Free cash flow and position-related consumption of senior management-based on empirical data of state-owned listed companies

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Abstract. The ultimate owner of the state-owned listed companies is the State, but the State cannot directly participate in the supervision of the managers of the company, so the owner may be "absent" in many state-owned listed companies, leading to excessive position-related consumption of the company's senior management by using the resources of the company in order to seek personal benefits. When the free cash flow is abundant, the senior management will more intend to put it into their own position-related consumption, resulting in higher agency costs. This article collects the data of A-share state-owned listed companies from 2009 to 2015 as research sample, and empirically studies the impact of free cash flow and the "Eight Regulations" on the position-related consumption of senior management. According to the research, excessive free cash flow will promote the position-related consumption of senior management of state-owned listed companies, resulting in higher agency costs; and in case the enterprise has certain free cash flow, the promulgation of the "Eight Regulations" has a restraining effect on the position-related consumption of senior management in the state-owned listed companies.

1. Introduction

Senior management’s position-related consumption behavior is a reflection of agency cost caused by free cash flow, which has drawn wide concern. For a long time, the problem of position-related consumption of senior management in Chinese enterprises is relatively prominent, the ultimate owner of state-owned listed companies is the State, but the State cannot directly participate in the supervision of managers of the enterprises, and the owner’s "absence" problem is serious. Due to the lack of supervision over real shareholders, serious agency problems exist in state-owned enterprises. At the same time, because of the "pay ceiling" policy, it is the good choice for the senior management of state-owned enterprises to make use of the resources of the enterprises for personal gains, and excessive position-related consumption naturally becomes a shortcut for them to gain benefits.

State-owned enterprises play an important role in the national economy and people's lives. However, along with the continuous development of economy, the drawbacks of state-owned enterprises are gradually exposed, the problem of position-related consumption of senior management in state-owned enterprises has been relatively prominent, the "sky-high wine price", "sky-high hospitality price" event and so on, which have been widely concerned by all sectors of society, reflect the problem of position-related consumption of senior
management. The original intention of position-related consumption is to encourage the senior management of state-owned enterprises to work hard, create more value for the enterprises and maximize the interests of shareholders. And from the high level of position-related consumption, it can be seen that the actual results are contrary to the original intention. The position-related consumption of senior management in state-owned enterprises not only increases the cost of the enterprise, damages the interests of shareholders, but also causes a great loss to the image of the enterprise.

For this purpose, relevant government departments have issued a series of management measures to control the increasingly serious problem of position-related consumption of senior management in state-owned enterprises, among which, the most influential measure is the promulgation of the "Eight Regulations". After the promulgation of the "Eight Regulations," the Political Bureau of the CPC Central Committee started from its own, forming a good atmosphere of top-down supervision. Both the leaders and the grass-roots officers have really felt the tremendous changes during this period.

Based on the empirical analysis of China's A-share state-owned listed companies in Shanghai and Shenzhen from 2009 to 2015, this article discusses the impact of free cash flow and government regulatory policies on the position-related consumption of senior management in state-owned listed companies, with certain characteristics and innovation, which is mainly reflected in the following aspects: 1. This article discusses the impact of free cash flow on position-related consumption through empirical analysis, enriches the research sample on the correlation between free cash flow and position-related consumption, and makes more research results on the level of position-related consumption. 2. In view of the position-related consumption of senior management is hidden and difficult to quantify, quantitative analysis is difficult. This article introduces the cost behavior theory into the study of position-related consumption of senior management, divides the administrative expenses into fixed cost and variable cost, and takes the administrative expenses after deducting the amortized intangible assets which are easy to quantify in the fixed cost as the quantitative description of the position-related consumption. 3. This article studies the impact of "Eight Regulations" on the position-related consumption of senior management in state-owned listed companies under the condition that enterprise has certain fixed free cash flow, which is innovative and enriches the research sample with respect to the impact of government policies on position-related consumption, especially provides microscopic evidence on the impact of "Eight Regulations" on position-related consumption.

