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Constructing an Economic Responsibility Audit Evaluation System for State-Owned Enterprise Heads: Indicator Selection and Improvement Suggestions

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Abstract: ***As China continues to deepen state-owned enterprise (SOE) reform, strengthening SOE management, ensuring the orderly progress of anti-corruption work, and promoting the steady development of SOEs have become increasingly important. Accordingly, establishing and improving an economic responsibility audit evaluation system for SOE heads is particularly significant. China's economic responsibility audit system for SOE heads has been in place for a considerable period. To provide a stronger theoretical basis for this system, this paper conducts an in-depth analysis of the current status of economic responsibility audits of SOE heads in China. On this basis, it selects key economic responsibility indicators to construct an evaluation system that can reasonably reflect the performance of SOE heads' responsibilities. The paper further proposes feasible suggestions for improving the economic responsibility audit of SOEs, so as to give full play to the supervisory role of government audit and promote the faster and better development of SOEs. The study aims to contribute to the refinement of audit evaluation practices and to support more effective accountability and governance in the SOE sector.***

Keywords: State-owned enterprises, Economic responsibility audit, Evaluation system, Government audit**.**

1. Introduction

Economic responsibility audit system is a unique form of audit in China. After 30 years of practice in China, the economic responsibility audit of the person in charge of state-owned enterprises has been continuously improved with the continuous development of China's market economy and the reform of state-owned enterprises. At present, the audit objects of China's economic responsibility audit are mainly individuals, the type is mainly outgoing audit, and the number of audit shows a small growth trend [1]. Although economic responsibility audit has played an important role in promoting the development of China's state-owned enterprises and preventing corruption, the evaluation of economic responsibility audit still has some defects to be further improved. At the third plenary session of the 19th central committee, China further emphasized the spirit of deepening the reform of state-owned enterprises, which shows that the economic responsibility audit of heads of state-owned enterprises will face more and more challenges in the new situation.

2. Current Problems in Economic Responsibility Audit of State-owned Enterprises

2.1 Economic Responsibilities are Difficult to be Divided and Defined

The definition of economic responsibility involves the determination of economic responsibility bearers, the division of collective responsibility and individual responsibility, objective responsibility and subjective responsibility, current responsibility and former responsibility[2].

First, the current audit of the heads of state-owned enterprises is mostly the audit of the legal representatives of state-owned enterprises, namely the chairman of the board. However, the responsibilities of other leaders, such as the general manager, the chairman of a subsidiary company and the leader in charge of a department, often overlap with the responsibilities of the chairman in the actual business activities of the enterprise, which makes it difficult to identify the responsibility bearers. Second, state-owned enterprises are easy to be affected by objective factors such as national policies and government intervention, so problems may be caused by objective factors or subjective errors of the person in charge. However, in the actual definition, the allocation of subjective and objective responsibilities is often inaccurate [3]. Third, although the minority is subordinate to the majority principle when state-owned enterprises are faced with major decisions, in fact, few other responsible persons raise objections to the chairman's decisions. However, in fact, the chairman of the board of directors accounts for a large proportion of decision-making, so it is difficult to distinguish individual behavior from collective behavior in the audit process, which may easily lead to the person in charge to bear less responsibility. Fourth, the business affairs of the enterprise are based on the premise of continuous operation. Most of the economic responsibility audit in China is the audit of the outgoing responsible person, so it is not possible to accurately determine whether the former responsible person or the current responsible person is responsible according to the time. For example, for problems left over from the previous person in charge, the current person in charge maintains the existing situation and fails to timely solve and rectify the problems.

2.2 First off then Audited, Lack of Timeliness

At present, the main form of economic responsibility audit for

the head of state-owned enterprises in China is still the outgoing economic responsibility audit. Usually before the audit, the appointment and removal of the responsible person, rewards and punishments and other documents have been issued, and some audit work of the audit department has become formalism. Thus it can be seen that the economic responsibility audit of the responsible person of state-owned enterprises in China focuses on the post-audit, and there is a serious lag, so it is difficult to evaluate the performance of the responsible person's responsibilities in a fair and objective manner during his/her tenure. Therefore, it can not provide the basis for the appointment of the responsible person or the reward and punishment, which makes the audit evaluation system lose its significance. In addition, first off then audited ,the responsibility definition of the responsible person and the result of performance evaluation will be distorted to a certain extent, which affects the supervision function of economic responsibility audit to a great extent.

