Management Compensation Determinants in Mainland China

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Content

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Abstract

Top management compensation is a major topic in corporate governance, and there are a lot of papers and arguments on this subject.

However, there is little evidence on the determinants of top management compensation in China. This is partially because the information disclosure is poor, and general economic laws are often twisted in China.

Using the 6 years' panel data for top three managers' compensation package in each company listed in Shanghai A Share from 2006 to 2011, the authors attempt to explore the determinants of the top management compensation in China, and have made some discoveries. We found that the firm performance, especially the stock return and accounting measurement like ROA plays a significant role in determining the compensation size, which is in aligned with most of prior findings in western countries.

Moreover, the paper also attempts to explore the influence of State Owned Enterprise (SOEs) and compensation tradition in determining the compensation of top management.

Key Word: Corporate Governance, Management Compensation, SOEs, China.

Introduction

With the rapid development of China's economy, companies in China are expanding very quickly, and so is the compensation to the top management team. From 2005 to 2010, the average compensation of top management team of China listed company grew from ￥291,000 to ￥668,000 with an annual growth of 18.1%, far exceeding the growth rate of the GDP. Last year (2012), CEO of Alibaba got ￥47,570,000 of compensation (including cash and stock option incentive), which is 1984 times of the average annual income of city inhabitants.

Extremely high pay to the top management team in an environment of slow salary growth and high inflation rate, has raised much social concerns in Chinese society. One might easily question: do these executives deserve such high pay? Is there any causal relationship between the management compensation and firm performance under Chinese environment? What kinds of factors are determining the management compensation?

In terms of top management compensation, the US companies have been studies extensively, and major discoveries have been made: there is a clear link between firm performance and management compensation, and different measures and variables may have different influences on the size of compensation.

But does this link still hold true in the context of China's "socialist market economy"? If so, will the same measures and variables have the same influence on compensation size as they do in western countries?

To explore these two questions, the authors collect the panel data (from year 2006 to year 2011) of the compensation size, accounting measurements (ROA, debt-to-equity ratio, total assets, etc), stock performance data (annual rate of return of stock), and basic information (size of board, industry category, age, list age, etc) of 763 companies listed in Shanghai A Share.

It needs to be stressed that China's companies didn't give managers incentive stocks or options until 2006, and even after that there have been very few companies granting their managers with stocks and options. So in this paper, we use the total amount of compensation of top three managers as the indicator, without further exploration into the structure of the compensation.

By running appropriate regressions, the authors try to find the appropriate indicators for the management compensation size. After testing the several measurements, we have found that some measurements have a very significant determining power over the management compensation size, including the ROA, firm size, stock return, etc.

Besides, the authors also tried to explore the impact of state-owned situation, and tried to explore in what ways the SOEs could affect the compensation size.

Literature Review

The relation between top management compensation and firm performance has been studied extensively over the past few decades. Previous studies focused on two main aspects: 1)whether there is a clear link between top management compensation and firm performance and how clear this link is; 2)how this link varies with the change of compensation structure (cash, stocks, options, etc).

The executive compensation was first studied by Roberts (1956) and even Bearle and Means (1932). There were also some trial papers like Masson (1971), Lewellen and Hunstman (1970) and Coughlin and Schmidt (1985).

The first significantly influencing study was conducted by Murphy (1985), in which he collected and analyzed the data of over 70 companies and the compensation of 460 top managers accordingly. He found a very clear positive link between the managers' compensation and firms' performance, which he called the "fixed effect model". Yet he didn't quantify the relation.

This study was taken a further step by Jensen and Murphy (1990). They used the shareholders' wealth to indicate the firm performance and managers' cash compensation as the main form of compensation. They found that for an increase of 1,000 dollars in shareholders' wealth, the managers' compensation will increase by 3.5 dollars, which, according to Jensen and Murphy's interpretation, indicates the weak relation between firm performance and compensation. They also looked into the variation of the relation with the change of forms of compensation.

Jensen and Murphy's study was followed by Liebman and Hall (1998), who included stock and stock options in the compensation, which had almost been impossible before because of the incomplete disclosure of related information. Using this as the compensation form, Liebman and Hall found that for an increase of 1,000 dollars in shareholders' wealth, the management compensation will increase by 5.29 dollars, 50% higher than Jensen and Murpher's finding, thus proving an even stronger relation between compensation and firm performance.

There are also many other studies around the pay for performance relation and compensation structure, such as John, Robert and David (1998), who focused on the compensation size and the board composition; KJ Sigler (2011), who focused on the period from 2006 to 2009, to study whether the relation between compensation and firm performance still holds after the Sarbanes Oxley Act.

The pay for performance study is taken to a more detailed level by following scholars. They start to explore the law in different countries; the measurements of firm performance and the significance of them in determining top managers' compensation. For example, Takao Kato and Katsuyuki Kubo (2003) explored the law in Japanese companies, and found that the accounting measurements are critical in determining top management compensation in Japan.

