

## Research on the impact of compensation gap on firm performance

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**Abstract:** Before 1970s, China applied traditional economic system in which equal distribution mechanism was used for compensation allocation. However, equal compensation distribution mechanism could no longer satisfy actual needs due to economic system reform. As a result, current distribution system appeared and is still working. Change of equal distribution leads to compensation gap. The influence relation between compensation gap and corporate development is the research task of this thesis. This thesis conducted investigational analysis on the above questions to confirm the influence relation in between.

### 1. Introduction

While choosing their jobs, people mainly take three aspects into consideration: company's development prospect, employee's development space, and compensation level. Among the three aspects, the most directly-visualized selection condition is compensation level. Distribution system in current stage decides it is inevitable to have compensation gaps and they are various inside companies. Scholars always think senior executives constitute the main body influenced by corporate performance as they are authorized to make important operation decisions. Therefore, in the preliminary stage of related research, scholars mainly focused on the economic effect of compensation gap among senior executives based on all kinds of theories. They overlooked research on the influence of compensation gap between senior executives and general staff left on corporate performance. Based on the above, this thesis mainly studied the influences on corporate performance left by internal compensation gap among senior executives and compensation gap between senior executives and general staff.

### 2. Research Design

#### 2.1 Research hypothesis

Bashed on previous research results, this thesis thought, there is zone effect between compensation gap and corporate performance due to combined influence from tournament theory and behavioral theory that is compensation gap is in positive correlation with corporate performance within a certain scope and corporate performance will fall after compensation gap is expanded to a certain degree. The overall trend of corporate performance will be rise first and then fall presenting an inverted-U relation. Based on the above! we proposed the following hypotheses:

Hypothesis 1: There is inverted-U relation between top management team's internal compensation gap and corporate performance

Hypothesis 2: There is inverted-U relation between top management team—general staff compensation gap and corporate performance.

#### 2.2 Sample selection

This thesis selected A-share companies listed in the two cities from 2013 to 2015 as the original samples. Related data of the samples came from Rthy RESSET database. According to the

following steps and conditions, the original samples were further screened and 1028 final samples were selected. Specific screening steps and conditions are as follows:

- (1) Remove sample companies which have missing data in three years.
- (2) Remove sample companies which have ST or PT in three years.
- (3) Remove sample companies belonging to financial industry or insurance industry.
- (4) Remove sample companies of which the managerial compensation gap is zero or negative that can result in extreme value or abnormal value in empirical analysis.

## 2.3 Variable definition

This thesis followed scholars' related research and selected return on total assets as the index to measure corporate performance, which is:

$$\text{ROA} = \text{Net profit} / \text{Total assets}$$

In which: 1. Comparing values before and after deducting non-recurring profit and loss, the lower value should be taken as the calculation basis for net profit. 2. Weighted averages at the beginning of the year and at the end of the year should be taken as the calculation basis for total assets.

While measuring a top management team's internal compensation gap, divide the team into core members and non-core members. The so-called core members refer to the top 3 members with the highest salary within the team while others are non-core members. Define the internal compensation gap GAP1 by the absolute difference between the average compensations of these two groups:

$$\text{GAP1} = \ln(\text{Core members' average salary} - \text{non-core members average salary})$$

In which: 1.  $\ln$  is natural logarithm; 2. Core members' average salary = top 3 senior executives' total salary amount/3; 3. Non-core members' average salary = (total salary of the team - total salary of the top 3 senior executives) / (Number of the team members - 3).

While measuring compensation gap between senior executives and general staff, GAP2 is defined as follows based on the above:

$$\text{GAP2} = \ln(\text{Top management team's average salary} - \text{general staff's average salary})$$

In which: 1.  $\ln$  is natural logarithm; 2. Top management team's average salary = Team's total salary amount/Number of team members; 3. General staffs average salary = (Salary paid to and paid for employees - top management team's total salary amount) / (Number of employees - number of top management team members); 4. Salary paid to and paid for employees come from related data in cash flow statement.

