2	7996	0.0000	1.0000	0.2900	0.0000	0.4550
DROA	7996	-0.2146	0.2400	-0.0020	-0.0018	0.0551
DSIZE	7996	-0.3332	1.1483	0.1372	0.1053	0.2075
DLEV	7996	-0.3052	0.2562	0.0098	0.0100	0.0798
DGROW	7996	-3.2973	3.2368	-0.0100	-0.0205	0.6819
TOP	7996	8.5050	75.4198	35.9559	34.0463	15.4423
STATE	7996	0.0000	1.0000	0.1700	0.0000	0.3790
DUAL	7996	1.0000	2.0000	1.8000	2.0000	0.4000
IDI	7996	0.3000	0.5714	0.3688	0.3333	0.0522
SIZE	7996	19.2368	25.6826	21.9084	21.7518	1.2723
LEV	7996	0.0505	1.0637	0.4813	0.4887	0.2203
AGE	7996	1.0000	20.000	9.8800	10.0000	5.5450
ROA	7996	-0.1763	0.2342	0.0426	0.0371	0.0585
FCF	7996	15.8514	23.5387	19.8173	19.7995	1.4018
MONI	7996	3.0000	8.0000	3.8000	3.0000	1.1740

2. Statistical analysis of correlation

The lower-left corner of Table 3 is the Pearson correlation test between variables, and the upper right corner of Table 3 is the Spearman correlation test between variables. The correlation

coefficient (absolute value) of all the variables in the table is less than 0.4, which shows that there is no serious collinearity between the variables. The change in executive compensation CEP is significantly positively correlated with the external reference point ERP, and investment efficiency is significantly negatively correlated with the external reference point ERP. It shows that Hypothesis 1 and Hypothesis 2 have been verified.

Table 3. Pearson and Spearman correlation analysis

	CEP	INV	ERP_1	ERP_2
CEP	1.0000	0.0187 *	0.2435 ***	0.1970 ***
INV	-0.0396 ***	1.0000	- 0.0965 ***	-0.0886 ***
ERP_1	0.3109 ***	-0.0569 ***	1.0000	0.7881 ***
ERP_2	0.2035 ***	-0.0431 ***	0.7648 ***	1.0000

3. Regression analysis

3.1 Identification of the external reference point effect of executive compensation

Table 4 shows the regression results of Model 2, the regression results of the identification of external reference points in executive compensation contracts. Regarding the

continuous variables and dummy variables of the external reference point, the adjustment coefficients of model 2 are 0.10 and 0.07, respectively. At the same time, the F statistics of model 2 are 37.50 and 24.38, respectively, and the P value is 0.00, so model 2 passed the significance test. Regarding the continuous value ERP1 of the external reference point of the explanatory variable compensation contract, the regression correlation coefficient is 0.45, the T value is 25.31, and ERP1 is significantly positively correlated with the change in executive compensation (CEP) at the 1% level. At the same time, the regression coefficient of the dummy variable ERP2 of the external reference point is 0.33, the T value is 17.67, and it is significantly positively correlated with the change in executive compensation (CEP) at the 1% level. It can be seen that the company's executive compensation varies with the executive compensation of companies of the same industry, same property rights, and similar scales. When the executive compensation is different from the external reference standard, the change of the executive compensation will converge with the external compensation reference point.

Table 4. Analysis of Results of Hypothesis 1

Model 2/CEP	Panel_A	Panel_B
ERP_1	0.45 *** (25.31)	

Model 2/CEP	Panel_A	Panel_B
ERP_2		0.33***
		(17.67)
DROA	0.43***	0.52***
	(2.78)	(3.22)
DSIZE	0.51***	0.47***
	(12.59)	(11.40)
DLEV	-0.17*	-0.12
	(-1.65)	(-1.07)
DGROW	0.01**	0.01
	(0.38)	(0.49)
TOP	0.01*	0.01**
	(1.82)	(1.89)
STATE	-0.01	0.02
	(-0.02)	(0.77)
DUAL	-0.04**	-0.04*
	(-2.36)	(-1.88)
IDI	0.01	0.01
	(0.07)	(0.04)
CONS	-0.32***	-0.02***
	(-4.31)	(-0.25)
YEAR	control	control
INDU	control	control
Adj_R^2	0.10	0.07