So to summarize, the previous studies give us a general picture of the relation between firm performance and management compensation, yet we find there are some more problems to be solved.

First, most previous scholars use stockholders' wealth as an indicator of the firm

performance. This is reasonable to some degree, but it ignores the impact of the size of the firms and some accounting measurements. Thus in this essay, we use more indicators of firm performance, including ROA, list age, etc.

Second, studies about firms in China are very rare due to poor information disclosure requirement. In this essay, we will focus on China's companies listed in Shanghai A share, trying to explore the potential determinants of the management compensation and the impact and significance of each one of them.

Objective of Study

This paper aims to explore the determinants of top management compensation in China's special "socialism market economy" environment.

We define management compensation as the total compensation (t) of the top 3 executives. The assumed determinants of the top management compensation include: stock return, return on asset, debt to equity ratio, firm size, firm listing age, firm ownership concentration, the percentage of managers' holding stock of the firm's total stock and last year's compensation.

We will test the significance of the relationship between these assumed determinants and the top management compensation, trying to find out the correlation and significance of each determinants and achieve a formula to express the compensation.

Besides, we divide the all the 763 companies into 7 industries to explore whether the industry categories have any impact on the compensation size. These industries will be shown in the data and methodology part.

Also, SOEs play a very import role in China. Many rules and laws become more significant or less significant under SOEs conditions. So in this paper, we also try to add in the dummy variable of SOEs, to see if the correlation and significance of the determinants will change under SOEs conditions.

Institutional Context

1. The development in top management compensation in China

Before the year 2006, the incentive stocks and options to top managers were not allow, so the top management compensation only consisted of cash salary, bonuses and some stipend like travelling, double pay and so on.

After 2006, the firms have been allowed to give managers some incentive stocks and options. However, very few firms do that. In 2006, no more than ten firms gave this kind of compensation.

On the other hand, the compensation size keeps getting bigger. As stated above, from 2005 to 2010, the average compensation of top management team of China listed company grew from ￥291,000 to ￥668,000 with an annual growth of 18.1% .

2. The development of the regulation on China's capital market.

In the year 1978, China began to reform and open up to the world. Enterprises began to bloom and the need for capital pushed the local capital market to emerge. But the regulation of the capital market was very poor.

In the year 1992, China Securities Regulatory Commission (CSRC) was established. This organization was intended to oversee and supervise the capital market in China as a whole, to increase information disclosure and strengthen management, to decrease the capital risk and so on. With its establishment, the national capital market began to emerge.

In 1998, the Securities Law was passed, to supervise the capital market more strictly. At this point, the status of capital market in China was formalized. However, the information disclosure is still not enough.

Before 2001, China did not require the firm to disclose the compensation information of board of directors or the top managers. Some firms just volunteered to disclose such information.

After 2001, it is required by CSRC to disclose the sum of the top three executive's compensation and the sum of top three board directors' compensation on a cash basis.

From 2006, CSRC further required the listed companies to disclose the top executive's compensation on a individual basis. The information started to get more transparent.

3. The special situation of SOEs in China.

Unlike the US institutional context, many firms in China are state owned, and thus many top managers in the state owned enterprises are government bureaucrats. Their compensation are usually decided by the government, not the firm's performance or the board of directors.

Furthermore, the purpose of the SOEs may not be shareholder wealth maximization. Apart from the economic goals, the SOEs will also serve some political and social purposes. For example, one of the SOEs social tasks is to improve employment. This will pose great limitations on them when they want to lay off staff.

All these situations make our research more complicated, and leave one question open: whether or not will the top managers' compensation in SOEs be tied to firm performance? In this essay, we will add dummy variables for the SOEs to test this question.

4. The reform of SOEs in China.

The state owned enterprises in China was once part of the government, and the bosses in such SOEs were governors. But in 1978, China began to reform the SOEs and make them partially private and increased their profitability from a broad sense.

From year 1979 to 1983, the reform focused on the decentralization and profit retention. Before that, the SOEs were totally controlled by the central government. The local governments and the enterprises could not decide what to produce, how much is the product or even where to sell the products. All the profit had to be submitted to the central government.

In this stage, the SOEs were reformed in a way that the controlling power was transferred from central government to local government; and the local government can retain some profit instead of submitting it all to the central. In this way, the local government's freedom and motivation started to play an important role.

From year 1983 to 1987, the reform focused on the way of capital allocating. Before that, the government allocated capital to the SOEs directly. The SOEs were not required to pay it back or pay any interest. Such kind of allocation would certainly cause waste and low efficiency.

In this stage, the when the SOEs needed money, they started to be required to apply for loan from the banks. They had to repay the principal and the interest. This relieved the government's burden, and more importantly, increased the efficiency of capital allocation and use.

From year 1987 to 1992, the reform focused on the separation of the government's ownership from the management of the SOEs. In this stage, the Contractual Management System was established. The SOEs will hire the boss and he or she will be responsible for the profit or loss.