2. Literature Review and Hypothesis Proposal

According to agency theory, senior management and shareholders' goals are not always the same, senior management behave for their own-interest, which means, they maximize their own interests by sacrificing the interests of shareholders (Jensen, Meckling, 1976), position-related consumption is a typical case of agency cost. Position-related consumption has caused negative economic consequences to enterprises, which is a kind of agency conflict between managers and shareholders, and will bring about the reduction of enterprise value. Some cases have shown that the agency cost of position-related consumption is much greater than the benefit it brings (Hart, 2001). According to Fama (1980), certain preconditions exist when the position-related consumption becomes the agency cost between the owner and the manager. Only when the salary adjustment of the manager cannot make up for the company resources consumed by position-related consumption, position-related consumption will become a kind of agency cost, and position-related consumption will also become the opportunistic behavior of the senior management in enterprise. The existence of free cash flow increases the possibility of position-related consumption by senior management. Jianping HU, Shengdao GAN and Li WANG (2008) found that the free cash flow of enterprises has a positive correlation with discretionary income and expenditure. Because of the inconsistency of objectives and information asymmetry, there are different opinions between owners and managers in term of the use of free cash flow, while the management contract is not perfect and the manager market is not mature in China, so the senior management of enterprises tend to choose self-motivation through position-related consumption (Yinguo LIU and Chen ZHANG, 2012). By means of restricting free cash flow of enterprise, increasing debt financing (Jensen and Meckling, 1976) and cash dividend payment (Agrawal and Jayaraman, 1994), the cash flow that managers can control is reduced, the control power of managers is reduced, the agency cost between owners and managers is reduced, and the business performance is improved. Based on this, hypothesis 1 is proposed:

Hypothesis 1: Excessive free cash flow will encourage position-related consumption by senior management of state-owned listed companies, resulting in higher agency costs, free cash flow is positively correlated to position-related consumption level.

On December 4, 2012, the Political Conference of the CPC Central Committee deliberated and adopted eight regulations on improving work style and maintaining close ties with the people. These "Eight Regulations" put
forward the requirements of "simplifying reception process", "not arranging banquets", "streamlining conference activities", and "strictly enforcing regulations on work and living treatment such as housing and vehicle equipping", which will inevitably have a certain impact on the behavior of the senior management of state-owned enterprises. Owners of state-owned enterprises are "absent", which makes it difficult for them to monitor and control the senior management effectively. In this case, the promulgation of the "Eight Regulations" of the central government is bound to strengthen the supervision of the senior management and weaken the self-interest behavior of the senior management. Therefore, from the perspective of free cash flow, this article studies the impact of the "Eight Regulations" policy on the position-related consumption of senior management in state-owned enterprises under the condition of certain fixed free cash flow. Based on this, hypothesis 2 is proposed:

Hypothesis 2: Under the condition of certain fixed free cash flow, the promulgation of the "Eight Regulations" has reduced the level of senior management position-related consumption in state-owned listed companies, and government supervision has played a restraining role on senior management’s position-related consumption

3. Research and Design

3.1. Data Source and Sample Selection

In order to verify the hypothesis 1, this article selects the financial data of A-share state-owned listed companies in Shanghai and Shenzhen from 2011 to 2015; In order to verify hypothesis 2, this article selects the financial data of A-share state-owned listed companies in Shanghai and Shenzhen from 2009 to 2015, and selects the sample data for this article. Considering that in 2012, the Political Bureau of the CPC Central Committee deliberated and adopted the "Eight Regulations." Therefore, this article takes the data for a total of seven years as research samples, including data for three years before the promulgation of "Eight Regulations" (2009-2011), on the year of the promulgation (2012), and for three years after the promulgation (2013-2015). The relevant data source involved in this study is the CSMAR database. On the basis of the whole sample collected, the following screening was performed: 1. The samples with missing data are removed. 2. Abnormal samples whose data are obviously not comparable such as negative free cash flow, asset-liability ratio greater than 1 (insolvent), negative position-related consumption level (administrative expenses less than amortization of intangible assets) are removed.

3.2. Selection and Measurement of Variables

3.2.1 Explained variables
Position-related consumption: Based on Ang, Cole, Lin's research method and cost behavior theory, this article uses the difference of administration expenses minus the amortization of intangible assets (fixed cost) to measure the level of senior management’s position-related consumption, and uses the ratio of the difference to the main business income (NPC) to quantitatively describe the level of senior management's position-related consumption, namely:

Position-related consumption level (NPC) = (administration expenses-amortization of intangible assets)/main business income

3.2.2 Explanatory variables
Free cash flow: Based on the calculation methods [31] of Standard & Poor's, Professor Copeland (1990), Lehn (1989) and other scholars, this article adopts the following calculation methods to calculate the absolute value of free cash flow:

Free cash flow = (net profit + interest expense + non-cash expenditure)-operating capital supplement-capital expenditure

At the same time, in order to eliminate the influence of enterprise size and make the enterprises of different scales comparable, the free cash flow intensity index is selected to measure the free cash flow level (FCF).

