

# THE OPTIMAL MANAGERIAL INCENTIVE MECHANISM FOR CHINA'S LOCAL AND CENTRAL SOES: AN EMPIRICAL STUDY OF LISTED COMPANIES

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## Abstract

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By studying listed companies, this paper investigates the effects of financial incentives and administrative incentives on the performance of managers in China's local state-owned enterprises and central state-owned enterprises (SOEs) respectively. We find that administrative incentives are more effective on managers of central SOEs, while financial incentives are more effective on those of local SOEs. We conclude that against the current background of mixed-ownership reform, we should realise the limitations of administrative incentives and broaden the role of financial ones. Moreover, we should find, for SOEs, the optimal incentive combination that is custom-made based on ownership type. In this way, incentive compatibility can be achieved and SOE performance will be enhanced.

**Keywords:** Central SOEs, Local SOEs, Economic Incentives, Administrative Incentives

## 1. INTRODUCTION

The critical issue of the ongoing SOE reform that started a few years ago is motivating SOE managers effectively. Particularly important is the questions whether the newly-introduced executive compensation cap<sup>1</sup> on managers of central SOEs will lead to a lack of incentives and whether the lack of incentives will result in low efficiency and talent outflow and, consequently, poor performance?

To answer those questions, it is imperative to obtain an in-depth understanding of the state enterprise system and the incentive mechanism of SOEs. Generally speaking, managers are given two types of incentives: financial incentive and administrative incentive. The former which promises bigger compensation package is the most widely-adopted type of incentive, while the latter offers private benefits of control to managers who usually have administrative powers as government officials do. Generally speaking, private benefits of control refer to the gains of exerting influence. It includes non-financial incentives, such as authority and

prestige, and financial incentives, such as grey income and reimbursement for on-the-job consumption (Liu Ruiming, 2005). However, in China, the term also includes higher social status and promotions. In light of this, for clarification purpose, a new term "administrative incentive" was coined to emphasise the unique circumstances in China. Commonly-seen administrative incentives in Chinese SOEs range from bigger administrative titles to higher positions in the Communist Party (Zhou Li'an, 2004).

Chinese SOEs are more closely linked to the government than their foreign counterparts. Under China's state-owned asset management system, managers of SOEs are given official titles. Moreover, outstanding managers will be offered a decent position in the government. Therefore, the administrative incentive has become an integral part of the incentive mechanism of SOEs in China, especially after the compensation cap introduced.

Given the unique situation in China and the ongoing mixed-ownership reform, satisfactory incentive effect cannot be achieved through the mindless adoption of existing incentives theories. To get optimal results, financial incentives, such as bigger compensation package and stock options, should by no means be our only tool in battling

<sup>1</sup> In 2009, the Ministry of Human Resources and Social Security along with others issued a guideline about managers' salaries in central SOEs, mandating that salaries should be based on performance, risk and responsibility

corporate poor performance. Administrative incentives should play a larger role. In light of this, a comparative study of the effects of financial incentives and administrative incentives will be a useful addition to the existing incentives theories.

In light of this, we decided to explore the effects of financial incentives and administrative incentives on different types of SOEs by analysing an enormous amount of public data about listed companies as well as examining the status quo of the existing incentive mechanism. First, we will review the critical literature on this subject matter. Then, we will propose two hypotheses based on our examination of Chinese SOEs. Next, we will select and review all data. What follows is an empirical study of the hypotheses. Finally, we will introduce our conclusion and put forward the optimal incentive mechanism for Chinese SOEs.

## 2. LITERATURE REVIEW

There has already been a significant amount of theoretical and empirical study on financial incentives. Coughlan et al. (1985), Mehran (1995), Hall et al. (1998) and Canarella et al. (2008) all explore, through different data samples, the correlation between managerial compensation and corporate performance. They all come to the similar conclusion that a positive correlation does exist between the two. Conyon et al. (2012) even go as far as to say that the pay-performance sensitivity of Chinese SOEs is higher.