Model 2/CEP	Panel_A	Panel_B
F	37.50***	24.38***
N	7996	7996

*Note: * p <0.05, ** p <0.01, *** p <0.001, the T value is in parentheses.*

3.2 The impact of external reference points for executive compensation on inefficient investment

Table 5 is the regression analysis of the external reference point of executive compensation to investment efficiency. Regarding the continuous variables and dummy variables of the external reference point, the adjustment coefficient of model 3 is both 0.27. At the same time, the F statistics of Model 3 are 110.30 and 115.21, respectively, and the P values are both 0.00, so Model 3 passed the significance test. Regarding the continuous value ERP1 of the external reference point of the explanatory variable salary contract, the regression correlation coefficient is -0.03, the T value is -6.63, and ERP1 is negatively correlated with investment efficiency (INV) at the 1% level. Besides, in the total sample 7996, there are 7748 samples with ERP1>0. It can be seen that it is common that the salary of external executives is higher than the internal salary of the enterprise, an unfair salary is common. At the same time, the regression coefficient of the dummy variable ERP2 of the

external reference point is -0.02, the T value is -5.64, and it is negatively correlated with inefficient investment (INV) at the 1% level. It can be seen that when the salary of the executives of the same industry, the same property rights, and similar scale companies is greater than that of the company's executives, the executives will adjust their income through excessive investment or underinvestment (Inefficient investment) because of jealousy, to achieve psychological satisfaction. However, both overinvestment and underinvestment will hurt investment efficiency. Based on the above analysis, hypothesis 2 has been verified, and it was in line with Jiang's research. The external reference points of executive compensation are set as ERP1 continuous variables and ERP2 dummy variables in order to study the robustness of the conclusions. From the following results, it is found that different forms of external compensation reference points will have the same negative impact on inefficient investment.

Table 5. Analysis of Results of Hypothesis 2

Model 3//INV	Panel_A	Panel_B
ERP_1	-0.03*** (-6.62)	
ERP_2		-0.02*** (-5.64)

Model 3//INV	Panel_A	Panel_B
SIZE	-0.03***	-0.03***
	(-10.17)	(-10.70)
LEV	0.27***	0.27***
	(26.55)	(27.85)
STATE	0.02***	0.02***
	(3.59)	(3.86)
AGE	0.02***	0.02
	(7.84)	(8.28)
ROA	0.27***	0.29***
	(8.71)	(9.37)
FCF	-0.01	-0.01*
	(-1.06)	(-1.71)
MONI	-0.01**	-0.01**
	(-2.44)	(-2.35)
IDI	0.11***	0.12***
	(3.70)	(4.03)
CONS	0.55***	0.60***
	(16.18)	(18.70)
YEAR	control	control
INDU	control	control
Adj_R^2	0.27	0.27
F	110.30***	115.21***

Model 3//INV	Panel_A	Panel_B
N	7748	7996

*Note: * p <0.05, ** p <0.01, *** p <0.001, the T value is in parentheses.*

Discussion

As one of the three big decisions of an enterprise, the investment decision directly affects the other two decisions of the enterprise and is crucial to the development of the enterprise. However, underinvestment and overinvestment are common in Chinese enterprises. Therefore, how to improve investment efficiency and keep investment behavior from deviating from the goal of maximizing corporate value is a difficult problem for the academic community. Based on this realistic background, this research starts from the optimal contract theory of executive compensation and the investment theory of new institutional economics, starting from the reference point of executive compensation contract, and finds that the effect of the reference point of executive compensation contract makes executives different psychology Cognition, and its psychological cognition will further influence the behavioral decisions of executives, such as investment decisions.

This research first needs to determine whether there is an external reference point for executive compensation. Only

when there is an external compensation reference effect in the same industry can the effect of this influence on executive behavior be studied. In the process of formulating executive compensation contracts, the psychological factors of the parties to the contract are crucial to the signing of the contract. Because people are not only rational but also emotional, managers will show strong economic and social preferences when signing contracts. Specifically, they tend to not only pay attention to their salary but also to care about the gap between their salary and others' salary, which makes the formulation of the salary contract should pay attention to the manager's fair preference. The external reference benchmark of the salary contract has always been the focus of the academic community and corporate shareholders, and different scholars and entrepreneurs have different views on how to choose a reference company. Some companies tend to choose the salary level of their competing companies as a reference standard to protect and attract talents; even some companies' salary committees use large-scale, high-level companies as benchmarks to improve executive salaries. Although there are many ways to choose a salary concerning benchmarks, this study believes that the same industry and similar scale are often the best choices. Inter-industry transmission effect: When the salary of some corporate executives increases, other companies will follow suit and make

corresponding salary changes. Besides, due to China's special national conditions, the difference between state-owned listed companies and non-state-owned listed companies cannot be ignored. Therefore, to more accurately identify external reference points, this study uses the influencing factor matching method to compare corporate executive compensation and compensation benchmarks. To verify the existence of the salary contract reference point, analyze from the four dimensions of enterprise property rights, region, scale, and industry. Through empirical analysis, it is verified that the change of executive compensation is affected by the compensation level of executives of the same industry, same property rights, and a similar scale.

