Can the Gap and Rating of Market Expectation Promote Innovation Input of China Manufacturers?

Zhangsheng Jiang 1,2

1 School of Business Administration, Zhejiang Gongshang University, Hangzhou 310018, China; jianghit@zjgsu.edu.cn; Tel.: +86-151-5800-8996
2 Zheshang Research Institute, Zhejiang Gongshang University, Hangzhou 310018, China

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Abstract: Under the strategic background of Made-in-China to Mind-in-China, how the capital market expectation affects enterprise innovation input has reached no coincident conclusion. This paper uses Chinese A-share manufacturing listed companies from 2010 to 2017 to investigate the internal mechanism among the gap and rating of market expectation and enterprise innovation input, and further explores the moderating effects of institutional coverage and government subsidies. The results show that: firstly, innovation input will first decrease and then increase with the market expectation gap increase. However, innovation input will first increase and then decrease with the market expectation rating increase. Secondly, when the institutional coverage and government subsidies increase, innovation input will remarkably transform from the first decrease and then increase into the first increase, then decrease with the market expectation gap increase. Finally, when institutional coverage is high and government subsidies are low, innovation input will remarkably transform from the first increase and then decrease into the first decrease, and then increase with the market expectation rating increases. These research findings can provide some academic support and policy references for managers to deal with effectively external performance pressures, institutional coverage, and optimize government subsidies to promote manufacturers’ innovation-driven upgrading.

Keywords: market expectation; institutional coverage; government subsidies; innovation input

1. Introduction

Since Industry 4.0 was formally proposed in 2013, intelligent manufacturing has become the focus of national competition. “Made-in-China 2025 and Internet plus are inseparable,” Li Keqiang said at the 10th Summer Davos Forum. Moreover, “It is necessary to develop the real economy, continuously promote industrial modernization and improve the level of the manufacturing industry,” as Xi Jinping has made many essential discussions on the transformation and upgrading of Chinese manufacturing. However, with the increasing downward pressure on the global economy and exacerbating market competition, the sustainable development of Chinese manufacturers is also facing multiple pressures of economic recession, resource shortage, technical update [1]. Facing these pressures, manufacturers must solve strategic problems such as how to allocate limited resources, enhance core competitiveness, and maintain healthy and sustainable value development. There is no doubt that innovation is the internal motivating force of manufacturers to get a long-term competitive advantage and sustainable development in the market competition, and affects the long-term interests of investors and shareholders from the social effects of innovation. Innovation is helpful for manufacturers to acquire, assimilate, transform, and exploit new technology knowledge, and make the intangible resources of manufacturers continuously generate and accumulate. The stock resources are the critical determinants for manufacturers to implement technology upgrading, obtain long-term profits, and improve the market value of manufacturers. Simultaneously, with the
transformation of the social environment, increasingly severe pollution has aroused stakeholders’ broad concerns, and the voice of environmental protection is ever-rising. However, the essential resources related to the survival and development of manufacturers are usually in the hands of some critical environmental stakeholders, such as government, community, institutions, investors, and other related entities, which makes manufacturers face many uncertainties in the process of allocating and using these resources. Manufacturers must respond to and comply with the voice of external relevant environmental stakeholders to control environmental pollution through innovation, accumulate moral capital, establish and maintain a trustworthy relationship with the stakeholders, improve their images and reputations, gain the recognition and support of stakeholders, create a favorable external environment for the manufacturers’ development, increase social intangible resources, and finally realize the win-win of economic growth and environmental protection. Therefore, increasing innovation investment has become an approach to seeking Chinese manufacturers’ sustainability. How to improve the level of Chinese manufacturing through innovation is crucial to the realization of Mind-in-China.