As the market economy system matures and the internal and external governance mechanism improves, it is a belief held by the majority of Chinese scholars that the effect of financial incentives on corporate performance has become greater. In the 1990s, Zhang Weiyong et al. (1995) have already pointed out that agents' taking home the economic surplus realised the Pareto improvement by creating net surplus as a result of greater enthusiasm in supervision and elevated level of efforts. Later, Zhang Huiming (2002) presents evidence indicating an apparent positive correlation between monetary reward and corporate performance. This result is confirmed by the research of Zhang Junrui (2003), Xu Xiangyi (2007), Du Xingqiang (2007), Fang Junxiong (2009) and Wu Yuhui (2010). Xin Qingquan (2009) goes further and says that as a market mechanism of SOEs is being improved, managerial pay-performance sensitivity increases.

However, some scholars maintain that financial incentives provided to managers do not visibly improve corporate performance. Jensen et al. (1990), Wei Gang (2000) and Chen Xinmin (2003) all find no evidence indicating that financial incentives are noticeably effective. Firth et al. (2006) state specifically that there is no correlation between corporate performance and executive compensation in the case of Chinese SOEs. Liu Xing et al. (2012) assert that too much government intervention weakens the effect of market-oriented managerial incentive contracts, thus weakening the link between corporate efficiency and financial incentives targeting management. They also discover that the pay-performance sensitivity of central SOEs is usually lower than their local counterparts.

Similarly, an abundance of research has been conducted on the matter of managers'

administrative incentives. Most of the researchers conclude that administrative incentives are effective in boosting managerial efforts and corporate efficiency. In the 1970s, McClelland (1976) has already discovered the stimulus effect of rewarding managers with greater power. In recent years, Huang Qunhui (2000) has said that although financial incentive is the most direct form of motivation, managers prefer greater control to bigger compensation packages. Song Deshun (2004), Tong Weihua (2005), Song Zengji et al. (2013) narrow the scope of their research and focus on Chinese SOEs. They prove the existence of a positive correlation between administrative incentives and performance of SOEs, thus showing that administrative incentives are mainly useful in motivating managers of Chinese SOEs.

Lü Changjiang (2008) goes deeper and finds that in SOEs, managers in lower positions attach more significance to monetary compensation, while managers in higher positions find ways to obtain extra compensation by using their power. Jiang Fuxiu et al. (2014) study the link between corporate performance and forced CEO turnover (demotion and discharge). They discover that compared with managers of non-SOEs, SOE managers pay more attention to corporate performance. The research results of Quan Xiaofeng et al. (2010) is particularly valuable to our research in that they find that more administrative power usually leads to more private gains, but managers of central SOEs prefer intangible non-monetary benefits while their local counterparts prefer commercial ones that are more visible.

Liu Yinguo et al. (2005) uncover a more interesting phenomenon that government intervention can distort managerial behaviour by causing managers to care more about maintaining their positions than enhancing corporate performance.

Therefore, it is clear that the performance-boosting effects of both financial and administrative incentives aiming at SOE managers have been thoroughly researched from multiple angles. Some researchers have noticed a difference in the consequences of the two incentives, which provides valuable insights for our research into the optimal incentive measures for Chinese SOEs. However, few researchers looked at the effects of financial and administrative incentives on different types of SOEs individually. Therefore, there is still room for further research. Moreover, the previous research mostly only gave a qualitative diagnosis without adequate supporting data. For example, the study of Quan Xiaofeng et al. (2010) did conduct a quantitative analysis, but their data are old while insufficient, and SOE type is not a major focus of them. In addition, little research has been conducted using theoretical models. We strive to contribute to this aspect.

The previous research's data about SOEs' administrative incentives have been incomplete. To get an accurate and comprehensive picture, we not only gathered all the public data available by ploughing the Internet, annual reports and news articles but also personally verified and checked all of them. The large gathering of accurate data is one of the major strengths of our paper.

### 3. RESEARCH HYPOTHESIS

Next, using a simple model, we will demonstrate how to achieve the optimal incentive effect while adopting both financial incentives and administrative incentives. This model is based on the linear principal-agent model introduced by Holmstrom and Milgrom (1987).

We assume that the State-owned Assets Supervision and Administration Commission (abbreviated as SASAC), the principle of our model, is free to adopt financial incentives and administrative incentives to motivate corporate managers (referred to as M) which are the agent. The incentive intensity is  $\beta_s$  and  $\beta_p$  respectively. Managers are assumed to be risk averse, so the utility function should be the one of constant absolute risk aversion, as follows:

$$U_M = -e^{-[S(y)-C(e)]} \quad (1)$$

where we assume that the managerial efforts  $e$  will directly affect the outputs of SOEs and that the variable  $e \in R_+$  is unobservable.