FCF=Free cash flow/total assets of the enterprise
3.2.3 Control variables
Based on the research methods of Yinguo LIU, Chen ZHANG (2012), Rong YANG (2016) and other scholars, this article introduces management pay (MP), capital structure (LEV), enterprise size (SIZE) as control variables.

The specific calculation method is as shown in Table 1.

Table 1. Variable Connotation Summary

| Variable abbreviation | Variable name | Variable connotation |
|-----------------------|---------------|----------------------|
| NPC                  | Position-related consumption level | (Administration expenses-amortization of intangible assets)/main business income |
| FCF                  | Free cash flow | Free cash flow/total assets at year-end |
| MP                   | Management pay | Annual total salary of senior management such as director or supervisor /main business income |
| LEV                  | Capital structure | Total liabilities at year-end/total assets at year-end |
| SIZE                 | Enterprise size | Natural logarithm of total assets at year-end |

3.2.4 Model construction
According to the above variables, based on hypothesis 1, we construct the following multiple regression model to check the relationship between the free cash flow (FCF) of state-owned enterprises and the level of position-related consumption (NPC):

\[ NPC = \beta_0 + \beta_1 FCF + \beta_2 MP + \beta_3 LEV + \beta_4 SIZE + \epsilon \]

To verify hypothesis 2, that is, to verify the impact of the "Eight Regulations" on the position-related consumption level of senior management in state-owned listed companies under the condition that the free cash flow remains unchanged, this article uses the ratio of the absolute number of position-related consumption level to the free cash flow of the enterprise to measure the level of position-related consumption of the senior management in the state-owned listed companies, which indicates how much will be used to increase the position-related consumption of the senior management in case of increase of one yuan of free cash flow of the enterprises. The details are as follows:

\[ NPC/FCF = \text{Absolute value of position-related consumption /free cash flow} \]
\[ = \text{(administration expenses-amortization of intangible assets)/free cash flow} \]

4. Empirical Analysis

4.1 An empirical analysis of free cash flow and senior management’s position-related consumption

4.1.1 Descriptive statistics
The descriptive statistics of the whole samples is as shown in Table 2. The average value of the level of position-related consumption (NPC) is 0.0763, showing great difference between the two levels. The average value of free cash flow (FCF) is 0.0594, showing significant difference between the two levels. The average value of management pay (MP) is 0.0022, the lowest value is 0, the highest value is 0.0989 (at the same time, its position-related consumption level is also the highest); Average value of capital structure (LEV) is 0.5204, in which: The number of enterprises with asset-liability ratio greater than 0.5 accounted for 54.54%, and the number of enterprises with asset-liability ratio between 0 and 0.5 accounted for 45.46%. The average value of enterprise size (SIZE) is 22.6334. After logarithmic processing, the gap of enterprise size is getting narrowed.
Table 2. Descriptive statistics of main variables

| Variable name                  | Variable abbreviation | Quantity | Minimum | Maximum | Average value | Standard deviation |
|-------------------------------|-----------------------|----------|---------|---------|---------------|--------------------|
| Position-related consumption level | NPC                 | 2719     | 0.0018  | 0.7934  | 0.0763        | 0.0615             |
| Free cash flow               | FCF                  | 2719     | 2.73E-06| 1.3504  | 0.0594        | 0.0615             |
| Management pay               | MP                   | 2719     | 0.0000  | 0.0989  | 0.0022        | 0.0040             |
| Capital structure            | LEV                  | 2719     | 0.0103  | 0.9961  | 0.5204        | 0.2031             |
| Enterprise scale             | SIZE                 | 2719     | 18.3701 | 28.4820 | 22.6334       | 1.3747             |