The previous literature shows that innovation is an essential way for enterprises to improve their competitive advantages, and many internal and external factors affect enterprise innovation, such as government behaviors [2], manager characteristics [3], organizational learning [4], capital market [5], and environmental management [6]. Simultaneously, with the vigorous development of capital markets, the forecasting and rating institutions as the specialized market intermediaries connecting investors and listed companies, the function of public opinion guidance and supervision of the institution is increasingly apparent, and the external governance effect is prominent, which can significantly influence the innovation decisions of managers of listed companies. Institutions can guide investors’ investment behavior by collecting, analyzing, and issuing earnings forecasts and stock ratings of listed companies. Enterprise managers will pay close attention to the forecasts and ratings of institutions, and then adjust management decision-making to meet or exceed capital market expectations. Some scholars have noticed that the profit forecasts and institutional coverage will affect innovation activities [5]. These results lay the foundation for further exploration of the relationship between market expectation and innovation input.

Therefore, based on the performance feedback theory and signal transmission theory, this paper intends to explore the following issues from the external perspective of capital market and government policies: in the context of the national strategy of mass entrepreneurship and innovation, facing the expected market performance and investment rating of institutions, in the process of resource allocation, should enterprise managers pay more attention to the realization of short-term goals or long-term development prospects? What kind of mechanism will institutional coverage reflecting the capital market environment and government subsidies reflecting the government environment have on the relationship between market expectation and innovation input? In order to answer the above questions, this paper takes Shanghai and Shenzhen A-share listed manufacturing companies in China from 2010 to 2017 as research samples to make a theoretical and empirical study on the internal relationship between market expectation and innovation input. On that basis, the paper further explores the moderating mechanism of institutional coverage and government subsidies from the dual external perspectives of the market and government environment.

The contributions of this paper are as follows: (1) Using more objective data to measure external stakeholders’ predictions and ratings for enterprise performance, we discuss how the gap and rating of market expectation affect the innovation decisions of managers, which enriches the research perspective of enterprise innovation. Some scholars have studied the impact of expected internal performance on innovation decision-making from the internal perspective of enterprise governance [7,8]. However, in the Internet plus era, enterprise managers’ innovation decisions need to consider the internal governance efficiency and pay more attention to the external stakeholder needs. (2) From the
dual external perspective of the capital market environment and government environment, this paper explores the regulatory and restrictive effects of the external governance factors of institutional coverage and government subsidies on market expectation and innovation input. So, the research expands the situational mechanism in the field of enterprise performance feedback theory and signal transmission theory. Some scholars have respectively studied the impact of institutional coverage or government subsidies on enterprise innovation. These studies respectively discussed the effect of institutional coverage and government subsidies on innovation input, combined with enterprise ownership and region heterogeneity to analyze interactive effects [9–11]. However, innovation decision-making is context-dependent. External network and industry attributes will affect the enterprise innovation input, such as capital market and government policies, which have an important guiding and stimulating role in resource acquisition and implementation of enterprise innovation.

2. Literature Reviews and Research Hypotheses

2.1. Market Expectation Gap and Enterprise Innovation Input

The market expected performance is usually the expected performance of external capital market institutions for the listed companies’ intrinsic values. The capital market institutions will have a positive expectation on the growth of the enterprise leading business, which will encourage the enterprise to continue to increase innovation input and output [12]. If the market expectation performance of the institution for the prospect of the enterprise is slightly lower than the actual operating performance, enterprise managers will become conservative, thus inhibiting strategic changes and possibly reducing R&D budgets [11,13]. However, in order to change the market expectation of the institution, enterprise managers may reduce R&D expenditures in the fourth quarter to reduce operating costs [14]. However, if the market expectation of the institution is much lower than the actual operating performance of the enterprise, enterprise managers will become more aggressive and pay more attention to the high returns brought by the success of high-risk strategies [15,16]. Concurrently, if the market expectation of the institution is slightly higher than the actual operating performance of the enterprise, the managers will face few performance pressures, and in order to meet or exceed the market expectation of the institution, the innovation input will be reduced [8,17]. However, if the market expectation of the institution is much higher than the actual operating performance of the enterprise, in order to meet the market expectation, enterprise managers will be more inclined to adopt revolutionary strategies and increase R&D input [18–20]. Therefore, based on the performance feedback theory, some scholars have used the piecewise function to construct regression models and empirically analyze the impact of the gap between the expected performance and the actual performance on enterprise innovation input. These results show that when the gaps are relatively small, enterprises may reduce innovation input; conversely, the probability of enterprises engaging in innovation will increase [18,21,22]. That is, enterprise managers will compare the gap to judge the success or failure of the enterprise operation, which affects organizational change, technological innovation, and other behavioral decisions. There is evidence that there may be a significant U-shaped relationship between performance expectation gap and enterprise innovation input [23,24].