SASAC give incentives to managers under the linear incentive contract, as follows:

$$S(y) = S_0 + \beta_s y + \omega \beta_p y \quad (2)$$

where:

- $S_0$  – is the fixed income of managers,
- $y$  – the output SOEs produce,
- $\beta_s$  – is the intensity of financial incentives,
- $\omega$  – means the impact ownership type has on administrative incentives, and
- $\beta_p$  – denotes the intensity of administrative incentives.

In addition,  $\omega \beta_p y$  denotes the monetary equivalent of the effect administrative incentives produce.

$$\begin{cases} \text{Max}_{e, \beta_s, \beta_p} E(y) = \alpha e - S_0 - \beta_s \alpha e - \omega \beta_p \alpha e \\ \text{s.t. (IR)} S_0 + \beta_s \alpha e + \omega \beta_p \alpha e - \frac{1}{2} k e^2 - \frac{1}{2} [(\beta_s)^2 + (\omega \beta_p)^2] \sigma^2 > E \\ \text{(IC)} e = \frac{\beta_s \alpha + \omega \beta_p \alpha}{k} \end{cases}$$

Factoring in the IR constraints and the IC constraints above, the objective function becomes:

$$\text{Max}_{e, \beta_s, \beta_p} \frac{\alpha^2 (\beta_s + \omega \beta_p)}{k} - E - \frac{1}{2} k \left( \frac{\beta_s \alpha + \omega \beta_p \alpha}{k} \right)^2 - \frac{1}{2} [(\beta_s)^2 + (\omega \beta_p)^2] \sigma^2$$

Adopt the optimal first-order method, we get:

$$\beta_p = \frac{\alpha^2}{\omega(2\alpha^2 + k\sigma^2)}$$

$$\beta_s = \frac{\alpha^2}{2\alpha^2 + k\sigma^2}$$

$$e = \frac{2\alpha^3}{2\alpha^2 k + k^2 \sigma^2}$$

Note that the variable  $\omega$ , an indicator of administrative incentives' effect, is absent in the equation about optimal managerial efforts. It means that when maximum profitability is achieved, the

The output of SOEs is:

$$y = \alpha e + \varepsilon$$

where,  $\alpha$  measures the marginal effect of managerial efforts on corporate output and  $\varepsilon$  factors outside SOEs.  $\varepsilon$  is normally distributed:  $\varepsilon \sim N(0, \sigma^2)$ .

The cost of managerial efforts takes the form:

$$C(e) = \frac{1}{2} k e^2 \quad (3)$$

where, the coefficient  $k > 0$  denotes marginal cost. Besides, we assume that  $C'(e) > 0$ ,  $C''(e) > 0$ .

Applying equations (2) and (3) to the utility function of managers, one gets:

$$U_M(e) = -e^{-[S(y(e))-C(e)]} = -e^{-[S_0 + \beta_s \alpha e + \omega \beta_p \alpha e - \frac{1}{2} k e^2]}$$

Managers' certainty equivalent  $CE$  is equal to the monetary equivalent of the managerial expectation, minus the risk cost:

$$CE = S_0 + \beta_s \alpha e + (\omega \beta_p) \alpha e - \frac{1}{2} k e^2 - \frac{1}{2} [(\beta_s)^2 + (\omega \beta_p)^2] \sigma^2$$

Considering the participation constraint, we found that the certainty equivalent must exceed the maximum expected utility  $E$  managers will get without the contract.

The incentive compatibility of the optimal managerial efforts is:

$$e^* = \frac{\beta_s \alpha + \omega \beta_p \alpha}{k}$$

Therefore, the maximum expected utility, in this case, can be computed as follows:

optimal managerial effort does not vary with corporate type. It is also clear from the above equations that administrative incentives and financial incentives are substitutes for each other. When one has to be reduced, SASAC can ensure optimal efforts by increasing the other's intensity. However, in reality, the intensity of administrative incentives ( $\beta_p$ ) has its limits because of constraining factors such as the administrative level of SOEs, regulations and range of impact. When administrative incentives are insufficient, SASAC tend to substitute them with their financial counterparts that are more market-oriented because their intensity is not affected by ownership type. In conclusion, to achieve incentive compatibility, it is

essential to provide a variety of sensible and effective financial incentives to compensate for the underperforming administrative incentives.