Year 1992 till 2001 is the key reform stage, which is the corporatization of the SOEs. After the "socialism market economy" was announced, this stage began. In this stage, the SOEs started to go public, and the separation of ownership and administration makes the SOEs become real corporations in modern sense.

The SOE reform is critical in China. The once political SOEs are now active in China's commodity and financial market, which make the compensation situation and our research much more complicated.

Data and Methodology

1. Data Source

One limitation of study on Chinese economy is the non-complete data sets. To avoid this problem, we use GTA data base to search the relevant information. All the currencies in this paper are denominated by RMB.

2. Selection of the Companies

Shanghai A share are for domestic investors and Shanghai B share are for foreign investors. Yet Shanghai A share is always used as a benchmark of China market, and most of Chinese representative companies are listed in Shanghai A share, such as China Mobile, Sinopec, etc. So we research the data of all the companies from the Shanghai A share.

There are altogether 2656 companies in Shanghai A share. Since the compensation information is incomplete (some stocks are suspended, some are listed after 2006), we only use the remaining 763 companies. We would then categorize them into 7 different industries; and SOEs and non-SOEs, and then analyze and compare them.

3. Definition of Variable

For the top management compensation, we use the sum of the top three managers' compensation package to denominate. Since there are few companies give managers incentive stocks or options, we don't go further to explore the structure of the compensation. The compensation will be the total sum of all forms of salary and bonus. The denomination is COMP.

We assume that in China, there is a strong relationship between the compensation size of last year's and that of this year's, because even in some bad years like 2008, the compensation size keeps getting bigger. So we assume last year's compensation is an important determinant, with the denomination of COMP_LAG.

Besides COMP_ LAG, firm performance is another aspect that would have great impact on the compensation size, because many firms in China tend to pay the managers by their performance. So the measurements of firm performance are also assumed to be the determinants, including return on assets (ROA), debt to asset ratio (DTOA), and stock return (RETURN).

Thirdly, the firm's listing age and size is also assumed to influence the compensation size. This is because the listing age (LIST_AGE) determines how long the firm has enjoyed low cost capital from the market; the longer the listing age, the bigger the compensation size might be.

The size of the firm is an indicator of the firm's ability and strength, so we assume there to be a positive relation between firm size and compensation size. In this paper, we use total assets (TA) to represent the size of the firm.

Fourthly, some corporate governance policies may affect compensation size, too, such as the firm ownership concentration (STOCK_CON), and the ratio of managers' holding of firm stocks to the firm's total stocks (MAN_PCSTOCK).

Besides all the variables stated above, we would like to see if different industry categories have an impact on the compensation size. So we create a dummy variable for each industry we have, including business and commerce (D_B_C), light industry (D_L_IND), heavy industry (D_H_IND), high technology industry (D_H_TECH), health care industry (D_H_C), utility industry (D_UTI) and other industry (D_OTH).

Finally, SOEs play a significant role in China's market. We would like to see under the special circumstances of SOEs, whether the determinants will have the same effect on compensation size or not. If not, how can the SOEs change the effects of these variables. We create a dummy for SOEs (D_SOEs), and an interaction dummy for each of the determinants stated above, so we get D_SOEs* ROA, D_SOEs* DTOA, D_SOEs* RETURN, D_SOEs* LIST_AGE, D_SOEs*TA, D_SOEs* STOCK_CON, and D_SOEs* MAN_PCSTOCK.

And also, since the sizes of management compensation and total assets are both very big, the variation can be huge. To avoid the bias caused by the huge variation, we will use the logarithm of compensation (LOG(COMP)) and the logarithm of total assets (LOG(TA)) to denominate the compensation size and the firm size.

4. Procedures

1) General Methodology

The ordinary least square model (OLS) is used throughout the whole paper. When we run the regressions using OLS, we use linear regression or exponential linear regression for different variables based on their features. Also, we add in some dummy variables and interaction dummy variables to adjust the result.

Using the OLS regression, estimate a restricted equation as following:

$$Y = c + \alpha X + e$$

After running the regression, we will first look at some key statistics for the overall model, including adjusted R square, probability (F-statistics), Akaike information criterion (AIC), Durbin-Watson statistics (DW Ratio), etc.

The adjusted R square is a measure of how well observed outcomes are replicated by the model. If it is close to 1, it means the model has a good replication of the variables generally.

The probability (F-statistics) is a test if all the correlations of the variables are insignificant. If it is less than 0.1, then we have 90 percent confidence that at least one independent variable is significant.

The AIC is a measure of the relative goodness of fit of a statistical model. The smaller the AIC, the better the model.

The DW Ratio is to test whether there is auto-regression in the residuals. If it is close to 2, then the residuals are nearly random and the model is good.

If most of the important statistics are acceptable, it means that our model is

reasonable.

Assuming the model is reasonable, we will further look at the correlation and t-statistics for the independent variables.