Besides compensation gap, there are other factors inevitably affect corporate performance, such as company size, financial leverage, ownership concentration, and district. In order to analyze the influence of compensation gap left on corporate performance more precisely, we also took these factors as control variables in regression analysis.

### (1) Company size

Analyzed from perspectives of economics and financial management, continuous expansion of company size will bring scale economics effect to company. As a result, company's cost will get lower and its competitiveness will be greatly improved, and thus there will be more value created and more benefit generated. Hence, in order to better compare sample companies in different sizes and control company size as a variable for more objective empirical analysis, this thesis took  $\ln(\text{Asset})$  of company's total assets at the end of the year as the calculation basis for company size.

### (2) Financial leverage

When company's asset-liability ratio is in a reasonable range, liability leverage can bring certain performance improvement to company. With continuous increase in liability ratio, financial risk exposed to company will gradually counteract initial liability leverage effect and lead company to low operation performance and bad business situation. This fact has been proved in financial theories and abundant empirical literature. It is thus clear that asset-liability ratio has obvious influence on corporate performance. This thesis took it as a control variable.

### (3) Ownership concentration

A phenomenon has been found in related research on company management all the time: when a

listed company has excessively concentrated stock equities or some shareholder controls significant decision-making votes, the right may be used as a tool personal benefit and can damage corporate performance. However, on the contrary, excessively dispersed stock equities may make each shareholder focus on their own business and fail to make effective investment business decisions for the company. Therefore, this thesis took ownership concentration as a control variable and selected top 10 shareholders' shareholding ratios of the company in calculation.

#### (4) District

Three districts were divided according to national regional economy plan: west, middle, and east. Three dummy variables were set. When the value belonged to some district, "1" was selected; otherwise, "0" was selected. The influence of district on corporate performance was controlled according to this pattern in the research.

Table 1 Variable declaration

Variable nature	Variable code	Variable name	Variable definition
Explained variable	ROA	Return on total assets	Net profit/total assets
Explanatory variable	GAP1	Internal compensation gap in top management team	Ln (Core member's average compensation—non-core member's average compensation of top management team)
	GAP2	Compensation gap between top management team and general staff	Ln (Top management team's average compensation - general staffs average compensation)
Control variable	SIZE	Company size	Final total assets of listed company, take natural logarithm
	LEV	Asset-liability ratio	Final asset-liability ratio of listed company
	OC	Ownership concentration	Top 10's shareholders' shareholding ratio of listed company
	Dis	District	Take "1" for districts belonging to research district; or take "0"

## 2.4 Model building

In order to better correspond to the hypotheses, this thesis constructed 2 empirical research models given below:

In order to verify Hypothesis 1, Model 1 was constructed as follows:

$$ROA = \alpha + \beta_1 * GAP1 + \beta_2 * GAP12 + a * Size + b * Lev + c * OC + d * Dis$$

In order to verify Hypothesis 2, Model 2 was constructed as follows:

$$ROA = \alpha + \beta_1 * GAP2 + \beta_2 * GAP22 + a * Size + b * Lev + c * OC + d * Dis$$

## 3. Empirical Research

### 3.1 Descriptive statistics

Table 2 Descriptive Statistics of Basic Variables

Variable code	Sample quantity	Minimal value	Maximal value	Average value	Standard deviation
ROA	1028	-43.45	126.12	5.33	9.56
GAP <sub>1</sub>	1028	8.6	17.43	12.43	0.83
GAP <sub>2</sub>	1028	3.15	14.83	12.18	0.94
Size	1028	17.92	28.14	21.57	1.17
Lev	1028	0.65	95.7	43.96	33.45
OC	1028	0.13	1	0.63	0.22

From the descriptive statistics, it is clear that when the sample companies' ROAs had larger difference, the minimal value was only -43.45%, the maximal value was as high as 126.12%, and the average value was in a low-speed level; 5.33%. We can make simple backward calculation according to the results of the above descriptive statistics. The calculation results can reflect specific difference figures more directly. For example, backward calculation of independent variable GAP1 can find that the compensation gaps within top management teams were all around 250,000RMB which can fit the overall economic distribution trend in recent years and the low-speed increase level shown in our company development for the past few years , meaning the samples have certain representativeness.