2.3 Evaluation Indicators are not Unified and Comprehensive

There is no standard and clear standard for the management of the economic responsibility of the heads of state-owned enterprises in China, no laws and regulations to define and quantify the economic indicators for the assessment of leading cadres, and no corresponding targeted responsibility system[4]. At the same time, most state-owned enterprises in China are large in scale, complex in structure and densely staffed, so the internal management of state-owned enterprises is relatively complex. The inconsistency of indicators and the complex internal situation of enterprises bring great difficulties to the economic responsibility audit work of the heads of state-owned enterprises. In addition to the inconsistent indicators, most of the indicators selected by the former economic responsibility audit cannot fully reflect the economic responsibility of the person in charge, and the indicators selected tend to be financial indicators as the main body. Although the Detailed Rules for the Implementation of the Provisions on Auditing the Economic Responsibility of Major Leading Cadres of the Party and Government and Leading Personnel of State-owned Enterprises were promulgated in 2014, the audit indicators began to be more diversified, most of the economic responsibility audit indicator systems are still not comprehensive.

2.4 Economic Responsibility Audit Report Needs to be Improved

In the economic audit report of our country, most of the space is the explanation of the performance of the negative economic responsibility, and the lack of the explanation of the performance of the positive economic responsibility. Among them, the negative economic responsibility refers to the responsibility that the person in charge of the enterprise needs to remedy after the personal behavior of the person in charge of the enterprise produces harmful consequences to the enterprise or society; positive economic responsibility refers to requiring the person in charge of the enterprise to carry out positive behaviors to produce beneficial results for the enterprise or the society, or to prevent the occurrence of adverse results. When making the economic responsibility audit report, it is necessary to comprehensively explain the performance of the economic responsibility of the heads of state-owned enterprises in the report. On the basis of maintaining the existing detailed negative economic responsibility evaluation, the proportion of positive economic responsibility performance evaluation should be continuously increased. Only in this way can comprehensive, profound, specific and valuable economic responsibility audit report be obtained, which can provide a practical basis for anti-corruption work and the promotion mechanism of leading cadres in state-owned enterprises.

3. Construction of Audit Evaluation System of Economic Responsibility of State-owned Enterprises

3.1 Index Selection and Classification

The key part of economic responsibility audit is the construction of audit evaluation system. According to the existing relevant data, this paper USES analytic hierarchy process (ahp) as the evaluation method to divide the main economic responsibility of the person in charge of state-owned enterprises into management responsibility, social responsibility, legal responsibility and financial responsibility [5-7]. In order to further quantitatively evaluate the performance of the responsibilities of the heads of state-owned enterprises, 16 specific qualitative and quantitative indicators were selected according to the main economic responsibilities. The specific indicator division is shown in Table 1.

Table 1: Audit evaluation system of economic responsibility of heads of state-owned enterprises

Target Layer(M)	*Rule Layer(B)*	*Index Layer(C)*
Economic Responsibility Audit and Evaluation of Heads of State-Owned Enterprises	Management Responsibility (B_1)	Feasibility of development plan (C_1)
		Internal supervision and division of rights and responsibilities (C_2)
		Business process rationality (C_3)
	Social Responsibility (B_2)	Employee satisfaction (C_4)
		Provide job growth (C_5)
		Proportion of r&d investment (C_6)
		Proportion of investment in environmental governance (C_7)
	Legal Responsibility (B_3)	Revenue legal compliance rate (C_8)
		Policy implementation (C_9)
		The legal compliance rate of decision making (C_{10})
	Financial Responsibility (B_4)	Return on equity (C_{11})
		Accounting truth rate (C_{12})
		Market share (C_{13})
		Total asset turnover (C_{14})
		Net profit completion rate (C_{15})
		Economic value added (C_{16})

First, the indicators reflecting management responsibility are the feasibility of development planning, internal supervision and division of rights and responsibilities, and the rationality of business process. These three indicators are closely related to the internal control of enterprises and can fully reflect the quality of enterprise management. Second, the indicators of

social responsibility include employee satisfaction, job growth rate, proportion of investment in r&d and proportion of investment in environmental governance, which reflect the contribution of an enterprise to social economy, science and technology, environment and other major aspects. Thirdly, the index reflecting the legal responsibility is to evaluate whether the activities of the enterprise under the management of the responsible person conform to the laws and regulations. Fourth, the index that reflects financial responsibility. As the person in charge of a state-owned enterprise, it is the primary responsibility to make the enterprise run well, and the level of operating efficiency can be shown through financial indicators. Therefore, some important financial indicators are important indicators to evaluate the economic responsibility of the person in charge.

