

Research on the Impact of Employee Stock Ownership Plan on Enterprise Innovation

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Abstract: This article takes A-share listed companies in China from 2014 to 2022 as research samples to explore the relationship between the implementation of employee stock ownership plans and corporate innovation in listed companies. Research has found that compared to listed companies that have not implemented employee stock ownership plans, listed companies that have implemented employee stock ownership plans have higher innovation investment, and employee stock ownership plans are beneficial for promoting enterprise innovation. Compared with non high-tech enterprises, implementing employee stock ownership plans in high-tech enterprises can increase the R&D intensity of the enterprise. The research conclusion of the paper provides empirical evidence for improving the innovation capacity of enterprises and building an innovative country.

Keywords: Employee Stock Ownership Plan; Enterprise innovation; R&D intensity; High tech enterprises

Introduction:

Enterprise innovation is the primary driving force for enhancing the core competitiveness of enterprises, promoting industrial structure upgrading, and leading macroeconomic transformation. At present, enhancing the independent innovation capability of local enterprises is the only way to shift economic development from factor driven to innovation driven, build a modern economic system, and achieve high-quality sustainable development. However, there are two opposing empirical research conclusions regarding the impact of implementing employee stock ownership plans on innovation. Some scholars believe that the positive impact mechanism of employee stock ownership plans on innovation is contradictory; Other scholars believe that the effect of employee incentives on a company's innovation ability is related to the specific incentive implementation method. Equity incentives for core technology employees cannot improve the company's innovation performance, and there is no significant positive correlation between the two. Therefore, expanding and deepening the research on employee centered enterprise innovation has strong theoretical value and practical significance.

1. Literature Review and Hypothesis Proposition

In the study of the impact of employee stock ownership on innovation, from the perspective of non executive employees, it was found that when employees are more important to innovation activities, there is less "free riding" behavior among employees, stock options are widely granted to employees, and the exercise period of stock options is longer, non executive employee stock ownership has a stronger incentive effect on employees, which is more conducive to enterprise innovation (Chang et al., 2015). Jiang Yingbing and Shi Yiran (2017) believe that R&D activities are highly specialized and the R&D process is difficult to supervise. If there is a serious information asymmetry between the R&D team and the enterprise, it will be detrimental to the success of enterprise innovation. Granting employees a certain amount of equity can reduce their retention of innovative ideas, motivate them to implement innovative ideas, and accelerate the research and development process. The implementation of employee stock ownership plans leads to changes in the degree of information asymmetry, restructuring of governance relationships, and changes in governance mechanisms, affecting the company's economic behavior and consequences (Shen Hongbo et al., 2018; Meng Qingbin et al., 2019). The implementation of employee stock ownership is beneficial for the innovation output of the company (Zhou Donghua et al., 2019; Meng Qingbin et al., 2019).

Based on this, the hypothesis H1 is proposed: given other conditions remain unchanged, implementing an employee stock ownership plan can improve the R&D intensity of a company compared to companies that have not implemented it.

2. Research Design

2.1 Research samples and data sources

This article selects listed companies A-share markets from 2014 to 2022 as research samples. The data on employee stock ownership plans is sourced from the Wind database. During the sample period, a total of 984 initial sample companies that released 1765 employee stock ownership plans were obtained. This article deleted 164 sample companies whose employee stock ownership plans were not approved or whose implementation progress was stopped at the shareholders' meeting. At the same time, 92 sample companies that issued multiple employee stock ownership plans in the same year were excluded, and only their first employee stock ownership plans were retained. Finally, 1509 initial sample companies were obtained. Furthermore, the paper performs the following sample selection process: (1) excluding listed companies in the finance and insurance industries; (2) Excluding listed companies with less than one year of listing; (3) Companies that select ST and PT; (4) Retain data for three consecutive years; (5) Delete data before the company goes public; (6) Considering the impact of outliers, all continuous variables were subjected to tail reduction at the 1% and 99% levels. Finally, 896 samples with implemented employee stock ownership plans, 2626 samples without implemented employee stock ownership plans, 7344 experimental group "company year" samples, and 19678 control group "company year" samples were obtained.

2.2 Model Design and Variable Definition

This article uses a fixed effects model to examine the relationship between employee stock ownership plans and corporate innovation. Referring to Chang et al. (2015), Tan Hongtao et al. (2016), Meng Qingbin et al. (2019), Zhou Donghua et al. (2019), and other relevant literature, the model controls variables such as company financial and corporate governance characteristics, as well as annual and individual effects. The specific model is as follows:

$$rd_{it} = a_0 + a_1 esop_{it} + \sum \text{controls} + \sum \text{ind} + \sum \text{year} + \varepsilon$$

Among them, R&D intensity (rd) is calculated as the percentage of R&D expenses in operating revenue; Referring to Zhou Donghua et al. (2019), the employee stock ownership plan () refers to whether the i-th listed company implemented the employee stock ownership plan in year t. If the employee stock ownership plan is implemented or exists, its value is 1, otherwise it is 0.