If the probability (t-statistics) is less than 0.1, then we can have 90 percent confidence to argue that the independent variable is significant to the dependent variable and will be taken into account in this paper. If, however, the probability (t-statistics) is bigger than 0.1, the independent variable will be considered insignificant in this paper.

2) Regression on Yearly Data

Since we have the panel data of 763 companies' compensation and other relevant information for 5 years (from 2006 to 2011), to simplify our discussion, we will run regression on each year's data separately, and then compare the yearly results.

In this step, we will consider the impact of all the variables and dummy variables stated above (excluding the interaction dummy variables).

Also, since most firms decide the compensation at the end of the year, there will be no lag effect between the compensation size and the independent variables (except for last year's compensation). So the regression model in this step will be:

$$LOG(COMP\_T)=\alpha_1*C+\alpha_2*LOG[COMP\_(T-1)]+\alpha_3*DTOA\_T+\alpha_4*LIST\_AGE\_T+\alpha_5*MAN\_PCSTOCK\_T+\alpha_6*RETURN\_T+\alpha_7*ROA\_T+\alpha_8*STOCK\_CON\_T+\alpha_9*LOG(TA)+\alpha_{10}*D\_B\_C+\alpha_{11}*D\_H\_C+\alpha_{12}*D\_H\_IND+\alpha_{13}*D\_H\_TECH+\alpha_{14}*D\_L\_IND+\alpha_{15}*D\_U$$

$TI+\alpha_{16}*D\_OTH+\alpha_{17}*D\_SOEs$

Based on the general principals of OLS stated above, we will first look at the statistics of the overall model. If it is good enough, we will discuss the correlations and t-statistics of all the αs.

By doing this step, we can take each year's specific information and situation into account. The result for each year will be very accurate.

3) Overall Regression on All the Data with Yearly Dummy Variables

On the basement of the last step, we think that in some special years, the result may be significantly different from that of the other years. It will affect our judgment of the general law under all the data and will jeopardize the consistence and accuracy of the overall rule.

For example, in 2008, the financial crisis hit the world. Many companies were badly affected. The firm performance may be worse off the minute the crisis took place, but the management compensation may not respond to the incident so quickly. So the result may differ from other years' very much.

To solve this problem, we decide to run the regression of compensation size on the same variables in step 4)-2, using all the data in the five years' time. We only add in the yearly dummy variables to define each year and to adjust the result. In this way, we can achieve a more general principal.

When we add in yearly dummies, we only add dummies for year 2008 to 2011, without 2007. In this way, we make year 2007 the base year and other years will

compare with it.

So in this step, the regression model will be:

LOG(COMP)= β_1*C+β_2*LOG[COMP_LAG]+β_3*DTOA+β_4*LIST_AGE+β_5*MAN_PCSTOCK+β_6*RETURN+β_7*ROA+β_8*STOCK_CON+β_9*LOG(TA)+β_{10}*D_B_C+β_{11}*D_H_C+β_{12}*D_H_IND+β_{13}*D_L_IND+β_{14}*D_H_TECH+β_{15}*D_UTI+β_{16}*D_OTH+β_{17}*D_SOEs+β_{18}*D_2008++β_{19}*D_2009+β_{20}*D_2010+β_{21}*D_2011

Again, we will first make a judgment whether the model is reasonable or not based on the OLS principals. If it is good enough, we will discuss the correlations and t-statistics of all the βs.

By doing this step, we are able to see the overall rule buried under all the five years' panel data and we can see the special year's influence.

The last step is mainly focused on the general rule and the time influence. But in China, the SOEs have a very big market power, resource advantage, and political support. In a word, they are a special group, so we assume that they will have a special impact on the compensation determination.

Based on this assumption, we would like to further explore in which ways the SOEs will have an impact on the compensation determination. So in this step, we will add in the interaction variables.

The regression model in this step will be:

LOG(COMP)= γ_1*C+γ_2*LOG[COMP(-1)]+γ_3*DTOA+γ_4*LIST_AGE+γ_5*MAN_PCSTOCK+γ_6*RETURN+γ_7*ROA+γ_8*STOCK_CON+γ_9*LOG(TA)+γ_{10}*D_B_C+γ_{11}*D_H_C+γ_{12}*D_H_IND+γ_{13}*D_L_IND+γ_{14}*D_H_TECH+γ_{15}*D_UTI+γ_{16}*D_OTH+γ_{17}*D_SOEs+γ_{18}*D_2008++γ_{19}*D_2009+γ_{20}*D_2010+γ_{21}*D_2011+γ_{22}*D_SOEs* ROA

$+\gamma_{23}$*D_SOEs* DTOA $+\gamma_{24}$*D_SOEs* RETURN $+\gamma_{25}$*D_SOEs* LIST_AGE $+\gamma_{26}$*D_SOEs*TA $+\gamma_{27}$*D_SOEs* STOCK_CON $+\gamma_{28}$*D_SOEs* MAN_PCSTOCK

After running the regression, we will first decide whether it is good or not. If it is good, we will focus on the correlation and t-statistics for all the interaction dummy variables and how they influence other independent variables.