3.2 Calculation of Index Weight

(1) In order to calculate the weight of each index by analytic hierarchy process (ahp), comparatives judgment matrix should be constructed. By consulting materials and synthesizing the opinions of many experts, the comparative judgment matrix A of criterion layer to target layer is obtained, so as to judge the importance of criterion layer to target layer. And the comparison judgment matrix B_1-C, B_2-C, B_3-C and B_4-C between the index layer and the criterion layer to determine the importance of the index layer to its corresponding criterion layer. The specific comparative judgment matrix is as follows:

$$\mathrm{A}=\begin{bmatrix} 1 & 2 & 2 & 2 \\ 1/2 & 1 & 2 & 2 \\ 1/2 & 1/2 & 1 & 1 \\ 1/2 & 1/2 & 1 & 1 \end{bmatrix}$$

$$B_1-C=\begin{bmatrix} 1 & 1/2 & 1/3 \\ 2 & 1 & 1/2 \\ 3 & 2 & 1 \end{bmatrix}$$

$$B_2-\mathrm{C}=\begin{bmatrix} 1 & 2 & 1/3 & 1/2 \\ 1/2 & 1 & 1/4 & 1/2 \\ 3 & 4 & 1 & 3 \\ 2 & 2 & 1/3 & 1 \end{bmatrix}$$

$$B_3-C=\begin{bmatrix} 1 & 3 & 2 \\ 1/3 & 1 & 1/2 \\ 1/2 & 2 & 1 \end{bmatrix}$$

$$B_4-C=\begin{bmatrix} 1 & 1/2 & 4 & 5 & 5 & 1 \\ 2 & 1 & 3 & 4 & 3 & 1/2 \\ 1/4 & 1/3 & 1 & 3 & 2 & 1/4 \\ 1/5 & 1/4 & 1/3 & 1 & 1 & 1/4 \\ 1/5 & 1/3 & 1/2 & 1 & 1 & 1/4 \\ 1 & 2 & 4 & 4 & 4 & 1 \end{bmatrix}$$

(2) The importance of the criterion layer to the target layer and the index layer to the criterion layer is obtained by single ranking, and the consistency test is carried out. MATLAB software can be used to obtain the maximum characteristic root and its respective weight of each judgment matrix W_i=[W_{i1},W_{i2},W_{i3} ⋯]. The formula $I=(\lambda-n)/(n-1)$ and $CR=CI/RI$ were used to obtain the consistency index (CI) and the consistency ratio (CR) of each comparison judgment matrix, respectively. Where λ is the largest characteristic root of matrix C_i , and RI is the random consistency index of matrix. The calculation results are shown in table 2 and table 3.

Table 2： The weight vector of hierarchical single sort

Matrix	*Weight Vector*
A	$(0.3917,0.2792,0.1646,0.1645)^T$
B_1-C	$(0.1638,0.2973,0.5389)^T$
B_2-C	$(0.1625,0.1046,0.5069,0.2260)^T$
B_3-C	$(0.5390,0.1638,0.2972)^T$
B_4-C	$(0.2563,0.2423,0.0960,0.0534,0.0587, 0.2933)^T$

Table 3: calculation results of single-layer judgment matrix

Matrix	λ_{max}	*CI*	*CR*
A	4.0606	0.0202	0.0227
B_1-C	3.0092	0.0046	0.0079
B_2-C	4.0813	0.0271	0.0301
B_3-C	0.0271	0.0046	0.0079
B_4-C	6.2906	0.0581	0.0461

According to the calculation results, all levels meet the consistency condition of CR<0.1, that is, the consistency requirement is met.

(3) The importance of the index layer to the target layer can be obtained by sorting the total levels, that is, $\mathrm{W}=\left(p_1^{(3)},p_2^{(3)},p_3^{(3)},p_4^{(3)}\right)\cdot\omega^{(2)}$ =(0.0642,0.1165,0.2111,0.0454,0.0292,0.1415,0.0631,0.0887,0.0270,0.0489,0.0422,0.0399,0.0158,0.0088， 0.0097,0.0482). Consistency check for the total ranking of levels is as follows:

$$\mathrm{CI}^{(2)}=\left(CI_1^{(2)},CI_2^{(2)},CI_3^{(2)},CI_4^{(2)}\right)=(0.0046,0.0271,0.0046,0.0581)$$

$$\mathrm{RI}^{(2)}=\left(RI_1^{(2)},RI_2^{(2)},RI_3^{(2)},RI_4^{(2)}\right)=(0.58,0.90,0.58,1.24)$$

$$\mathrm{CI}^{(3)}=\mathrm{CI}^{(2)}\cdot\omega^{(2)}=0.01968$$

$$\mathrm{RI}^{(3)}=\mathrm{RI}^{(2)}\cdot\omega^{(2)}=0.77791$$

$$\mathrm{CR}^{(3)}=\mathrm{CR}^{(2)}+\frac{\mathrm{CI}^{(3)}}{\mathrm{RI}^{(3)}}=0.0227+\frac{0.01968}{0.77791}=0.047998<0.1$$

