An Empirical Study on the Existence of Negative Financial Behavior of State-owned Enterprises' Executives -Based on the Effect Test of Salary Limitation Policy

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Abstract—This paper aims to study the impact of the salary limitation policy on financial behavior of executives in Chinese state-owned enterprises (SOEs). Through the empirical analysis made by SPSS of A-share listed companies in the period of 2012-2016, we test the data of SOEs and non-SOEs and found that after the introduction of salary limitation policy, executives in SOEs do have negative financial behavior, which is shown as follows. Compared with non-state-owned enterprises(non-SOEs), the level of financial leverage in SOEs is decreasing year by year, the standard error of quarterly sales revenue is deviating largely, and the on-the-job consumption level of senior executives is improved. The findings help to theoretically enrich the study of the economic consequences of executive remuneration and practically explore the unreasonableness of salary limitation policies, thereby promoting the optimization of the remuneration policies of SOEs in China.

Keywords--negative financial behavior; state-owned enterprise; salary limit

1 Introduction

In 2009, China issued the "Guidance on Further Standardizing the Salary management of State-owned Enterprise Executives", which requires that the salary level of SOEs' executives should be linked with their employees' wages. This is the first time that the government implements salary control on SOEs' executives. In 2013, the government issued several opinions on deepening the reform of the income distribution system, which stipulates that a key issue to be solved in the reform of SOEs is the problem in the executive compensation. Since then, it has become a common phenomenon for SOEs' executives to implement the salary limitation policy. So, what kind of impact will this regulation have on the behavior of senior executives?

Compensation control has greatly reduced the cash salary received by SOEs' executives [1] and has weakened the role of the compensation contract. The control has also reduced the

effectiveness of enterprise compensation system [2], such as reducing enterprise performance [3], increasing their on-the-job consumption [4] and corruption [5]. Besides, it may lead to executives' negative emotions, resulting in "inaction". In terms of finance, executives may conduct negative financial behavior. In the case of imperfect market with information asymmetry and agency problems, directors are affected by internal and external negative factors directly relevant to interests (e.g., limitation of salary and/or power). Then, financial behavior will happen. Combining the theory of negative emotions with the theory of financial behavior, negative financial behavior can be understood as irrational behaviors made by executives in SOEs, such as zero debt operation, insufficient investment, no dividend, etc. Such behaviors are usually harmful to the long-term development of SOEs.

In order to verify the existence of negative financial behavior of SOEs' executives, we need to start from selecting relevant indicators in the balance sheet, income statement and cash flow statement. Based on the characteristics of negative financial behavior, this paper selected three aspects of corporate leverage, quarterly changes in corporate sales revenue, and on-the-job consumption of enterprise executives to measure the financial behavior of the management. We used the data of A-share listed manufacturing companies from 2012 to 2016 to test the existence of negative financial behavior of SOEs under the background of executive salary limitation policy.

To sum, this paper demonstrates the consequences of Chinese SOEs' executive compensation restriction policy from the perspective of behavioral economics, which has certain theoretical innovation. What's more, the conclusion of this paper puts forward the limitations of the policy, which is helpful to promote the optimization of Chinese SOEs' compensation system, and has important practical significance.

2 THEORY AND HYPOTHESES

2.1 Corporate financial leverage and the salary limitation of SOEs' excutives

The relationship between the owner of state-owned capital and SOEs' executives subjects to principal-agent relationship. Both parties pursue the goal of maximizing their own interests. Owing to the interest differentiation, SOEs' executives are likely to maximize self-interests at the cost of the interests of shareholders. Since the introduction of the government's "Salary Limitation Policy" in 2009, which directly reduced the incomes of SOEs' executives, academics have begun to study the impact of this policy on SOEs. Yanyang Yan et al. (2012) [6] proved the necessity and effectiveness to limit the salary of senior executives by studying the optimal incentive combination, while Dong Lu et al. (2012) [7] believed that the salary control reduces the enterprise performance. We believe that the salary control has a special background of China's transformation system, which is conducive to preventing the sky-high pay for SOEs' executives and improving social fairness. However, in a branch of a SOE, the salary of the general manager is much higher than that of the manager of the head office. It leads to problems including the inequity within the company, the violation of economic principles, and inaction of SOEs' executives caused by negative emotions, which is the unwillingness to take risks in pursuit of higher corporate returns while ensuring basic performance. Modern corporate finance theory suggests that appropriate debt management is conducive to lowering the integrated cost of capital ratio without diversifying the owners' equity, and that moderate debt management is conducive to increasing corporate efficiency when the return on assets is higher than the corporate cost of capital ratio. Therefore, the negative financial behavior of SOEs executives is manifested in the financing behavior of the company's financial leverage below a reasonable value, and we propose the following research hypothesis.