The overall intensity of the incentives SASAC adopt takes the form:

$$\beta = \beta_P + \beta_S = \frac{\alpha^2(1+\omega)}{\omega(2\alpha^2+k\sigma^2)},$$

which gives rise to three corollaries.

The first corollary is  $\frac{\partial\beta}{\partial\omega} < 0$  which means that a rise in the efficiency of administrative incentives will lower the overall intensity<sup>2</sup>.

The second corollary is  $\frac{\partial\beta_P}{\partial\alpha} > 0$  and  $\frac{\partial\beta_S}{\partial\alpha} > 0$ , demonstrating a positive correlation between the incentive intensity and the marginal effect of managerial efforts on corporate output. That is, the bigger the marginal effect, the higher the incentive intensity.

Nevertheless, another corollary which is  $\frac{\partial^2\beta_P}{\partial\alpha^2} < 0$  and  $\frac{\partial^2\beta_S}{\partial\alpha^2} < 0$  indicates a diminishing marginal effect, thus suggesting the existence of an optimal incentive intensity.

Our first hypothesis is that financial incentives are more effective on managers of local SOEs than those of central SOEs in improving corporate performance.

We put forward this hypothesis because we found that the ceiling effect of promotions was more severe in local SOEs, compared with central SOEs. Besides, managers of local SOEs gain fewer private benefits of control from administrative incentives, and they are less likely to get more because they are less likely to be transferred to central SOEs or central government. Consequently, they attach more importance to financial incentives. Given the positive correlation between managerial compensation and corporate performance demonstrated in Coughlan et al. (1985) and Mehran (1995), we conclude that financial incentives are more effective on managers of local SOEs than those of central SOEs in improving corporate performance.

Our second hypothesis is that administrative incentives are more efficient on managers of central SOEs than those of local SOEs in improving performance.

This hypothesis is also based on a couple of observations we have made. Compared with local SOEs, the ceiling effect of central SOEs can barely be seen. The incentive effect of administrative incentives is greater in central SOEs because managers are more likely to be promoted within the company, to other SOEs or to the central government. Besides, administrative incentives come with a high number of private benefits of control and social resources. For instance, many executives of the five biggest banks in China are appointed to the main positions in municipal and provincial governments. Apart from non-monetary benefits like prestige and private benefits of control, in central SOEs administrative incentives also carry monetary benefits, such as grey income and reimbursement among others. In addition, the financial benefits will increase as one moves up the corporate ladder. Last but not least, the executive compensation cap increased the role of administrative incentives in

central SOEs. These observations are confirmed by the discovery of Quan Xiaofeng (2010) that central SOE managers prefer invisible non-monetary gains and that higher positions carry more private benefits of control.

Next, we will present data that supports our theories.

#### 4. DATA SELECTION AND SAMPLE FEATURES

On September 16th, 2009, the Ministry of Human Resources and Social Security along with five other ministries issued an executive compensation guideline regarding central state-owned enterprises, which placed greater restraints on managerial compensation. Therefore, to build our data sample, we collect information about all the companies listed between 2009 and 2014 on the A-shares market. For accurate results, we choose Chairmen of the board<sup>3</sup> to be our research objects. Meanwhile, we don't take into account certain companies: (a) financial institutions<sup>4</sup>, because their data are not representative; (b) ST and PT companies, because their unique financial situation; and (c) companies whose data are too incomplete to include. After the exclusion, we have a total of 4866 SOEs, among which 1602 are central SOEs, and 3264 are local SOEs. Our data are collected from CSMAR database and iFinD database. For more information, see Table 1.

Table 1. Companies sample

| Year | Central SOE | Local SOE |
|------|-------------|-----------|
| 2009 | 267         | 544       |
| 2010 | 267         | 544       |
| 2011 | 267         | 544       |
| 2012 | 267         | 544       |
| 2013 | 267         | 544       |
| 2014 | 267         | 544       |

Source: CSMAR and iFinD

The CSMAR database enumerated twelve reasons that managers leave their posts, including job transferring, retirement, end of the term, change of control, resignation, dismissal, illness, personal reason, corporate restructuring, legal involvement and end of the contract. However, we cannot discern whether the manager in question is promoted or demoted from simple descriptions like job transferring, resignation and personal reason. Therefore, to get a clear and accurate picture, we personally verify all the data through corporate annual reports, news coverage and information on the Internet.