Indicates that the hierarchical total sort also passes the consistency check. Thus, the proportion of each indicator in evaluating the performance of the economic responsibility of the head of the state-owned enterprise can be obtained. Combined with the scoring of specific indicators, the audit results of the economic responsibility of the heads of state-owned enterprises can be finally obtained.

4. Measures to Improve the Economic Responsibility Audit of State-owned Enterprises

4.1 Effective Combination of Outgoing Audit and Tenure Audit

Although the outgoing audit can comprehensively evaluate

the performance of the economic responsibility of the person in charge of the state-owned enterprise during his/her tenure, the audit projects are large and concentrated, the audit frequency is irregular, and the timeliness is lacking [8]. Therefore, it is necessary to increase the proportion of tenure audit, in order to regularly understand the economic responsibility of the person in charge of the performance of the situation, as early as possible to find the problems in the enterprise management. On the one hand, we should steadily establish the economic responsibility audit system which combines the tenure audit and the outgoing audit, with the tenure audit as the main body and the outgoing audit as the supplement. On the other hand, we should ensure the audit frequency of the tenure audit and conduct regular audit on the performance of the economic responsibility of the in-service heads of state-owned enterprises, so as to better apply the audit results to the promotion, reward and punishment.

4.2 Constantly Improve the Evaluation Index System

It is a long way to perfect the economic responsibility audit evaluation index system. First of all, relevant departments should further improve the audit evaluation index system according to relevant theories, and step up the improvement of relevant supporting systems and regulations, so that the economic responsibility audit system has laws to follow and rules to follow in practice. Local governments should also set up additional evaluation indicators in light of specific local conditions. Secondly, we should attach importance to the application of various evaluation methods and systems in practice. In the era of rapid development of informatization and Internet, we can also explore and try the application of various evaluation software to improve the audit efficiency.

4.3 Define Economic Responsibility Scientifically

First, it is reasonable to distinguish between the current leader and the former leader, individual and collective and subjective and objective economic responsibility. The problems left over during the tenure of the former leader should be systematically defined with the perspective of development; for the problems related to objective factors, we should make clear the proportion of subjective and objective responsibility and define economic responsibility reasonably; for collective economic responsibility, we should fully analyze the role and proportion of the person in charge in influencing the decision. Second, we should improve the governance structure of state-owned enterprises in China, avoid problems such as insufficient or excessive control of internal control of state-owned enterprises, and strengthen the management reform to gradually improve the internal corporate governance of state-owned enterprises.

4.4 Enhance the Influence of Economic Responsibility Audit

The influence degree and scope of economic responsibility audit should be improved continuously [9]. Audit departments should go deep into local governments and state-owned enterprises in their daily work, actively publicize the issues related to economic responsibility auditing, understand the economic responsibility of enterprises, and pave the way for future economic responsibility auditing work. At the same time, relevant departments can promote enterprises with outstanding experience in economic responsibility auditing in charge in a certain scope, establish the leading role of enterprises, so that more state-owned enterprises continue to pay attention to economic responsibility auditing. In addition, under the circumstances that laws and regulations permit, the audit results of economic responsibility should be actively disclosed, and the focus of social concerns and key enterprises should be properly exposed.

5. Conclusion

Although the audit system of economic responsibility of the heads of state-owned enterprises has been practiced for many years in China, there are still some problems to be solved, such as the economic responsibility is difficult to be divided and defined, the lack of timeliness, the evaluation index is not unified and comprehensive, and the economic responsibility audit report is not comprehensive [10]. This paper makes an in-depth analysis of the status quo of the economic responsibility audit of heads of state-owned enterprises in China. On this basis, the audit evaluation system of economic responsibility of heads of state-owned enterprises is established, and the weight of audit indicators is solved by using analytic hierarchy process. At the same time, according to the present situation and the evaluation system, the paper puts forward some reasonable Suggestions to improve the economic responsibility audit system of the state-owned enterprises.

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