Hypothesis 1: Under the background of salary limitation for senior executives of SOEs, the negative financial behavior of firms exists if the growth rate of assets and liabilities of SOEs in the same industry is significantly lower than that of non-SOEs.

2.2 Quarterly change of sales revenue and the salary limitation of SOEs' excutives

Sales is the main source of business income. The level of annual sales determines the performance of the enterprise this year. In the case of salary restriction, SOEs' executives only want to meet the basic requirements of enterprise benefits due to the limited salary and negative motivations. They are not willing to increase sales when meeting the target, which leads to deliberately lower the performance in the fourth quarter when their performance in the first three quarters is better.

This phenomenon is similar to the earnings management. Earnings management is the behavior of senior managers to obtain personal benefits by purposefully controlling accounting report (Katherine · shipper, 1989) [8]. Based on the research idea of earnings management, this paper takes the quarterly and annual sales growth rate as the measurement index to study the change of sales growth rate in the fourth quarter compared with that in the first three quarters when the enterprise overfulfils the task in the first three quarters. Because there is no clear standard for the enterprise's annual target benefit, this paper selects the sales growth rate in the first three quarters. If the growth rate of sales in the first three quarters is greater than the industry average, the enterprise may exceed the annual target benefit in the first three quarters. If the growth rate of sales in the first three quarters is less than the industry average, the enterprise's benefit in the first three quarters is not good. Therefore, we screened the enterprises that exceeded their annual target benefits in the first three quarters as a sample. If the growth rate of sales in the fourth quarter of the study sample declined significantly compared with the previous three quarters, and the quarterly standard deviation of sales revenue deviated, the enterprises were judged to have engaged in negative financial behavior. Based on the above theoretical analysis, we propose the following research hypotheses.

Hypothesis 2: Under the background of salary limitation for senior executives of SOEs, when the quarterly standard deviation of sales revenue of SOEs deviates, the negative financial behavior exists.

2.3 On-the-job consumption of senior executives and salary limitation of SOEs' excutives

Since the reform of SOEs in China, government intervention and supervision of SOEs have intensified, resulting in policy restrictions on the remuneration of top executives within the transition period of SOEs, which is generally lower than that of non-SOEs in the same position, or even lower than that of middle managers in the same enterprise. This, coupled with problems in internal controllers of SOEs, has made the principal-agent problem of SOEs under government pay controls more visible in the high on-the-job consumption of corporate executives.

According to previous research on salary control and on-the-job consumption, the higher the degree of pay controls in the context of pay restrictions, the stronger the marginal desire of corporate executives to replace their pay with on-the-job consumption. Studies showed that there is a significant negative correlation between the relative salary of SOEs' executives and their on-the-job consumption. Since the remuneration of SOEs' executives is not the result of negotiation through the parties' interests but is directly limited by the government, on-the-job consumption becomes a substitute for monetary incentive, and the executives tend to use on-the-job consumption to complete self-motivation, which leads to the negative financial behavior of directors. Chen Donghua et al. (2005) [4] pointed out that the management and pumping control led to the on-the-job consumption becoming a substitute source of incentives for SOE executives and that SOEs pay incentives are less efficient than those of private firms. For this phenomenon, Yermack (2006) [9] and Xie Rui and Liu Yinguo (2011) [10] found that the increased agency cost due to on-the-job consumption and moral hazard is not conducive to the increase of enterprise performance. Based on the above theoretical analysis above, we propose the following hypothesis:

Hypothesis 3: Under the background of salary limitation for senior executives of SOEs, when the level of on-the-job consumption of state-owned enterprise executives is higher than that of non-SOEs the negative financial behavior exists.

3 RESEARCH DESIGN

3.1 Sample selection and data sources

This paper selected manufacturing enterprises of Shanghai and Shenzhen A-share listed companies from 2012 to 2016. In order to better test the existence of negative financial behavior of SOEs' executives, non-SOEs samples in manufacturing industry are selected as the reference group. The data mainly comes from the database of Guotai'an service center. Sample selection criteria: (1) eliminate the enterprises with incomplete data; (2) eliminate the enterprises with extreme values.

3.2 Variable definition

We selected the following variables to carry out the research, as shown in Table 1:

Variable Symbol Definition Measurement Within a reasonable range, the growth rate of asset liability ratio (asset liability ratio at is positive, and the enterprise tends to operate with debt, whose the end of the year -Growth rate of financial behavior is positive; if asset liability ratio at asset liability **GRAL** the growth rate of asset liability the beginning of the ratio ratio is negative continuously, the year) / asset liability enterprise management's ratio at the beginning of the year willingness to bear risks is weakened, and its financial behavior tends to be negative.