It is evident from Table 2 that 21.19 percent of managers in central SOEs receive administrative incentives, higher than the 17.98 percent of local SOEs. For more information, check Table 2.

Table 2. Chairmen and administrative incentives

| Type        | Total Number of Chairmen | Chairmen with Incentives | Percentage |
|-------------|--------------------------|--------------------------|------------|
| Central SOE | 604                      | 128                      | 21.19%     |
| Local SOE   | 1090                     | 196                      | 17.98%     |

<sup>2</sup> The premise of this conclusion is that the only variable is the efficiency and the other factors are constants. In practice, however, when the efficiency (namely administrative level and corporate attribute) alters, other factors cannot remain unchanged.

<sup>3</sup> According to Song Deshun (2004), Chairmen are the ultimate decision-makers in listed SOEs. Therefore, we choose Chairmen rather than CEOs as our research objects.

<sup>4</sup> Financial institutions are taken out of consideration because they have a different set of rules regarding financial statements.

We also discover that the average compensation of local SOEs is 77,300 RMB per year, significantly higher than the 47,500 RMB of central

SOEs. Besides, the average efficiency of local SOEs is also slightly higher. For more information, refer to Table 3.

Table 3. Descriptive analysis

| Type                | Variable            | Average  | Median   | Maximum  | Minimum  | Standard Deviation |
|---------------------|---------------------|----------|----------|----------|----------|--------------------|
| Local SOE           | ROI                 | 0.039835 | 0.03158  | 1.581004 | -0.84009 | 0.068439           |
|                     | ROA                 | 0.051762 | 0.04462  | 1.65133  | -0.79237 | 0.066271           |
|                     | Financial Incentive | 7.729621 | 12.14632 | 16.25402 | 0        | 6.385117           |
|                     | Size                | 1.08E+10 | 3.64E+09 | 4.15E+11 | 18.66645 | 2.28E+10           |
|                     | Debt Ratio          | 0.540265 | 0.55408  | 1.867087 | 0.010269 | 0.19552            |
|                     | STATE               | 0.397307 | 0.3881   | 0.8492   | 0.0502   | 0.157273           |
|                     | Revenue Growth Rate | 0.206047 | 0.103597 | 31.16788 | -0.88249 | 0.891566           |
| Central SOE         | Monopoly            | 0.246777 | 0        | 1        | 0        | 0.431215           |
|                     | ROI                 | 0.036474 | 0.03198  | 1.201571 | -0.67148 | 0.063823           |
|                     | ROA                 | 0.04675  | 0.043785 | 1.207073 | -0.59102 | 0.061023           |
|                     | Financial Incentive | 4.752598 | 0        | 16.56278 | 0        | 6.266524           |
|                     | Size                | 4.34E+10 | 4.25E+09 | 2.41E+12 | 18.53754 | 1.71E+11           |
|                     | Debt Ratio          | 0.529276 | 0.540935 | 2.055935 | 0.01561  | 0.212206           |
|                     | STATE               | 0.405647 | 0.4149   | 0.8635   | 0.1137   | 0.153689           |
| Revenue Growth Rate | 0.274149            | 0.116585 | 103.8115 | -0.90121 | 2.96046  |                    |
|                     | Monopoly            | 0.285714 | 0        | 1        | 0        | 0.451924           |

## 5. REGRESSION ANALYSIS

### 5.1. Regression Analysis of the First Hypothesis

In our model, the explained variable is corporate performance. There are a variety of indexes for measuring organisational performance. Our study uses the accounting index because it is the one utilised by the State-owned Assets Supervision and Administration Commission. More specifically, we choose the return on assets (ROA) and return on investment (ROI) as our indicators because they tend to produce high-quality results. Both ROA and ROI measure the return on corporate assets, but the former looks at net return while the latter focuses on the earnings before interest and tax.

The explanatory variable is the financial reward of Chairmen (REWARD) which refers to Chairmen's annual compensation.