By doing this step, we zoom in the SOEs part of the panel data, and we will be able to discuss what factors may have a different impact on compensation size under SOEs conditions, and we will try to explore the reasons for such differences.

Results & Analysis

1. In align with other previous studies, we find out that in China, in the past few years, CEO compensation is more related to firm's accounting performance than stock performance.

From our yearly regression (Table 3), the ROA variables are significant from 2007-2009, and the stock return variable is significant from 2010-2011. The coefficients of both the significant ROA and stock return variables are positive, meaning there is a strong positive relationship between firm performance and CEO compensation. At first the accounting performance is more significant, after 2009 as more and more firm is granting stock and options to the management team, the stock performance became a crucial part in deciding CEO compensation.

From the two general regression models (Table 1 & Table 2), the ROA is positive and significant while the stock return is insignificant. This shows that in general, Chinese firms are well adopting "pay for performance" methodology and are having an accounting base evaluation system. If we look at the history of China's financial system, this is not a surprising result. China's financial system is still at its early stage of development. China's stock market only has 20 years of history and before the Non-tradable share reform in 2005, many stock are government owned and non-tradable. For a long time, there is no such thing as stock price to be use for evaluation of CEOs. As a result, until now, most Chinese listed firm still use accounting performance to evaluate CEO's management outcome.

What's more, in the general model, the SOE interactive dummy D_SOE*ROA is insignificant while D_SOE*RETURN becomes significant and take a positive sign. It means that the effect of accounting performance is similar to SOEs and non-SOEs, but SOEs are more concerned about RETURN than non-SOEs when giving CEO compensation. This might be because SOEs in China might be the pioneer in the stock grant reform. This is true in real life. If we look at the history of the financial market reform, the SOEs are the first to be listed in China. Because the market develops nearly from scratch, at first the Chinese government only selected the best of the best SOEs to be listed. These companies were huge and well performed so they won't be affected much if anything goes wrong in the stock market. This is also the case in the stock grant reform. Therefore, the stock return is more positively related for SOEs than non-SOEs.

2. Size of company, as represented by firm's total asset taken logarithm, significantly affects CEO's compensation.

Both in the yearly regression model and the two general regression models (with and without interactive dummy), the size controlling variable LOG(TA) is positive and significant. The positive sign indicates that CEOs of larger companies are paid higher. This is consistent in real life. As companies grow larger, it will have more resources to hire more expensive CEOs. This scale effect is both applicable to both SOEs and non-SOEs without substantial difference given that D_SOE*LOG(TA) is insignificant.

The coefficient of LOG(TA) is very small (0.06 comparing with

LOG(COMP_LAG): 0.8). This might be because a firm's asset must be far larger than the compensation it pays to it CEOs, so the coefficient of LOG(TA) should be smaller than the LOG(COMP_LAG).

3. Firm's capital structure also has influence on CEO's compensation if taken into account of the firm's nature.

From the yearly regression model (Table 3), only in 2007 and 2011 the D/A variable is significant. In the regression model without other interactive dummy of SOE (Table 1) we can find that, the t-test probability of D/A is 0.15, very close to 10% of significant. Once SOE and respective interactive dummy is included (Table 2), variable D/A and (D_SOE)*(D/A) both become significant.

This suggests that the influence of company's leverage depends on government's ownership. It is also interesting to find that the coefficients of D/A and (D_SOE)*(D/A) are canceling out each other (-0.062046 and 0.062097 respectively). This indicates that for SOEs, CEO compensation is irrelevant to company leverage while for non-SOEs there is a negative relationship. This is reasonable in real situation. For non-SOEs, leverage ratio – a proxy of bankruptcy risk, is one of the major concerns for shareholders. Risk aversive investors (shareholders) might not like to take so much risk while for CEOs they have an incentive to gamble for huge bonuses. Therefore, there might be restrictions for CEOs to increase leverage, otherwise they might be punished. But for SOEs, there is little bankruptcy risk concerns due to easy access of bank loans (from SOE dominated banking system) and huge government

subsidies. And for the bureaucratic CEOs, evaluation of them might not include risk control (leverage control).

4. There are some minor differences in CEO compensation across industries.

From the yearly regression model (Table 3), only in 2008 and 2010 the industry dummy are mainly significant (in 2008 all are significant but in 2010 Business & Commerce, health care and high tech are insignificant). This might be because in these two critical years the stock market crashes and it is the best time to find out the differences between different industries while in normal years all industries are growing.

From both general regression models, only Business & Commerce, health care and high tech are insignificant. Possible explanation might be either there is no significant difference from the base dummy real-estate or these three groups of companies need to be further divided into smaller and more specific group. For example, for high-tech group there could be companies from IT industry and space discovery related industry. For business & commerce group, there includes banks, trading companies, and retailing business. What's more, some companies may belong to more than one categories which further complicates the analysis. For example, some companies were originally involves in international trade, now it begins to invest in real-estate business. All of these factors and affect the results.