 TABLE 1
 VARIABLE DEFINITION AND MEASUREMENT

| Interest bearing debt ratio | ID/B | The interest-bearing debt ratio can show the debt generated by the external financing needs of enterprises and can accurately reflect the willingness of enterprise managers to take risks. | (Short term loans + non current liabilities due within one year + long term loans + bonds payable) / total assets |
|-----------------------------------|------|---|--|
| Growth rate of sales | GRS | The level of sales largely determines the efficiency of the enterprise, and the change of quarterly sales growth rate represents the efficiency of the enterprise in this quarter. | (current sales revenue - previous sales revenue) / previous sales revenue |
| on-the-job consumption | OJC | on-the-job consumption is the substitute of monetary incentives for the managers of SOEs under the condition of salary control | management expenses - executive compensation - amortization of intangible assets |
| on-the-job consumption rate | OJCR | Proportion of on-the-job consumption in income from main business | on-the- jobconsumption / main business income |

4 EMPIRICAL RESULTS AND ANALYSIS

4.1 Corporate financial leverage

4.1.1 Descriptive statistics

Table 2 shows the changes in the growth rate of asset liability ratio of state-owned and non-state-owned enterprises in the manufacturing industry from 2012 to 2016. It is easy to see that We found that the growth rate of asset liability ratio of SOEs has been negative in the past five years, except in 2015, which has been lower than that of non-SOEs. Growth rate of asset liability ratio of non-SOEs shows a decreasing trend, except for a slight increase in 2016. It indicates that the asset liability rate of SOEs has decreased year by year, and the reduction rate is greater than that of non-SOEs, implying that the management of SOEs has weakened their willingness to borrow money and has intentionally began to avoid risks. The financial behavior has also been negative. Therefore, it is preliminarily proved that hypothesis 1 is true.

TABLE 2 THE GRAL OF MANUFACTURING ENTERPRISES IN 2012-2016

| GRAL | 2013 | 2014 | 2015 | 2016 |
|----------|--------|--------|--------|--------|
| SOEs | -0.90% | -0.02% | -3.10% | -2.80% |
| non-SOEs | 6.80% | 1.90% | -4.10% | -2.30% |

4.1.2 Independent-samples T-test

To test whether there is a significant difference between state-owned and non-state-owned enterprises in terms of the average growth rate of leverage degree, we used two independent samples of the growth rate of interest bearing liabilities of manufacturing SOEs and non-SOEs

for t-test. Results are shown in Table 3. In the case of SIG < 0.05, t = 8.996, P = 0.000 < 0.05. Therefore, the difference of leverage growth rate between state-owned and non-state-owned enterprises is significant, which supports the above conclusion.

Table 3 results of independent sample T-test on growth rate of ID/B

| Panel A: Group Statistics | | | | | | | | | |
|-------------------------------------|--------------------------------|----------------|-------------|----------------|----------------|------------------|--|--|--|
| | N | Me | ean | Sd | Standard error | | | | |
| non-SOEs SOEs | 3090 1727 | .20 -0.0 | 070 0434 | 1.114 0.419 | | 0.020 0.010 | | | |
| | Panel B: Group difference test | | | | | | | | |
| | Leven | ne test T-test | | | | | | | |
| | F | Sig | t | df | | Sig.(bilateral) | | | |
| Suppose the variances are equal | 167.601 | 0.000 | 8.996 | 96 48 | | 0.000 | | | |
| Suppose the variances are not equal | | | 11.168 | 4350 | 0.543 | 0.000 | | | |

4.2 Quarterly change of sales revenue

4.2.1 Descriptive statistics

According to the connotation of the growth rate of sales, the samples are selected as whose growth rate of sales in the first three quarters is greater than the average value, which means that the enterprise is likely to exceed the target in the first three quarters. After excluding the extreme values, the mean values of sales revenue growth rates for the first three quarters and the mean values of sales revenue growth rates for the fourth quarter were calculated in the total sample, in the sample of SOEs, and in the sample of non-SOEs, respectively. Table 4 shows the results of the descriptive statistics.