Based on the previous study, namely Luo Hong (2008) and Jiang Fuxiu et al. (2014), four control variables should be included in our analysis: corporate size (SIZE), degree of financial leverage (Lev), the majority shareholder's shareholding ratio (STATE) and revenue growth rate (IRBR). In addition, we decided to include one more variable: whether the company is in a monopolised industry (M-industries). According to the research of Aharony et al. (2000), Xin Qingquan et al. (2009) and Liu Xing et

al. (2012), and the information about state-states proportion in the 2012 Government Report On the Operation of State-owned Enterprises, we regard the following industries as monopolized industries: coal, petroleum & petrochemical, metallurgical, civil construction (railway, tunnel and harbor construction), transportation, news and publishing. For a detailed definition of all variables, see Table 4.

Table 4. Definitions of major variables

| Variable     | Definition   |
|--------------|--|
| ROA          | Net return divided by total assets                             |
| ROI          | Gross return divided by total assets                           |
| REWARD       | Natural logarithm of Chairmen's remuneration on annual reports |
| STATE        | Direct holders' shareholding ratio                             |
| LVE          | Asset-liability ratio  |
| SIZE         | Natural logarithm of total assets                              |
| IRBR         | Revenue growth rate  |
| M-industries | In monopolised industry or not. 1 for Yes, 0 for No.           |

To get accurate results, the data of the explained variables are from the present business cycle while those of the explanatory variables are from the following business cycle. In this way, we can reduce the effect of endogenous factors. We conduct separate regression analysis for each type of SOE. Regression equations 4 and 5 are based on the central SOEs:

$$ROA1_{i,t} = \alpha_0 + \alpha_1 REWARD1_{i,t-1} + \alpha_2 STATE1_{i,t} + \alpha_3 Size1_{i,t} + \alpha_4 LVE1_{i,t} + \alpha_5 M - industries1_{i,t} + \alpha_6 IRBR1_{i,t} + \epsilon_{i,t} \quad (4)$$

$$ROI1_{i,t} = \alpha_0 + \alpha_1 REWARD1_{i,t-1} + \alpha_2 STATE1_{i,t} + \alpha_3 Size1_{i,t} + \alpha_4 LVE1_{i,t} + \alpha_5 M - industries1_{i,t} + \alpha_6 IRBR1_{i,t} + \epsilon_{i,t} \quad (5)$$

Regression equations 6 and 7 are based on the local SOEs:

$$ROA2_{i,t} = \alpha_0 + \alpha_1 REWARD2_{i,t-1} + \alpha_2 STATE2_{i,t} + \alpha_3 Size2_{i,t} + \alpha_4 LVE2_{i,t} + \alpha_5 M - industries2_{i,t} + \alpha_6 IRBR2_{i,t} + \epsilon_{i,t} \quad (6)$$

$$ROI2_{i,t} = \alpha_0 + \alpha_1 REWARD2_{i,t-1} + \alpha_2 STATE2_{i,t} + \alpha_3 Size2_{i,t} + \alpha_4 LVE2_{i,t} + \alpha_5 M - industries2_{i,t} + \alpha_6 IRBR2_{i,t} + \epsilon_{i,t} \quad (7)$$

We find that in central SOEs there is only a weak positive correlation between Chairmen's compensation and corporate performance no matter

it is ROA or ROI that we measure. However, in local SOEs, the correlation is evident.

Table 5. Regression result

|              | Central SOEs |              | Local SOEs  |              |
|--------------|--------------|--------------|-------------|--------------|
|              | ROI          | ROA          | ROI         | ROA          |
| C            | 0.091851***  | 0.093084***  | 0.189828*** | 0.199061***  |
| REWARD       | 0.000564     | 0.000715     | 0.000777*   | 0.000785*    |
| SIZE         | 6.08E-15     | 9.02E-15     | -3.35E-13   | -4.01E-13**  |
| LVE          | -0.11254***  | -1.45E-01*** | -0.22845*** | -2.58E-01*** |
| STATE        | 0.021443*    | 0.036566***  | -0.03333    | -0.044303    |
| IRBR         | 0.00099*     | 0.001258**   | 0.006938*** | 0.006867***  |
| M-industries | 0.008925     | 0.004403     | -0.02112*** | -0.0209***   |
| R2           | 0.089187     | 0.141905     | 0.290228    | 0.360315     |