Based on the above analysis, when the market expectation performance of the institution is lower than the actual operating performance of the enterprise, the market expectation gap will inhibit the enthusiasm of enterprise innovation input. When the market expectation performance of the institution is higher than the actual operating performance of the enterprise, the market expectation gap will increase the enthusiasm of enterprise innovation input. Therefore, this paper uses the market expectation gap to reflect the gap between the market expectation performance of the institution and the actual operating performance of the enterprise, and puts forward the following hypothesis:

**Hypothesis 1a:** When the change of market expectation gap is from small to large, the change of enterprise innovation input will first decrease and then increase. The relation between them is a U-shape.
2.2. Market Expectation Rating and Enterprise Innovation Input

The market expectation rating is a qualitative and quantitative comprehensive rating of the stock investment value based on the institution’s expectation of the prospect and performance evaluation of the listed company given by the capital market institution. The institution will issue the market expectation rating at regular intervals, which can provide decision reference for investors and shareholders. Different investors react differently to the market expectation rating. Some investors will directly invest following the literal meaning of the rating, while others will take it with caution or operate in the opposite direction of it [25]. Moreover, the market expectation rating is closely related to the decision-making of enterprise managers. Because the institution collects enormous amounts of enterprise operation information and has a quick and comprehensive information channel, which will make the information issued by the institution have specific scale effects and supervision effects [26].

Therefore, some scholars believe that the market expectation rating of institutions can help investors reasonably choose enterprises with long-term development prospects, prompt enterprise managers to adopt more long-term risk projects with positive net present value, and encourage them to innovate [11]. Moreover, the more the market expectation rating is a reaction to the enterprise’s internal operating situation, the more accurate and timely will be the acquisition by investors of the operating ability and innovation decision of enterprise managers, which is conducive to passing the correct internal information of the enterprise to investors, thus reducing information asymmetry between investors and managers, and stimulating them to innovate [27]. Nevertheless, if the institution has consistently given a higher market expectation rating for the listed companies, this could cause investors to make a judgment that is collusion between institutional analysts and enterprise managers. At this time, investors will run counter to the market expectation rating and invest in opposite directions, which leads to enterprise managers having to reduce the risk investment to improve the current performance to attract investors [28].

Based on the above analysis, differentiating from the market expectation gap measured by the relative number, the market expectation rating is measured by the absolute number of the arithmetic mean value after the institution rating digitization. When the market expectation rating is lower than the investor expectation, the larger the market expectation rating is, the more the enterprise innovation input is. When the market expectation rating is higher than the investor expectation, the smaller the market expectation rating is, the higher the enterprise innovation input is. So, this paper puts forward the following hypothesis:

**Hypothesis 1b:** When the change of market expectation rating is from low to high, the change of enterprise innovation input will first increase and then decrease. The relation between them is an inverted U-shape.

2.3. Moderating Effect of Institutional Coverage

As one of the external stakeholders that influence the innovation decisions and actions of enterprise managers, the institution can change investors’ stock investment behaviors through public opinion release, analysis, and supervision, to make enterprise managers adjust their innovation strategies. The institutions will pass on the obtained information to investors, and also play a particular role in supervising and responding to public opinion on enterprise operation and capital market operation [29]. Generally, the more institutions pay attention to the enterprise, the more public opinion information will be issued from different perspectives by them, and the more valuable information will be learned by investors, which will help investors to invest rationally according to the principle of value investment, and also help enterprise managers to choose innovation for long-term development [30]. Mainly because the institutions are superior to the information collection ways of investors, they can comprehensively utilize and analyze the necessary information, market information, performance information, investment information, prospects, and temporary event information of the listed companies, and so on. On this basis, they release timely relevant data and event information
about the enterprise’s market expected performance and investment overall rating to investors. Both private and public information will become more open and transparent as the number of coverage institutions increases. At the same time, more attention from institutions will reduce the information asymmetry among enterprise managers, investors, and the board of directors. In order to avoid being discovered by the board of directors and investors for their short-sighted behavior of reducing R&D input, enterprise managers may increase innovation input in the next phase [11]. Institutions’ coverage of listed companies can reveal the value of enterprise innovation activities to a certain extent, reduce financing costs, and promote enterprise innovation. Therefore, the increase in the number of coverage institutions will encourage enterprise managers to increase R&D input to a certain extent and make more efforts to develop and commercialize patented technologies, thus enabling investors to improve the market valuation of the company stock [19].

