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An Empirical Study on the Impact of Executive Shareholdings on GEM Listed Companies on R & D Investment

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Abstract: This article selects companies listed on GEM between 2010 and 2018 as the research object, and obtains 2,200 samples after screening. This paper puts forward research hypotheses on the basis of sorting out relevant literature and classical theoretical analysis. After empirical testing, the following conclusions are drawn: (1) The higher the company's executive shareholding ratio, the more it can promote the company's R & D investment; (2) High, it will inhibit companies from investing in R & D; (3) The higher the company's equity deviation, the higher the proportion of independent directors, and the combination of the chairman and general manager can promote R & D activities. According to the conclusions of the study, this article starts with optimizing executive incentives, equity structure and corporate governance mechanisms, and puts forward corresponding suggestions to promote the company's R & D investment level and achieve long-term healthy development of the GEM market.

1. Introduction

At present, China is in a critical period of economic structural adjustment and the switch of old and new kinetic energy. The new economy has become the industry direction of social development. In 2019, the government work report of the Second Session of the Thirteenth National People's Congress also clearly pointed out that improving scientific and technological support capabilities, strengthening original innovation, and improving the industry-university-integrated innovation mechanism with enterprises as the mainstay. With the strong support of national policies, China has continuously increased its investment in innovation. In 2018, China's total investment in R & D was 1,965.7 billion yuan, ranking second in the world, up 11.6% over the previous year, and accounting for 2.18% of GDP. From the perspective of the main body of R & D activities, the total R & D expenditure of enterprises accounted for 75.9%, an increase of 11.5% over the previous year, and achieved double-digit growth for 2 consecutive years. The supporting and leading role of supply-side structural reform has been significantly improved [1].

In March 2009, China's GEM market was formally established, providing new equity financing channels for small and medium-sized high-tech enterprises with high growth. As of November 2019, the number of companies listed on GEM has reached 784, and the total market value has increased from 0.16 trillion yuan to 5.68 trillion yuan. From Figure 1, it can be seen that from 2010 to 2018, the absolute amount of R & D investment of listed companies on the GEM increased year by year. From the perspective of R & D intensity, listed companies on the GEM as a whole were around 7%, higher than the main board and small and medium board markets. From the perspective of trends, GEM listed company R & D investment intensity gradually increased from 7.78% in 2013 to 6.92% in 2017, but rose back to 7.46% in 2018, which may be caused by the relatively sluggish development of market economy at home and abroad in recent years. The Securities Regulatory Commission has recently stated clearly that it will increase support for new technologies, new industries, new formats and new models, which is undoubtedly good news for small and medium-sized high-tech enterprises. Therefore, it is of practical significance to focus on the R & D level of high-tech enterprises [2].

2. Empirical Research Design

In the modern enterprise structure, the separation of corporate ownership from operating rights has become a development trend. As shareholders of the company, shareholders often do not directly participate in the operation and management of the company. Usually, professional professional managers manage the company. The company's management often does not hold company shares, which makes the interests of individuals and shareholders do not match, and the management may infringe shareholders' rights based on insider advantages. Specifically, the agency costs between shareholders and management are mainly their different target benefits, asymmetry of information, and asymmetry of responsibility. Some scholars believe that the implementation of equity incentives for corporate managers so that management owns stocks can make them more consistent with the interests of business owners, encourage management to carry out more technological innovation, and promote long-term value appreciation of enterprises. In recent years, scholars at home and abroad have reached the same research conclusions, arguing that granting equity to management can effectively reduce agency costs, and at the same time can promote enterprises to carry out research and development activities. Specifically, management holdings allow them to obtain residual income from the long-term value of the enterprise, which will be consistent with the interests of shareholders, which will change their risk appetite, and tend to conduct innovative research and development activities to enhance the long-term value appreciation of the enterprise. That is to say, equity incentives have the same convergence effect. However, some scholars have reached the opposite conclusion. They believe that equity incentives cannot always promote enterprises to carry out R & D activities, but may inhibit R & D investment. The ditch effect hypothesis proposed by some scholars believes that equity incentives cannot effectively solve the agency problem. An increase in the shareholding level of an operator will expand its voting rights and influence, thereby enhancing its ability to resist external pressure, even based on insiders Advantages infringe shareholders' rights and interests, but increase agency costs [3].