In conclusion, the result of our regression analysis supports our hypothesis. We prove that *financial incentives are very effective on managers of local SOEs but less so on those of central SOEs*. The financial incentives are not very active in central SOEs for three reasons. Firstly, because of the compensation cap, central SOE managers earn a lot less than managers of private enterprises and foreign capital enterprises, reducing the effect of financial incentives in central SOEs. Secondly, the big private benefits of control (monetary gains and non-monetary gains) can not only compensate for the low salary but also bring more sense of achievement and satisfaction than financial incentives do. Thirdly, so far there are no auxiliary financial incentives that are effective and market-oriented, such as stock options, thus, to an extent, making executive remuneration rigid under government control (Liu Xing 2012). The reason why in local SOEs financial incentives are less than effective is that private benefits of control are limited because of the low administrative level of managers. Moreover, according to Quan Xiaofeng (2010), in the absence of effective censorship and supervision systems, managers of local SOEs usually decide their

own salaries. Therefore, given the weak administrative incentives they receive, managers respond very well to financial incentives in local SOEs.

## 5.2. Regression Analysis of the Second Hypothesis

Corporate performance is still the explained variable in the regression analysis of the second hypothesis and measured by ROA and ROI. However, since some Chairmen have been on the jobs longer than others, in order to get an accurate conclusion, we decide to study the average performance of the SOE during the time the Chairman in question is in office instead of the company's performance on the whole.

Administrative incentives (Promotion) received by Chairmen is the explanatory variable in the analysis. It is the numbers of promotion the Chairmen receive on average throughout his or her time in office. It includes promotion as well as transferal to a government agency.

Control variables remain the same as in the analysis of the first hypothesis. For a definition of the variables, see Table 6.

Table 6. Definition of major variables

| Variable     | Definition  |
|--------------|---|
| ROA          | Average ROA during Chairmen's time in office                                |
| T            | Average ROI during Chairmen's time in office                                |
| Promotion    | Average numbers of promotion Chairmen receive during their time in office.  |
| Background   | Have managers who used to work in government or not, 1 for Yes, 0 for No.   |
| STATE        | Direct holders' average shareholding ratio during Chairmen's time in office |
| LVE          | Average asset-liability ratio during Chairmen's time in office              |
| SIZE         | Average total assets during Chairmen's time in office                       |
| IRBR         | Average revenue growth rate during Chairmen's time in office                |
| M-industries | In monopolised industry or not. 1 for Yes, 0 for No.                        |

Regression equations 8 and 9 below are linked to the central SOEs:

$$\Delta ROA1_i = \alpha_0 + \alpha_1 \Delta Promotion1_i + \alpha_2 \Delta STATE1_{i,t} + \alpha_3 \Delta Background1_i + \alpha_4 \Delta Size1_i + \alpha_5 \Delta LVE1_i + \alpha_6 \Delta Mindustries1_i + \alpha_7 \Delta IRBR1_i + \epsilon_i \quad (8)$$

$$\Delta ROI1_i = \alpha_0 + \alpha_1 \Delta Promotion1_i + \alpha_2 \Delta STATE1_{i,t} + \alpha_3 \Delta Background1_i + \alpha_4 \Delta Size1_i + \alpha_5 \Delta LVE1_i + \alpha_6 \Delta Mindustries1_i + \alpha_7 \Delta IRBR1_i + \epsilon_i \quad (9)$$

Regression equations 10 and 11 below are linked to the local SOEs:

$$\Delta ROA2_i = \alpha_0 + \alpha_1 \Delta Promotion2_i + \alpha_2 \Delta STATE2_{i,t} + \alpha_3 \Delta Background2_i + \alpha_4 \Delta Size2_i + \alpha_5 \Delta LVE2_i + \alpha_6 \Delta Mindustries2_i + \alpha_7 \Delta IRBR2_i + \epsilon_i \quad (10)$$

$$\Delta ROI2_i = \alpha_0 + \alpha_1 \Delta Promotion2_i + \alpha_2 \Delta STATE2_{i,t} + \alpha_3 \Delta Background2_i + \alpha_4 \Delta Size2_i + \alpha_5 \Delta LVE2_i + \alpha_6 \Delta Mindustries2_i + \alpha_7 \Delta IRBR2_i + \epsilon_i \quad (11)$$

We find that whether in terms of ROA or ROI, in central SOEs there is a strong positive correlation between administrative incentives and corporate

performance. However, in local SOEs, the correlation is weak.