For all significant variables, their coefficients are negative, meaning that on average these industries' CEO compensation is lower than the base real-estate

industry.

5. There is no evidence that firms' stock ownership structure will affect CEO compensation.

Stock concentration level seems to have no relation to the CEO compensation according to all our regression models (Table 1, 2 & 3). Very unlike the US stock market, stock ownership in China is very concentrated. According to the data from our sample, the top 3 biggest shareholders can own as large as 85% of all the stocks of the listed company, leaving very few available for trading. We originally assume that this difference in ownership structure might have significant influence on the companies' corporate governance and therefore affecting CEO compensation. However, the result is not satisfying. The t-test for STOCK_CON is insignificant in all regressions.

Management stock ownership seems not to affect CEO compensation. Similar to the above logic, we assume that there should be a positive relation. But the t-test for MAN_PCSTOCK is also insignificant. To find out why, we checked back the raw data and find out that stock grant and stock option incentives are still not popular among Chinese listed firms and size of management stock ownership is small. By 2011, out of the 763 sample companies, only 440 of them have its top management owns the company's share. And the average ownership is 0.866%, which is very small and shall not have much influence on the company's corporate governance.

6. Government ownership seems to affect CEO payment, but it has different

influence on stock return, D/A ratio and management stock ownership.

From the yearly regression model (Table 3), it seems that only in 2008 and 2010 the CEO's compensation from SOEs is a bit less than non-SOEs

In the regression with just D_SOE alone (Table 1), this dummy variable is significant. As we add in more and more interactive dummies with D_SOE (eg. D_SOE*ROA), the original dummy becomes more and more insignificant (Table 2). This indicates that the cumulative effect of SOE dummy after excluding the 6 interactive dummy is ever decreasing and finally becomes insignificant. When we look at the negative coefficient of D_SOE we are surprised to find that SOEs generally pay less to CEOs than non-SOEs.

There might be 2 possible scenarios that bring us this outcome. Firstly, it could be the case that the CEO compensation of SOEs is actually higher than non-SOEs but they intentionally disclose a lower one to reduce the possibility of being challenged and questioned by the public (since it is state owned). In China's under-developed market context, data manipulation is possible and common. Not to mention right now the government has the incentive to show us a lower result. So we have considerable doubts over the authenticity and accuracy of those disclosed amount. Or it could be the case that the CEO compensation of SOEs is actually lower but it is still attractive because of the possible "grey income" and other undisclosed welfare. CEOs of SOEs are mainly bureaucrats. It is not good but we have to admit that bureaucrats in China enjoy many privileges. Their easy access of public projects can bring them benefits exceeding their income. What's more, please be noted that the compensation variable

here only includes cash salary, bonuses and stipends. But compensation in the broad sense includes all the related benefits and welfare. Welfare of SOEs might be much better than the private firms. This also can explain the deviation.

7. The history of being a listed company might have an influence on how CEOs are paid.

From the yearly regression model (Table 3), this relationship is not so significant. Only in 2008 LIST_AGE is significant. This is also true in the general regression model with all the interactive dummies (Table 2). But in the first general regression model (Table 1), its coefficient becomes significant. The positive relationship suggests that the longer the firm stays listed, the better its CEOs are paid. The t-test for the interactive dummy (D_SOE)*(LIST_AGE) is insignificant, meaning that this holds true no matter it is a SOE or not. Several factors might support this finding. Firstly, the companies that can be listed for a long time must have good performance, (otherwise it will be delisted). If CEOs are paid for performance (our general hypothesis and also one of our findings), then these well performing companies should pay higher compensation. Secondly, there might be competition among CEO compensation to attract competent CEOs. Since 2006, all listed firms should disclose the sum of top 3 CEOs' compensation. This creates an incentive for companies to raise the CEO salary to "above than average", resulting in a persistent growth of CEO compensation. So the longer the company is listed, the higher the accumulative growth. Our statistical findings also provide evidence for this assumption.

8. There is significant variation in time.

From our yearly regression (Table 3) we can find that there is significant difference among these 5 years. In 2008 and 2010 we have the most number of variables significant while in other years, only those strong related variables like LOG(TA), LOG(COMP_LAG) and ROA still remains significant. This justifies ourselves of adding year dummies for each year. In our general regression with year dummies, only the 2008 dummy is proven insignificant. This might be because of the sudden approach of financial crisis which somehow distorted the possible relationship. Apart from that, the coefficient of other dummies can well depict the business cycle which is similar to the GDP growth.

Conclusion

This paper examines the efficiency of aligning CEO pay and company performance. This is not an uncommon topic. However, few studies have been made in Chinese market. Even fewer has done the analysis using the data after 2006. Introducing in the SOE dummy and analyze the results under the Chinese environment make our research special.