The control variables include: (1) asset (size), measured by the natural logarithm of the company's total assets; (2) Asset liability ratio (lev), measured by dividing the company's liabilities by the company's total assets; (3) Return on Assets (ROA), which means the company's net profit divided by the company's total assets; (4) (cash), the total amount of monetary funds is taken as the natural logarithm; (5) Company growth(growth), measured by operating revenue growth ratio; (6) Fixed asset scale(fixedasset), using the natural logarithm of fixed assets; (7) The age of the company's listing(age), measured by adding 1 to the number of years of listing; (8) Dual, if the chairman and general manager are the same person, it takes 1; otherwise, it takes 0; (9) Board size(Board), measured by the logarithm of the number of directors in a company; (10) Independent director size (indep), using the natural logarithm of the number of independent directors in the current year; (11) Management compensation (pay) is measured by the logarithm of the per capita salary of the company's directors, supervisors, and executives in the current year; (12) The shareholding ratio of major shareholders (top 1), measured by the shareholding ratio of the first major shareholder; (13) Property Right Nature (SOE), if the company's property right nature is a state-owned enterprise, it takes 1, otherwise it takes 0.

3. Empirical analysis results

3.1 Descriptive statistics

Data display it can be seen that the maximum value of R&D expenses as a percentage of operating income (rd) is 28.02, the minimum value is 0.17, and the average value is 3.68. This indicates that there are certain differences in R&D intensity among different enterprises. The average value of employee stock ownership plan (esop) is 0.18, which means that 18% of the samples have implemented esop and 82% of the samples have not implemented esop.

3.2 Empirical Regression Results

Select a fixed effects model using the Hausman test with p=0.0000. This article uses a fixed effects model to test the impact of employee stock ownership plans on enterprise R&D investment. By gradually adding control variables and robust tests to the fixed effects model, the employee stock ownership plan shows a significant positive correlation with R&D investment, indicating the pro-

moting effect of employee stock ownership plans on enterprise innovation investment, and verifying hypothesis 1 of this article. The (1) column of Table 1 shows the results of controlling for individual effects without adding control variables, the (2) column shows the results of controlling for individual effects only after adding all control variables, the (3) column shows the results of controlling for years and individual effects after adding all control variables, and the (4) column shows the results of controlling for years and individual effects after adding all control variables, considering the clustering standard error. According to column (4), after implementing the employee stock ownership plan, the R&D investment of the processing group company increased by 0.2524 percentage points compared to the control group company.

4. Employee Stock Ownership Plan and Enterprise Innovation: Is it a High tech Enterprise

The regression results from Table 1 show that the innovation incentive effect of employee stock ownership plans is more significant in high-tech enterprises. From the table below, it can be seen that in high-tech enterprises, the impact of employee stock ownership plans on innovation investment is significantly positive at the 1% level, while in non high-tech enterprises, the impact of employee stock ownership on innovation investment is positive but not significant. In high-tech enterprises implementing employee stock ownership plans, the R&D intensity of the enterprise will increase by 0.3793 percentage points.

Table 1 Employee Stock Ownership Plan and Enterprise Innovation Investment:

High tech or not	High tech enterprises	Non high-tech enterprises
	rd	rd
esop	0.3793** (0.0230)	0.0842 (0.3649)
_cons	37.1076*** (0.0000)	9.7210*** (0.0000)
Year	Yes	Yes
Individual	Yes	Yes
_cons	37.1076*** (0.0000)	9.7210*** (0.0000)
N	14222	8596
R ² within	0.2162	0.1286

(1) The above regression models all control for relevant control variables, annual and individual dummy variables.

(2) ***, **, * respectively represent statistically significant at the 1%, 5%, and 10% levels.

5. Research Conclusion and Enlightenment

Based on the above research results, the article has the following suggestions: firstly, in the context of high-quality economic development in China, it is necessary to fully stimulate the innovation vitality of high-tech enterprises, continue to promote employee stock ownership plans, and play the role of employee stock ownership in promoting enterprise innovation; Secondly, continuously promote the reform of mixed ownership in state-owned enterprises and employee stock ownership plans, optimize the design of employee stock ownership plans for mixed ownership reform in state-owned enterprises, optimize corporate governance in state-owned enterprises, and promote high-quality and sustainable development of China's economy.

References:

- [1]Zhou Donghua, Huang Jia, Zhao Yujie: Employee Stock Ownership Plan and Enterprise Innovation. Accounting Research, 2019.3:63-69
- [2]Meng Qingbin, Li Xinyu, Zhang Peng: Can Employee Stock Ownership Plans Promote Enterprise Innovation Empirical Evidence Based on the Perspective of Enterprise Employees, Managing the World, 2019.11:209-228