Some scholars also found that different types of investors pay different attention to various public opinions released by institutions. Foreign investors pay more attention to the information reports about the long-term development prospects of enterprises, and regard innovation investment as the future growth signal, to promote enterprise managers to increase innovation input. Domestic investors pay more attention to information reports on enterprises’ short-term performance growth and do not care whether enterprises carry out innovation activities [9]. Therefore, based on the signal transmission theory and the above analysis, this paper believes that the institutional coverage will change the information environment of the external capital market to a certain extent, and interact with the gap and rating of market expectation to influence enterprise innovation input. So, this paper puts forward the following hypotheses:

Hypothesis 2a: Institutional coverage negatively moderates the relationship between market expectation gap and enterprise innovation input. The higher institutional coverage is, the weaker the U-shaped relationship between market expectation gap and enterprise innovation input will be significant.

Hypothesis 2b: Institutional coverage positively moderates the relationship between market expectation rating and enterprise innovation input. The higher institutional coverage is, the stronger the inverted U-shaped relationship between market expectation rating and enterprise innovation input will be significant.

2.4. Moderating Effect of Government Subsidies

As an institution, the government is an external stakeholder, which can reduce the uncertainty and cost of innovation through R&D subsidies, tax incentives, and policy incentives, to stimulate enterprises to increase R&D input [31]. If the enterprise is granted government R&D subsidies, the enthusiasm of enterprise R&D input will be significantly heightened [2], and the degree of technology R&D and the commercialization rate of innovation achievements will be significantly improved, that is, a significant amplification effect will be generated [10]. Government subsidies have heterogeneity. For example, they play a more significant role in promoting the innovation of private enterprises [32], and a more significant role in promoting the innovation of enterprises in regions with perfect system development level [33]. There is also evidence that government subsidies replace enterprises’ internal R&D expenditure to produce a crowding out effect to some extent [33,34]. Therefore, the government needs to dynamically adjust the subsidy to encourage innovation.

Moreover, government subsidies for enterprise innovation activities directly reflect the country’s strategic planning and direction guidance and have a noticeable signal transfer effect [35]. The signal transmission theory suggests that the reports of market expectation, government subsidies, and other related events disclosed by institutions can reduce information asymmetry [36], which helps to reduce supervision costs and moral hazard [21]. The signals of government subsidies are particularly crucial to investors, especially venture capitalists, because government subsidies for enterprises will be regarded as positive signals by investors, help enterprises label themselves as
recognized by the government, provide more opportunities to obtain support from other channels, and gain more innovative resources [37]. Therefore, the government should subsidize emerging industrial enterprises with high employment and high creation potential to ensure their innovation input and encourage institutions and private investors to actively follow suit [38,39]. The significant certification effect of government subsidies makes getting government subsidies a legal strategy for enterprises to obtain more external capital [40,41], and also change the institutions’ public opinion judgment and market expectation for listed companies. Therefore, this paper argues that the external capital market institutions will regard the government subsidies to enterprises as a macro policy signal to external investors and stakeholders, enabling the institutions to adjust their market expectations and public opinion analysis for enterprises accordingly, and affecting investors’ investment and enterprise innovation input. So, this paper puts forward the following hypotheses:

**Hypothesis 3a:** Government subsidies negatively moderate the relationship between market expectation gap and enterprise innovation input. The higher government subsidies are, the weaker the U-shaped relationship between market expectation gap and enterprise innovation input will be significant.