Most of China's GEM listed companies are small and medium-sized high-tech private enterprises with high growth. The degree of equity incentives for executives is generally high, and the overall shareholding of executives is also high, which has a greater influence on the company. There may be a decrease in the effect of convergence of interests, an increase in the ditch defense effect, or a relationship between the two. Therefore, this article proposes the following competitive assumptions:

H1a: There is a positive correlation between the shareholding of executives of GEM listed companies and R & D investment;

H1b: There is a negative correlation between the shareholding of executives of GEM listed companies and R & D investment.

2.1. Empirical Test and Result Analysis

2.2. Correlation Analysis

The correlation test results show that the correlation coefficient between executive shareholding and the dependent variable is significantly positive, which is consistent with H1a in this article. Because the correlation coefficient between variables will be affected by the sample and various factors, an accurate test must be performed through the model.

2.3. Multivariate Regression Analysis

According to the previous empirical research model, STATA13 data analysis software was used to perform regression analysis on the sample data, and both time and industry were controlled. Based on the empirical analysis results of the regression of executive holdings on R & D investment intensity, it was found that) The estimated coefficient is significantly positive, indicating that the shareholding level of the senior management of listed companies on the GEM has promoted the company's R & D investment. The executives, as the founders of the company, or the company's residual value claim obtained through equity incentives, have played a "benefit". The "convergence effect" of corporate governance has eased the agency problem [4].

2.4. Regression Analysis of Control Variables

The total shareholding ratio of the top ten shareholders of the company has a significant negative correlation with the company's R & D investment, which indicates that the higher the concentration of the company's equity, the fewer the company's R & D activities. The difference between the actual controller's cash flow right and control right has a significant positive correlation with the company's R & D, indicating that the higher the degree of deviation of the company's equity, the more it will promote the company's R & D investment. The proportion of directors, directors and directors of the company and the R & D investment of the company have a significant positive correlation, indicating that the higher the proportion of independent directors in the company's board of directors, the same person as chairman and general manager will promote the company Of research and development activities. Government subsidies and enterprises' R & D investment have a significantly positive correlation, which indicates that the more government subsidies to enterprises, the more they can stimulate enterprises to carry out technological innovation.

3. Conclusions

This paper conducted an empirical test on 2,200 sample companies by constructing a multiple linear regression model, and reached the following conclusions and made corresponding suggestions:

(1) The R & D intensity of China's GEM listed companies showed a downward trend from 2013 to 2017 and rebounded in 2018. In order to maintain the company's sustainable competitive advantage, it should still pay attention to technological innovation and improve its R & D level. At the same time, government departments should play a leading role, formulate preferential policies that are conducive to the development of small and medium-sized high-tech enterprises, and formulate reasonable policy incentive schemes to provide enterprises with a good environment for innovation. For example, we can shorten the administrative approval process and reduce the non-productive costs of enterprises; we must increase support for emerging industries such as environmental protection, new energy, electronic communications, big data, and artificial intelligence.

(2) The shareholding of the senior management of GEM listed companies has promoted corporate R & D investment. Therefore, we should continue to optimize the design of the incentive mechanism for management. For the equity incentive plan, the implementation object should be more targeted, such as Managers who have made outstanding contributions to the development of the company, managers who have an important influence on the company's investment decisions, and some core technical staff, urge them to consider more about the long-term development of the company; second, determine a reasonable stock subscription price, promote The management worked harder to realize the appreciation of stock value, reducing laziness and self-interest, and realizing the value increase of the company in the capital market. Finally, a more reasonable management stock exit mechanism should be designed to prevent management from resigning cash. Opportunistic behavior, which in turn undermines the stable development of the company.

(3) The more concentrated the equity structure of the listed companies on the GEM Board, the more R & D investment will be inhibited, and the level of equity concentration of the company should be moderately controlled; the integration of the two roles in the corporate governance mechanism and the proportion of independent directors all contribute to the R & D investment of the company It has promoted and played a good corporate governance effect. Therefore, when appointing independent directors, the company can give more consideration to whether the independent directors have an objective and neutral stance. In addition, the company can also introduce independent directors with technological resource advantages to promote research and development investment.

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