So can Chinese companies effectively change CEO compensation according to firm performance? Mainly yes. According to our research, the better the firm performs, the more likely the firm increases its CEO compensation. Given that firms' accounting performance have long been a reliable proxy of performance, most firms rely much on Return on Asset in evaluating CEOs and reward them base on it. But this accounting base system might change as the reform in the stock market deepens. We also find that CEO compensation varies among different time periods and across different industries. What's more, firm size and list age have a positive relationship with CEO compensation while company leverage takes a negative effect.

And are there any significant difference in deciding CEO pay between SOEs and non-SOEs? Our answer is yes again. By testing the significance of interactive dummies of SOE, we find that their coefficients are always the opposite of the base and thereby decreasing the sensitivity of compensation and external variables. We can then conclude that CEO compensation of SOEs is more stable and less affected by the external environment.

This paper agrees with the mainstream idea that CEO are paid by performance and provides more evidence that the corporate governance of the Chinese listed company is improving. China now is the world's second largest economy. It will surely go on to open up its financial system. We hope that our efforts can shed lights for future studies and the results shall be more specific and more accurate with the improved information disclosure.

Limitations

1) Poor information disclosure

Much effort has been taken by the CSRC to improve the information disclosure of China's listed companies, yet there are still some problems existing, which may affect our research result in a bad way.

First, many companies manipulated the data in annual report so that they can improve stock return or the company's image. This will directly affect the accuracy of our research result.

Second, some critical data are still not required to be disclosed. For example, the structure of the profit is not clear. This will help make the profit falsely big and affect our outcome.

2) Exclusion of some important data points

Due to limited time, in our research, we only use the companies from the Shanghai A Share. The companies listed on A Shanghai Stock Exchange are mainly big companies in compare with that on Shenzhen A Share. So the incomplete data set will make our results more applicable to big companies. What's more we selected 763 companies out of the 2656 companies from the board. The selection process is not random. To panelize our data, for convenience, we deleted all the incomplete data. Those missing data is caused by companies' suspended from trading, being de-listed or they simply did not go public on 2006. The omission of these companies will take

away some under-performance firms, leaving all the medium and good performing firms. This will make our results most fitted to these two types of firms.

Appendix

Table1: Overall Regression without Interactive Dummies

Dependent Variable: LOG(COMP)
Method: Least Squares
Included observations: 3815

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.649924	0.133469	12.36186	0
LOG(COMP_LAG)	0.792099	0.009295	85.21758	0
LOG(TA)	6.20E-02	5.82E-03	10.652	0
DTOA	-0.008593	0.006043	-1.421934	0.1551
LIST_AGE	0.003468	0.001822	1.903454	0.0571
MAN_PCSTOCK	0.050413	0.176612	0.285446	0.7753
STOCK_CON	1.65E-05	0.000457	0.036214	0.9711
RETURN	0.008481	0.008754	0.968884	0.3327
ROA	0.275997	0.039325	7.018313	0
D_2008	-0.024612	0.030206	-0.814792	0.4152
D_2009	-0.072116	0.020543	-3.510559	0.0005
D_2010	0.04029	0.026063	1.545872	0.1222
D_2011	-0.211141	0.02862	-7.377472	0
D_BUSINESS_COMMERCE	0.027516	0.030779	0.894003	0.3714
D_HEALTH_CARE	-0.002913	0.033494	-0.086968	0.9307
D_HEAVY_INDUSTRY	-0.097988	0.025572	-3.831845	0.0001
D_LIGHT_INDUSTRY	-0.072868	0.027504	-2.649354	0.0081
D_HIGH_TECH	-0.021468	0.043724	-0.490987	0.6235
D_UTILITY	-0.058819	0.029926	-1.965503	0.0494
D_OTHERS	-0.071891	0.033668	-2.13531	0.0328
D_SOE	-0.028082	0.013855	-2.02681	0.0428

R-squared	0.773688	Mean dependent var	13.69347
Adjusted R-squared	0.772495	S.D. dependent var	0.803389
S.E. of regression	0.383197	Akaike info criterion	0.924953
Sum squared resid	557.1099	Schwarz criterion	0.959338
Log likelihood	-1743.347	Hannan-Quinn criter.	0.937171
F-statistic	648.5222	Durbin-Watson stat	2.029356
Prob(F-statistic)	0		