**Hypothesis 3b:** Government subsidies negatively moderate the relationship between market expectation rating and enterprise innovation input. The higher government subsidies are, the weaker the inverted U-shaped relationship between market expectation rating and enterprise innovation input will be significant.

3. Sample Selection and Research Design

3.1. Research Samples

This paper takes manufacturing companies listed in Shanghai and Shenzhen A-shares as the research samples. In order to ensure that the selected samples meet the research situation, the following screening criteria are used: (1) according to the guidance on industry classification of listed companies issued by China Securities Regulatory Commission in 2012, 31 categories, such as manufacturing industry C13-C43 are taken as the primary samples; (2) deleting sample enterprises of ST, *ST and S; (3) deleting sample enterprises with missing severe data.

The data of profit forecast information issued by institutions and the number of institutions participating in the forecast were seriously missing before 2009. Therefore, in order to calculate the market expectation rating and market expectation gap, this paper takes 2009 as the starting point for data collection, and the real data range in the model is 2010–2017. The data mainly come from WIND, CSMAR and IFIND databases; risk degree, asset liquidity and self-support ratio of capital are obtained from WIND; innovation input, innovation output, enterprise-scale, enterprise ages are obtained from CSMAR; and market expectation, institutional coverage, government subsidies are obtained from IFIND. Then, the data are cross-checked with data from databases and websites to ensure their accuracy and reliability. Through the above industry selection, range selection, and cross-checking of samples, and the exclusion of outliers and extremes, this paper finally arranges the non-equilibrium panel data of China’s Shanghai and Shenzhen A-share manufacturing companies from 2010 to 2017, including 3706 valid observation samples, as shown in Table 1.
Table 1. The industry and annual distribution of samples.

| Indicator | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Summation |
|-----------|------|------|------|------|------|------|------|------|-----------|
| C13       | 9    | 12   | 16   | 0    | 1    | 18   | 22   | 15   | 93        |
| C14       | 2    | 7    | 7    | 0    | 1    | 18   | 26   | 12   | 73        |
| C15       | 6    | 8    | 12   | 0    | 14   | 15   | 13   | 52   | 40        |
| C16       | 3    | 4    | 5    | 0    | 10   | 17   | 13   | 68   | 32        |
| C17       | 1    | 5    | 7    | 0    | 16   | 17   | 13   | 59   | 20        |
| C18       | 0    | 0    | 1    | 0    | 3    | 6    | 0    | 10   | 3         |
| C19       | 1    | 1    | 0    | 0    | 4    | 4    | 1    | 13   | 3         |
| C20       | 0    | 1    | 1    | 0    | 5    | 6    | 1    | 23   | 3         |
| C21       | 1    | 6    | 6    | 0    | 9    | 11   | 9    | 45   | 12        |
| C22       | 2    | 1    | 1    | 0    | 4    | 5    | 3    | 16   | 22        |
| C23       | 1    | 1    | 3    | 0    | 6    | 5    | 5    | 21   | 12        |
| C24       | 1    | 2    | 2    | 0    | 2    | 4    | 3    | 14   | 13        |
| C25       | 1    | 2    | 3    | 0    | 2    | 4    | 3    | 14   | 14        |
| C26       | 26   | 32   | 39   | 0    | 46   | 57   | 40   | 233  | 1266      |
| C27       | 41   | 42   | 42   | 3    | 7    | 8    | 4    | 39   | 202       |
| C28       | 4    | 9    | 9    | 0    | 4    | 7    | 7    | 40   | 30        |
| C29       | 7    | 11   | 11   | 0    | 2    | 20   | 24   | 18   | 93        |
| C30       | 9    | 18   | 25   | 0    | 3    | 23   | 34   | 25   | 137       |
| C31       | 8    | 11   | 17   | 0    | 2    | 20   | 22   | 8    | 86        |
| C32       | 14   | 20   | 30   | 0    | 1    | 28   | 34   | 27   | 154       |
| C33       | 10   | 10   | 11   | 0    | 0    | 21   | 24   | 14   | 90        |
| C34       | 21   | 29   | 29   | 0    | 6    | 41   | 54   | 30   | 210       |
| C35       | 28   | 39   | 45   | 1    | 15   | 70   | 76   | 63   | 337       |
| C36       | 18   | 25   | 29   | 0    | 2    | 38   | 47   | 48   | 207       |
| C37       | 12   | 10   | 11   | 0    | 0    | 20   | 24   | 17   | 94        |
| C38       | 33   | 41   | 50   | 0    | 9    | 91   | 110  | 66   | 400       |
| C39       | 38   | 42   | 54   | 0    | 19   | 119  | 148  | 103  | 523       |
| C40       | 0    | 4    | 2    | 0    | 6    | 15   | 17   | 19   | 63        |
| C41       | 1    | 3    | 3    | 0    | 0    | 7    | 8    | 7    | 29        |
| C42       | 0    | 1    | 2    | 0    | 2    | 3    | 4    | 12   | 14        |
| Summation | 300  | 407  | 482  | 4    | 86   | 789  | 958  | 680  | 3706      |