Regarding the impact of the external reference point effect of the compensation contract on the behavior of executives, it can be analyzed from two levels. First, believe that the salary contract reference point is conducive to the flow of managers in the free market; second, we agree that the salary contract reference point is a tool for seeking personal gain. Specifically, scholars who adhere to the theory of the manager market believe that executives are a resource for companies in the fiercely competitive market. Using market compensation reference points to formulate compensation contracts can not only protect executives but also make timely adjustments based

on market conditions. Executive compensation is an efficient incentive method. Besides, starting from the theory of management power, senior executives will use compensation contract reference points to ingeniously adjust their salary growth. This phenomenon is particularly prominent in some large-scale companies with imperfect corporate governance. Because in large-scale enterprises, it is difficult to coordinate all management work without centralized director management rules. At this time, managers with certain power are likely to use the salary reference point to conduct self-interested behavior. Therefore, whether the external compensation reference of executives is fierce or induces opportunistic behaviors is the second step of this research, that is, the impact of the external reference point effect of executive compensation on the investment behavior of executives.

When executives make investment decisions, executives can adjust their own economic and psychological effects through two different investment behaviors: passive conservative demand and active expansion demand. Using market salary reference points to formulate salary contracts can not only protect outstanding executives but also adjust the salary of executives based on market conditions promptly, which is an efficient incentive method. However, when there is a large difference in salary between senior management members, the

senior management will feel jealous, which reduces the cooperation and coordination between team members and is not conducive to decision-making efficiency. Therefore, this study analyzes the data of listed companies in China and finds that when the earnings of executives are damaged (below the reference point), the executives will make up for their losses with speculation, that is when the level of executive compensation is lower than that of the same industry and the same property rights. And executive compensation of companies of similar size; executives will have dissatisfaction and jealousy. To make up for the loss of their salary, executives continue to invest in new projects and increase private income by controlling these resources, resulting in excessive investment. Besides, unfair pay makes senior executives jealous, and this unfair psychological hint makes them less motivated to work and expect to work in a steady state. This state of laziness and passive work will cause underinvestment. The increase in underinvestment and overinvestment will significantly increase and weaken the investment efficiency of enterprises.

Research conclusions and inspiration

1. Research conclusion

This study uses the 2012-2016 financial data of Chinese A-share listed companies as a sample to verify the existence of

the reference point effect of external executive compensation in the same industry, and analyze the impact of external compensation reference points on investment efficiency. The following research conclusions are obtained through empirical analysis.

(1) There is a positive correlation between executive compensation and executive compensation in the same industry.

Due to the existence of the salary contract reference point, when the contracting parties find that their rights have suffered losses by comparing the reference points in the performance of the contract, they will take speculative actions to perform the contract; on the contrary, if the parties feel that their rights are guaranteed, they will actively perform the contract behavior, this is the contract reference point effect. Senior executives show strong economic and social preferences. They not only pay attention to their salary but also care about the gap between their salary and others' salary. Therefore, to protect and attract talents, the change of executive salary will be based on the reference point of the executive salary contract. As a benchmark. That is to say, the change of executive compensation is affected by the compensation level of corporate executives of the same industry, same property rights, and a similar scale.

(2) The external reference point effect of executive compensation weakens investment efficiency.

Regarding the impact of the external reference point effect of the compensation contract on the behavior of executives, it can be analyzed from two levels. First, believe that the salary contract reference point is conducive to the flow of managers in the free market; second, believe that the salary contract reference point is a tool for seeking personal gain. This study found that when the external industry salary is higher than the executive compensation, it will bring negative behaviors to the executives; and only when the external industry compensation has a positive impact on the executive compensation.

The empirical test finds that when the salary level of executives is lower than that of the same industry, the same property rights and the similar scale of the executives. To make up for the loss of their salary, executives continue to invest in new projects and increase private income by controlling these resources, resulting in excessive investment. Besides, unfair pay makes senior executives jealous, which makes them less motivated to work and expect to work in a comfortable state. This state of laziness and passive work, the above two situations will significantly increase the inefficient investment of the enterprise, and have a negative impact on the investment

efficiency of the enterprise.

2. Research inspiration

First, the design of the executive compensation contract needs to consider the executive's psychological expectations of fairness and set a reasonable benchmark for compensation. Senior managers have economic and social preferences. They not only hope to get high salaries but also prefer to compare the salary levels of other managers. When executives compare and find that their salaries are lower than those of managers in the same industry and the same position, they will feel unfair. This sense of unfairness can cause negative emotions to managers and affect work efficiency. Therefore, to maximize the effectiveness of compensation incentives, external compensation contract reference points should be considered when designing compensation contracts.

Second, reduce the speculative behavior of executives due to unfair pay and improve investment efficiency.

When executives find that their salaries are lower than those of companies in the same industry, with the same property rights and similar scale, or lower than the salaries of other directors in the company, or lower than the individual's previous salary levels, the executives will have unfairness and jealousy. To take some actions to make up for their losses. Therefore, to

control the speculative behavior of executives' jealousy caused by unfair pay, it is necessary to avoid the situation that the executives' salary is lower than the average external salary, the average directors of the same company and their past salaries, to increase the enthusiasm of the executives to work to invest efficiency.

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