**Table 7.** Regression result

|              | Central SOEs |             | Local SOEs  |             |
|--------------|--------------|-------------|-------------|-------------|
|              | ROI          | ROA         | ROI         | ROA         |
| C            | -0.074115**  | -0.10597*** | -0.12536*** | -0.15489*** |
| Promotion    | 0.016679*    | 0.017423*   | 0.003676    | 0.003382    |
| SIZE         | 0.005847***  | 0.007748*** | 0.009008*** | 0.010658*** |
| STATE        | 0.021182     | 0.030475**  | 0.028265*** | 0.032509*** |
| LVE          | -0.04988***  | -0.09551*** | -0.07741*** | -0.11413*** |
| IRBR         | 0.004278     | 0.003826    | 6.72E-07    | 5.42E-07    |
| M-industries | -0.00485     | -0.01111**  | 0.00039     | -0.00431    |
| Background   | 0.005787     | 0.006229    | 0.000881    | 0.000568    |
| R2           | 0.066532     | 0.170296    | 0.12952     | 0.211202    |

Therefore, it is safe to conclude that *administrative incentives are, indeed, very effective in central SOEs but less effective in local SOEs*. There are multiple reasons behind it. In China, heads of SOEs are appointed by the management of the central government or the Communist Party of China, so they usually have official titles. Due to the strict remuneration control on central SOEs, promotions and the bigger monetary gains (greater power, higher social status and more resources) that come with them compensate well for the low salary. Because, compared with local SOEs, central SOEs are on a higher administrative level and usually operate on a national level, their managers receive far more private benefits of control. Therefore, administrative incentives are very effective in central SOEs. However, in local SOEs administrative incentives are limited. As a result, managers have no choice but to value financial incentives more. And because financial incentives are directly linked to corporate efficiency, they are conducive to the marketization of local SOEs.

## 6. CONCLUSION

Firstly, we elucidate, through a simple incentive model, that administrative incentives and financial incentives can compensate for each other when one of them is lacking. Then, we conduct a quantitative analysis of the separate effect of administrative incentives and financial incentives on local SOEs and central SOEs respectively, using the data of companies listed on the A-shares market between 2009 and 2014. We discover that *administrative incentives are more efficient on managers of central SOEs, while financial incentives are more effective on those of local SOEs*. We should create our incentive mechanism according to the ownership type of SOEs and the preference of managers so that we can achieve incentive compatibility, reduce costs, raise efficiency and facilitate the mixed-ownership reform.

In light of this, we put forward four suggestions:

1. Since the effect of administrative incentives is limited in both local SOEs and central SOEs, we should amplify the effect of administrative incentives as much as possible and in the meantime attach more importance to financial incentives.

2. In central SOEs, financial incentives should play a larger role, and a well-designed managerial compensation system should be established. In addition, listed companies should consider rewarding managers with stock options, which will promote the mixed-ownership reform.

3. In local SOEs, administrative incentive mechanism should be improved. For example, the promotion channel should be broadened so that managers can be promoted or transferred to central SOEs, other local SOEs or even the government.

4. Both central SOEs and local SOEs should differentiate between administrative positions and managerial positions according to managers' preferences and job descriptions. Then, select, appoint or contract managers accordingly.

Financial and administrative incentives have a different focus and achieve different results. The former offers material benefits and is widely adopted for all types of companies in today's economy, while the latter was created for the unique circumstances of the public sector. Though effective in motivating managers, administrative incentives have considerable limits and will eventually lead to managers' leaving.

For historical reasons, central SOEs, in reality, have many social functions besides being businesses and are subject to more government interference compared with local SOEs. In addition, the majority of the management are appointed by government officials. Consequently, promotion to government posts becomes a welcome substitute for monetary remuneration. Political promotion brings with it more power, more means and higher social status. However, it is a different story in local SOEs which receive less media attention, less government intervention, and in the meantime have a more flexible remuneration system. As a result, financial incentives are the major incentive measure adopted in local SOEs.

In this article, a couple of propositions are analysed and confirmed, using the latest data and backed by a sufficient amount of economic theories. However, what is lacking is an in-depth case study of one or several Chinese SOEs. For further research, a sampling survey followed by a case study should be conducted in order to explore how sound and flexible SOEs' internal governance is.

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