C13 Agricultural and sideline food processing industry; C14 Food manufacturing; C15 Wine, beverage and refined tea manufacturing; C16 Tobacco products industry; C17 Textile industry; C18 Textile, and clothing industry; C19 Leather, fur, feather, and their products and footwear; C20 Wood processing and wood, bamboo, rattan, palm and grass products industry; C21 Furniture manufacturing; C22 Paper and paper products industry; C23 Printing and recording media reproduction industry; C24 Cultural, educational, industrial and aesthetic, sports and entertainment products manufacturing industry; C25 Petroleum processing, coking, and nuclear fuel processing industry; C26 Chemical raw materials and chemical products manufacturing; C27 Pharmaceutical manufacturing; C28 Chemical fiber manufacturing industry; C29 Rubber and plastic products industry; C30 Non-metallic mineral products industry; C31 Ferrous metal smelting and rolling industry; C32 Non-ferrous metal smelting and rolling industry; C33 Metal products industry; C34 General equipment manufacturing; C35 Special equipment manufacturing industry; C36 Automobile manufacturing industry; C37 Manufacturing of railway, ship, aerospace and other transport equipment; C38 Electrical machinery and equipment manufacturing industry; C39 Manufacturing of computer, communication, and other electronic equipment; C40 Instrument manufacturing industry; C41 Other manufacturing; C42 Comprehensive utilization of waste resources; C43 Metal products, machinery, and equipment repair industry.

3.2. Regression Model

Based on the previous research results [2,5], considering the impact of capital market expectation, institutional coverage, government subsidies and other relevant factors on manufacturing enterprise innovation input, as well as the non-observed effect differences between individuals and time-points, the individual and time fixed effects model of unbalanced panel data is established as follows:

\[
INN_{it} = \beta_1 MAF_{it} + \beta_2 MOD_{it} + \beta_3 MAF_{it} \times MOD_{it} + \beta_4 MAF_{it} + \beta_5 MOD_{it} \times MAF_{it}^{2} + \sum_{j=1}^{8} \phi_j X_{ij} + \alpha_i + \lambda_t + \epsilon_{it} \tag{1}
\]

where the dependent variable \(INN\) represents enterprise innovation and is a vector of the proportion of R&D expenses (PRE), the proportion of R&D staff (PRS), and all-personnel labor productivity (ALP), which measures the innovation of enterprises from input and output, respectively. The independent variable \(MAF\) represents capital market expectation and is a vector of market expectation gap (MEG),
market expectation rating (MER). The moderating variable MOD representing the environment of the capital market and government is a vector of institutional coverage (INC) and government subsidies (GOS). Control variable X is a vector composed of eight variables, including enterprise attribute, financial attribute, and resource attribute. αi is the individual fixed effect; λt is the time fixed effect; i represents the listed company; t is the year.

3.3. Variable Definitions

(1) Dependent variables: The previous studies show that the measurement indicators of enterprise innovation mainly include R&D expenses, R&D staff, product sales, and patent quantity [42], where R&D expenses and staff measure enterprise innovation input; product sales and patent quantity measure enterprise innovation output. Therefore, referring to previous studies, this paper uses PRE, PRS, and ALP respectively to represent enterprise innovation input and output, and PRS and ALP are mainly used to test the robustness of research results.