According to panel A in Table 4, during 2012 - 2016, the average growth rate of sales of the whole manufacturing enterprises in the first three quarters and the fourth quarter showed a gradual growth trend. 2015-2016 is the highest, of which the average growth rate of sales revenue in the first three quarters is 56.60%, and the average growth rate of sales revenue in the fourth quarter is 51.71%. The growth rate of sales revenue in the first three quarters has been greater than that in the fourth quarter, indicating that some manufacturing enterprises have negative financial behavior in the fourth quarter when the enterprise benefit target in the first three quarters has been overfulfilled, leading to negative financial behavior in the fourth quarter. B and C panel distinguishes Chinese SOEs from non-SOEs in manufacturing industry, which helps to compare the two indicators. Panel B shows that there is a decreasing trend in the growth rate of sales of SOEs, which rebounded from 2015 to 2016. Compared with the first three quarters and the fourth quarter, the growth rate of sales in the fourth quarter was significantly lower, indicating that the operating efficiency of SOEs decreased in the fourth quarter, and the management had negative behavior. In panel C, the growth rate of sales of non-SOEs in the first three quarters and the fourth quarter increased year on year, and the growth rate of sales in the

fourth quarter was relatively low in all years except 2013-2014 when the growth rate of sales in the fourth quarter was higher than the growth rate of sales revenue in the first three quarters.

 TABLE 4
 DESCRIPTIVE STATISTICS OF SALES GROWTH RATE

| Panel A: Change of quarterly GRSR of manufacturing industry from 2012 to 2016 | | | | | | | | |
|---|------------------|--------------------|------------------|-----------------|--|--|--|--|
| GRS | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | | | | |
| The first three quarters | 48.53% | 44.65% | 49.64% | 56.60% | | | | |
| The forth quarter | 39.88% | 41.50% | 46.40% | 51.71% | | | | |
| Panel B: Change | of quarterly GRS | of the state-owned | manufacturing en | iterprises from | | | | |
| | | 2012 to 2016 | | | | | | |
| GRS | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | | | | |
| The first three quarters | 62.15% | 57.84% | 43.98% | 55.39% | | | | |
| The forth quarter | 47.03% | 37.61% | 35.16% | 46.29% | | | | |
| Panel C: Change | of quarterly GRS | of the non-state-o | wned manufacturi | ing enterprises | | | | |
| | fre | om 2012 to 2016 | | | | | | |
| GRS | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | | | | |
| The first three quarters | 42.94% | 40.74% | 51.22% | 56.89% | | | | |
| The forth quarter | 36.94% | 42.66% | 49.53% | 53.05% | | | | |

4.2.2 Independent-samples T-test

In order to test the significance of the difference between SOEs and non-SOEs in terms of the variation in sales growth rate (the average of the first three quarters of sales growth rate - the fourth quarter of sales growth rate). We used the difference between the sales growth rate of state-owned and that of non-SOEs in manufacturing industry for T-test. Result is shown in Table 5. In the case, SIG > 0.05, t = -2.232, P = 0.026 < 0.05. Therefore, it supports the above conclusion that the difference between SOEs and non-SOEs is significant, indicating the above conclusion is true.

 $\textbf{TABLE 5} \ \ \textbf{Results of independent sample T-test on the change of quarterly GRS}$

| Panel A: Group Statistics | | | | | | | | | |
|------------------------------------|--------------------------------|--------|---------|----------------------|-----|----------------|--------------------|--|--|
| | N | Mean | | Sd | | Standard error | | | |
| non-SOEs | 1476 | 0.0223 | 3 0.922 | | 922 | 0.024 | | | |
| SOEs | 447 | 0.137 | 1.039 | |)39 | | 0.050 | | |
| | Panel B: Group difference test | | | | | | | | |
| | Levene test | | | T-test | | | | | |
| | F | Sig | t df | | | | Sig.(bilateral)l) | | |
| Suppose the variances are equal | 1.284 | 0.257 | - | -2.232 1921 0.026 | | | 0.026 | | |
| Suppose the variances are no equal | | | - | -2.094 672.515 0.037 | | | 0.037 | | |

4.3 The level of on-the-job consumption

4.3.1 The level of on-the-job consumption

Table 6 represents the descriptive statistical results of in-service consumption rate. It can be seen from panel A that, in the manufacturing industry, the on-the-job consumption rate of state-owned enterprise executives increased year by year from 2012 to 2016. Though there is a small decline in 2016, the overall value increased year by year. The changes of the maximum and minimum of the on-the-job consumption rate of SOEs are inconsistent. The minimum rate kept unchanged in the past five years, floating around 0.008. On the contrary, the maximum one increased every year and its growth rate reached 273.98%, rising from 0.788 in 2012 to 2.947 in 2015. It shows the seriousness of the on-the-job consumption problem of SOEs' executives in the past five years. Panel B compares the average of in-service consumption rate of state-owned and non-SOEs in recent five years. It can be seen from the data that the average on-the-job consumption rate of SOEs is always higher than that of non-SOEs in recent five years, which indicates that the on-the-job consumption level of state-owned enterprise executives has produced negative financial behavior.