4.1.2 Correlation analysis

Because of the introduction of free cash flow (FCF), management pay (MP), capital structure (LEV), and other variables, there may be multiple collinearity in explaining the dependent variable position-related consumption level (NPC). Pearson correlation analysis is used to test the correlation between the explanatory variables, and Cohen's correlation coefficient and correlation criterion in the social science field are referred to. Pearson correlation analysis was performed on the model constructed in this article, and the results are shown in Table 3:

| NPC      | FCF | MP | LEV       | SIZE     |
|----------|-----|----|-----------|----------|
| NPC      |     |    |           |          |
| FCF      | .039*|    |           |          |
| Significance (two-sided) | .042|    |           |          |
| MP       | .533**|   | .031      | 1        |
| Significance (two-sided) | .000|   | .105      |          |
| LEV      | -.212**|  .079**| -.220** | 1        |
| Significance (two-sided) | .000|   | .000      |          |
| SIZE     | -.320**| .018      | -.391** | .333**   | 1        |
| Significance (two-sided) | .000|   | .351      | .000     | .000    |

*. Significant correlation at level of 0.05 (two-sided). **. Significant correlation at level of 0.01 (two-sided).

The Pearson coefficient and absolute value of each variable are mostly less than 0.5, which indicates that there is no highly collinearity problem between the main variables selected in this model. Therefore, the established regression model will not cause multicollinearity problem. It can be seen from the table that the free cash flow (FCF) is significantly and positively correlated with the position-related consumption (NPC) at a level of 5%, which can verify hypothesis 1 to some extent.

4.1.3 Regression analysis

This article makes a regression analysis on the relationship between the free cash flow (FCF) of the state-owned listed companies and the level of position-related consumption (NPC) of senior management. According to model 1, the following regression results can be obtained:


Table 4. Regression results of free cash flow and senior management’s position-related consumption of state-owned listed companies

| Variable                  | B  | SE  | P         |
|---------------------------|----|-----|-----------|
| Intercept                 | 0.1832 | 0.0180 | 7.22E-24 |
| Free cash flow (FCF)      | 0.0322 | 0.0161 | 0.0454    |
| Management pay (MP)       | 7.2096 | 0.2672 | 2.94E-142 |
| Capital structure (LEV)   | -0.0221 | 0.0052 | 2.01E-05 |
| Enterprise size (SIZE)    | -0.0050 | 0.0008 | 7.34E-10 |
| P                         | 3.97E-212 |
| R²                        | 0.3045 |
| Adjustment R²             | 0.3035 |

In Table 6, the free cash flow (FCF) coefficient is positive (B=0.0322) and statistically significant at 0.05 level (P=0.0454), which indicates that the state-owned enterprises will stimulate the senior management to use the enterprise funds for position-related consumption when the enterprise has a higher level of free cash flow, which fully proves the free cash flow hypothesis. Excessive free cash flow increases the agency costs of enterprises and encourages the position-related consumption of senior management. Therefore, the results support hypothesis 1 again.

4.1.4 Robustness test

The absolute value index is used to replace the relative value index in the model, the absolute values of position-related consumption (NPC), free cash flow (FCF) and management pay (MP) are used to replace the previous relative values. The regression model is still statistically significant at 0.05 level (P=0), and the free cash flow coefficient is still positive (B=0.6372), and statistically significant at 0.05 level (P=0). The regression results also support the main conclusions of this article.

At the same time, all variables are winsorized by 0.5% in this article. The regression model is still statistically significant at 0.05 level (P=0), free cash flow coefficient is still positive (B=0.0316), and statistically significant at 0.1 level (P=0.075). The regression results also support the main conclusions of this article.

4.2. An empirical analysis of senior management’ position-related consumption in state-owned listed companies before and after the "Eight Regulations" were promulgated.

4.2.1 Descriptive statistics

Table 7 shows the number of samples by year. It can be seen from the table that there were 1,405 samples before the promulgation of the Eight Regulations (2009-2011), 550 samples in 2012 when the Eight Regulations were promulgated, and 1,660 samples after the promulgation of the Eight Regulations (2013-2015).