Similarly, the compensation gap between senior executives and general staff GAP2 which has received dispute all the time can also be reflected in the descriptive statistics of Table 2. According to analytical results, the highest average compensation gap between top management team and general staff can reach 2.75 million RMB (with average value of 190.000 RMB). The data results can basically show the overall tendency of senior executive's compensation level and general staffs compensation level of listed companies in our country. They can conform to the current situation described in the research background of this thesis, and happens to hold the same view of the concerns published in national policies in recent years. It is thus evident that the research of this thesis is of great significance.

No more detailed description of other control variables in this thesis should be given. Except dummy variables of Industry and Annual are not shown in descriptive statistics, Company Size, Asset-Liability Ratio, Ownership Concentration can all be seen in Table 2. All these three variables can basically fit the characteristics of the overall listed domestic company samples.

### 3.2 Multivariate regression analysis

In this section, we will conduct regression analysis on Model 1 and Model 2 to obtain the coefficients in equations of regression analysis and finally decide whether the hypotheses given in this thesis are true.

#### 3.2.1 Model 1 multivariate regression analysis

Model 1 is used to verify the influence relation between internal compensation gap of top management team and corporate performance which is Hypothesis 1. See Table 3 given below for detailed regression analysis results.

Table 3. Model 1 multivariate regression analysis.

Model 1	Unstandardized coefficient		Standard coefficient Trial version	T	Sig	VIF
	B	Standard deviation				
Constant	54.267	26.712		2.004	0.045	
GAP <sub>1</sub>	9.911	4.435	0.908	2.251	0.026	-
GAP <sub>1</sub> <sup>2</sup>	-0.442	0.175	-0.99	-2.476	0.012	-
Size	0.137	0.232	0.017	0.687	0.493	1.08
Lev	-0.156	0.012	-0.573	-23.606	0	1.13
OC	12.499	1.042	0.287	11.994	0	1.03
Dis				Control		
R2			0.464			

Dependent variable: return on total assets

From the regression results, it can be seen that model regulation R2 was 0.464, meaning the model fitting degree was good. VIF coefficient was close to 1meaning the collinearity level was low.

GAP1 was significant in 95% significance level, quadratic coefficient significance was negative, and monomial coefficient significance was positive, meaning the scatter plot of data should be a parabola with open side down and the peak of the parabola is above X-axis. Therefore, Hypothesis 1 of this thesis is verified to be true.

### 3.2.2 Model 2 multivariate regression analysis

Model 2 is used to verify the influence relation between the compensation gap of senior executives and general staff and corporate performance which is Hypothesis 2. See Table 4 given below for detailed regression analysis results.

Table 4 Model 2 multivariate regression analysis

Model 2	Unstandardized coefficient		Standard coefficient Trial version	T	Sig	VIF
	B	Standard deviation				
Constant	30.141	12.298		2.45	0.014	
GAP <sub>2</sub>	5.608	1.903	0.563	2.948	0.003	-
GAP <sub>2</sub> <sup>2</sup>	-0.288	0.082	-0.661	-3.426	0.001	-
Size	-0.032	0.212	0.002	0.017	0.987	1.25
Lev	-0.157	0.008	-0.572	-23.619	0	1.03
OC	12.186	1.047	0.278	11.659	0	1.06
Dis	Control					
Regulation	0.455					
R2						

Dependent variable: return on total assets

## 4. Conclusions

This thesis divided internal compensation into two categories and respectively proposed Hypothesis 1 and Hypothesis 2. At last, it reached the conclusions and verified that these two types of compensation gap have inverted-U relation with corporate performance.

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