| Panel A: | OJCR of the state | e-owned manufa | cturing enter | prises from 201 | 2 - 2016 |
|----------|-------------------|-----------------|---------------|-----------------|----------|
| OJCR | 2012 | 2013 | 2014 | 2015 | 2016 |
| Mean | 0.081 | 0.082 | 0.087 | 0.102 | 0.094 |
| Sd | 0.064 | 0.063 | 0.081 | 0.162 | 0.072 |
| Min | 0.01 | 0.008 | 0.008 | 0.008 | 0.007 |
| Max | 0.788 | 0.708 | 1.194 | 2.947 | 0.658 |
| | Panel B: The | e mean value of | OJCR form 2 | 2012-2016 | |
| | 2012 | 2013 | 2014 | 2015 | 2016 |
| SOEs | 0.081 | 0.082 | 0.087 | 0.102 | 0.094 |
| Non-SOEs | 0.079 | 0.076 | 0.08 | 0.099 | 0.091 |

 TABLE 6
 DESCRIPTIVE STATISTICS OF ON-THE-JOB CONSUMPTION RATE

4.3.2 Independent-samples T-test

In order to test whether there is a significant difference between state-owned and non-state-owned enterprises in terms of the on-the-job consumption level, we made T-test by using two independent samples of the on-the-job consumption rate of those enterprises in manufacturing industry. Results as shown in Table 7, in the case of SIG < 0.05, t = -1.469, P = 0.142 > 0.05, the result of in-service consumption difference between SOEs and non-SOEs is not significant. The reason may lie in anti-corruption actions that has been intensified since 2013. Although the average on-the-job consumption rate of SOEs is higher than that of non-SOEs, there is little difference between the two. The average difference in the past five years is about 0.05, which is insignificant. However, from the absolute results, the level of on-the-job consumption of SOEs' executives is higher than that of non-SOEs.

Table 7 Results of independent sample T-test on the on-the-job consumption

| Panel A: Group Statistics | | | | | | | | | |
|------------------------------------|--------------------------------|-----|----------------|--------|----------------|---------|-----------------|--|--|
| | N | | Mean | | Sd | | Standard error | | |
| non-SOEs SOEs | 5160 2271 | | 0.086 0.089 | | 0.041 0.097 | | 0.001 0.002 | | |
| | Panel B: Group difference test | | | | | | | | |
| | Levene test | | | T-test | | | | | |
| | F Si | | g | t | | df | Sig.(bilateral) | | |
| Suppose the variances are equal | 77.503 | 0.0 | 000 -1.93 | | 37 | 7429 | 0.053 | | |
| Suppose the variances are no equal | | | | -1.46 | 59 | 2638.85 | 0.142 | | |

5 CONCLUSION

By analyzing theories and empirical data of China's A-share manufacturing listed companies from 2012 to 2016, this paper studies the indicators of asset liability ratio and sales revenue and management expenses. The paper concludes that: (1) Under the background of SOEs' senior executives' salary limitation, the financial leverage of SOEs decreases year by year, and its decline is greater than that of non-SOEs, indicating that SOEs are not willing to raise debt to operate; (2) The standard deviation of quarterly sales of SOEs is deviating, with a significant drop in sales revenue in the fourth quarter despite the over-achievement of the first three quarters. Obvious inaction and/or intentionally withholding efforts indicates that, after the salary restriction, executives in SOEs only sought to meet the target and unwilling to pursue better performance; (3) The on-the-job consumption rate of executives in SOEs is slightly higher than that of non-SOEs, suggesting that, after the government's salary limitation, directors use on-the-job consumption as a substitute for monetary incentives. Besides, though the on-the-job consumption phenomenon is widespread, the difference is small. One possible explanation is the pressure coming from anti-corruption action made by the government, which has led to a restraint in on-the-job consumption by executives.

The study has several implications. While salary controls can help achieve social equity, they can also lead to internal inequities within companies, such as financially negative behaviour of executives. Therefore, it is necessary to improve policies related to salary restriction in the future. Firstly, the regulation of SOEs' executives' remuneration can be gradually relaxed. Secondly, the government should establish a market for professional managers. The selection of SOE executives needs to rely on a market of professional managers in order to reduce the negative sentiment of SOE executives caused by government salary restrictions and to mitigate the negative consequences of the salary restriction policy.

Acknowledgment: We are grateful to anonymous reviewers whose valuable suggestions have led to a considerable improvement in the organization and presentation of this manuscript.

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