Table 2: Overall Regression with Interactive Dummies

Dependent Variable: LOG(COMP)
Method: Least Squares
Included observations: 3815

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.763012	0.194971	9.042447	0
LOG(COMP_LAG)	0.791987	0.0093	85.15634	0
LOG(TA)	5.81E-02	8.50E-03	6.83364	0
DTOA	-0.062046	0.017973	-3.4521	0.0006
LIST_AGE	0.004306	0.002963	1.453028	0.1463
MAN_PCSTOCK	0.028437	0.184585	0.15406	0.8776
STOCK_CON	3.44E-05	0.000727	0.047303	0.9623
RETURN	-0.012463	0.010317	-1.207966	0.2271
ROA	0.305326	0.049845	6.125547	0
D_2008	-0.014166	0.030206	-0.468985	0.6391
D_2009	-0.06941	0.020509	-3.384409	0.0007
D_2010	0.048841	0.026049	1.874939	0.0609
D_2011	-0.200323	0.028625	-6.998153	0
D_BUSINESS_COMMERCE	0.026816	0.030789	0.87096	0.3838
D_HEALTH_CARE	-0.001867	0.033549	-0.055639	0.9556
D_HEAVY_INDUSTRY	-0.10193	0.025615	-3.979278	0.0001
D_LIGHT_INDUSTRY	-0.077178	0.027728	-2.783385	0.0054
D_HIGH_TECH	-0.026693	0.043759	-0.610008	0.5419
D_UTILITY	-0.058915	0.030015	-1.962856	0.0497
D_OTHERS	-0.079128	0.033766	-2.343447	0.0192
D_SOE	-0.13958	0.227645	-0.613147	0.5398
D_SOE*LOG(TA)	0.003531	0.010204	0.346075	0.7293
D_SOE*DTOA	6.21E-02	0.019125	3.246824	0.0012
D_SOE*LIST_AGE	-0.001461	0.00371	-0.393917	0.6937
D_SOE*MAN_PCSTOCK	-1.42E-01	1.245847	-0.113723	0.9095
D_SOE*STOCK_CON	1.30E-05	0.000911	0.014281	0.9886
D_SOE*RETURN	0.041067	0.010186	4.031551	0.0001
D_SOE*ROA	-0.114626	0.080629	-1.421649	0.1552

R-squared	0.775412	Mean dependent var	13.69347
Adjusted R-squared	0.773811	S.D. dependent var	0.803389
S.E. of regression	0.382087	Akaike info criterion	0.920975
Sum squared resid	552.8657	Schwarz criterion	0.966823
Log likelihood	-1728.76	Hannan-Quinn criter.	0.937266
F-statistic	484.2581	Durbin-Watson stat	2.023085
Prob(F-statistic)	0		

Table 3: Year-by-year T-test Result

	2007_co	2007_p	2008_co	2008_p	2009_co	2009_p	2010_co	2010_p	2011_co	2011_p
C	**1.4321**	**0.0001**	**2.0137**	**0.0000**	**1.6988**	**0.0000**	**1.8394**	**0.0000**	**1.1573**	**0.0000**
LOG(COMP)	**0.7622**	**0.0000**	**0.7666**	**0.0000**	**0.8062**	**0.0000**	**0.7865**	**0.0000**	**0.8618**	**0.0000**
LOG(TA)	**0.0913**	**0.0000**	**0.0699**	**0.0000**	**0.0443**	**0.0008**	**0.0600**	**0.0000**	**0.0444**	**0.0001**
D/A	**-0.1033**	**0.0030**	-0.0181	0.3539	-0.0002	0.9770	-0.0169	0.5611	**0.0471**	**0.0529**
LIST_AGE	0.0026	0.5918	0.0041	0.3084	0.0058	0.1564	0.0032	0.3927	-0.0032	0.3635
MAN_PCSTOCK	0.2528	0.6445	0.2266	0.5808	0.3590	0.3833	0.2651	0.4777	**0.7319**	**0.0088**
STOCK_CON	-0.0002	0.8568	-0.0006	0.5478	0.0003	0.7609	0.0014	0.1364	0.0002	0.8092
RETURN	0.0160	0.2217	0.0989	0.2495	-0.0150	0.3865	**0.1148**	**0.0011**	**0.1514**	**0.0082**
ROA	**0.2919**	**0.0122**	**0.4064**	**0.0000**	**0.5167**	**0.0000**	0.2450	0.1845	0.1262	0.1492
D_B_C	-0.0299	0.7117	-0.0776	0.2582	0.1167	0.0859	-0.0272	0.6704	-0.0494	0.4101
D_H_CARE	0.0306	0.7282	-0.1500	0.0469	0.0403	0.5877	-0.1122	0.1121	-0.0792	0.2268
D_H_IND	-0.0896	0.1839	**-0.2279**	**0.0001**	-0.0360	0.5248	**-0.1709**	**0.0015**	**-0.0864**	**0.0869**
D_L_IND	-0.0654	0.3650	**-0.2060**	**0.0008**	-0.0199	0.7432	**-0.1342**	**0.0208**	-0.0491	0.3654
D_HI_TECH	-0.0752	0.5141	-0.1995	0.0409	0.1003	0.2975	-0.0785	0.3889	-0.0225	0.7923
D_UTILITY	-0.1173	0.1393	**-0.2333**	**0.0005**	0.0344	0.6027	**-0.1114**	**0.0722**	**-0.1665**	**0.0044**
D_OTHERS	-0.0271	0.7583	**-0.2324**	**0.0021**	0.0272	0.7154	**-0.1806**	**0.0097**	-0.0662	0.3146
D_SOE	0.0394	0.2795	**-0.0603**	**0.0503**	-0.0452	0.1417	**-0.0524**	**0.0672**	0.0236	0.3827

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