Table 5. Statistical Table of Sample Quantity by Year

| Time   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | Total |
|--------|------|------|------|------|------|------|------|-------|
| Number of enterprises | 425  | 454  | 526  | 550  | 547  | 568  | 545  | 3615  |

4.2.2 Analysis of the position-related consumption of senior management before and after the promulgation of "Eight Regulations"

Through the analysis of the position-related consumption data of senior management in state-owned listed companies in the three periods: before the promulgation of the Eight Regulations (2009-2011), in the year of promulgation (2012) and after the promulgation of the Eight Regulations (2013-2015), as shown in Table 8:

The consumption level after the promulgation of the "Eight Regulations" is significantly lower than that before the promulgation, and the government policies play a positive role in curbing the position-related consumption of senior management in company.
Table 6. Descriptive statistics of position-related consumption

| Time  | Quantity | Minimum | Maximum | Average value | Standard deviation |
|-------|----------|---------|---------|--------------|--------------------|
| 2009  | 425      | 0.0024  | 409.5300| 5.2794       | 25.0482            |
| 2010  | 454      | 0.0122  | 984.3778| 5.6401       | 48.2410            |
| 2011  | 526      | 0.0060  | 1104.1548| 5.6879     | 66.3271            |
| 2012  | 550      | 0.0041  | 157.6844| 2.3330       | 8.2853             |
| 2013  | 547      | 0.0039  | 353.4061| 3.7630       | 17.9872            |
| 2014  | 568      | 0.0140  | 144.6882| 3.2056       | 10.7969            |
| 2015  | 546      | 0.0070  | 248.7918| 3.3660       | 13.4666            |

As shown in Table 8, the average value of the NPC/FCF ratio reached a maximum of 5.6879 in 2011, and the standard deviation thereof reached a maximum of 66.3271; In 2012, the minimum value was 2.3330 and the standard deviation was 8.2853. The average value and standard deviation of NPC/FCF ratio for each year are shown in Figure 1:

![Figure 1: Average value and standard deviation of NPC/FCF ratio](image)

The average value of NPC/FCF ratio for the three years following the promulgation of the Eight Regulations (2013-2015) was generally lower than that for the three years before the promulgation (2009-2011). In the year of promulgation (2012), due to the timeliness of the policy, it has a strong restraining effect on position-related consumption, so the decline trend is obvious. The average value of NPC/FCF ratio for three years after the promulgation of the Eight Regulations was 3.4419, compared with 5.5489 before the promulgation, marking a decrease of 37.97%. Therefore, under the condition that free cash flow remains unchanged, the level of position-related consumption of senior management in state-owned listed companies is obviously lower than that before the promulgation of the "Eight Regulations", and the government policy has a positive effect on restraining position-related consumption of senior management in state-owned listed companies.

At the same time, after the promulgation of the "Eight Regulations," the standard deviation of NPC/FCF ratio also decreased obviously, the discreteness of the sample enterprises' position-related consumption level was lower, and the range of NPC/FCF ratio was lower than that before the promulgation, indicating that the randomness of position-related consumption of senior management in state-owned listed companies was obviously weakened, and the management tended to treat position-related consumption more cautiously in order to control unnecessary position-related consumption expenditure. To sum up, the results of this study support the hypothesis 2. Under the condition that there is certain fixed free cash flow, the promulgation of "Eight Regulations" reduces the level of position-related consumption of senior management in state-owned listed companies, and government regulation plays an inhibitory role on senior management’s position-related consumption.
5. Conclusions and Suggestions

Through the empirical study of state-owned listed companies from 2009 to 2015, this article discusses the impact of free cash flow and "Eight Regulations" on position-related consumption of senior management, and draws the following main conclusions:

(1) The free cash flow of state-owned listed companies is positively correlated to the level of position-related consumption of senior management. Therefore, in order to control the level of position-related consumption of senior management in state-owned enterprise, it is necessary to keep the free cash flow within a reasonable level, so as to ensure that the interests of the owners of enterprises will not be harmed.

(2) The promulgation of the "Eight Regulations" has restrained the level of position-related consumption of senior management in state-owned enterprise. Upon the promulgation of the "Eight Regulations", the level of position-related consumption of senior management in state-owned enterprise has shown a significant decrease trend, and the government's regulatory policy has played a better role in restraining such consumption.

The author believes that in order to control the consumption behavior of senior management reasonably, it is allowed to control the free cash flow (internal) and strengthen government supervision (external). For example: Control free cash flow rationally through cash dividend and stock repurchase; Control the capital structure reasonably through moderate debt, and therefore, the tax shield effect can also be obtained. Strengthen the government supervision; Improve the ability of the SASAC in performing its duties and strengthen the supervision of the owners; Strengthen the level of information disclosure.

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