(2) Independent variables: The previous studies show that the measurement indicators of market expectation mainly include the median of expected indicators such as per-share earnings, leading business income and net profit, gaps between expected indicators and actual indicators of enterprises, and the overall rating [17,19]. Therefore, referring to previous studies, and considering that the prediction and evaluation of institutions are usually effective in the short term, this paper chooses the period of the comprehensive forecast value as 180 days, using the prediction value at the end of the t − 1 year and the prediction value in the middle of the t year to measure MEG and MER, and the formula for calculation is as follows:

\[
MEG_{i,t} = \frac{MBI_{i,t-1} \times (MFR^e_{i,t-1} + MFR^m_{i,t})/2 - (MBI_{i,t} - MBI_{i,t-1})}{(MBI_{i,t} - MBI_{i,t-1})} \tag{2}
\]

\[
MER_{i,t} = (MER^e_{i,t-1} + MER^m_{i,t})/2 \tag{3}
\]

where \(MFR^e_{i,t-1}\) is the growth rate of the leading business income of the listed company predicted by the institution with 180-day cycles at the end of the t-1 year, \(MFR^m_{i,t}\) is the growth rate of the leading business income of the listed company predicted by the institution with 180-day cycles in the middle of the t year, \(MBI\) is the actual leading business income of the listed company, \(MER^e_{i,t-1}\) is the comprehensive rating score of the listed company predicted by the institution with 180-day cycles at the end of the t − 1 year, and \(MER^m_{i,t}\) is the comprehensive rating score of the listed company predicted by the institution with 180-day cycles in the middle of the t year.

(3) Moderating variables: the moderators mainly consider the impact of government institutional environment and capital market environment on enterprise innovation in this paper. Where, GOS was selected to reflect the government institutional environment, measured by the proportion of government subsidies in the leading business income [10], and INC was selected to reflect the capital market environment, measured by the number of institutions focusing on the listed company [19], and is calculated as follows:

\[
INC_{i,t} = (INC^e_{i,t-1} + INC^m_{i,t})/2 \tag{4}
\]

where \(INC^e_{i,t-1}\) is the number of institutions predicting per-share earnings of the listed company with 180-day cycles at the end of the t − 1 year; \(INC^m_{i,t}\) is the number of institutions predicting per-share earnings of the listed company with 180-day cycles in the middle of the t year.

(4) Control variables: Based on the related topic research results and practice of home and abroad, this paper selects eight sub-indicators as control variables X, including enterprise attribute, financial attribute, and resource attribute. Where, the enterprise size ENS, measured by the natural logarithm of total assets at the end of t year; the enterprise age ENA, measured by observation date minus establishment date of enterprise; the risk degree RID, measured by the z-value in financial analysis; the asset liquidity ASL, measured by the current ratio in financial analysis; the capital self-sufficiency rate CSR, measured by the cash flow adequacy ratio in financial analysis; the labor intensity LAI, measured
by labor cost with cash paid to and for employees divided by operating income; the technology intensity \( TEI \), measured by the technicians divided by the total employees; and the capital intensity \( CAI \) is measured by the net cash flow from investment activities divided by the net cash flow from operating activities, as shown in the Table 2.

| Table 2. Definition and measurement of variables. |
|-----------------------------------------------|
| **Type**   | **Variables** | **Observation** | **Definition and Measurement**               |
| Dependent Variables | Innovation Input | PRE            | R & D expenses divided by operating revenue |
|                 |                  | PRS            | R & D personnel divided by total employees |
|                 | Innovation Output | ALP            | Economic added value divided by total employees |
| Independent Variables | Market Expectation | MEG            | See formula (2) |
|                 |                  | MER            | See formula (3) |
| Moderating Variables | Capital Environment | INC          | See formula (4) |
| Government Environment |                  | GOS            | Government subsidies divided by operating revenue |
| Control Variables | Enterprise Attribute | ENS          | Natural logarithm of total assets |
|                 |                  | ENA            | Observation date minus establishment date |
| Financial Attribute | Financial Attribute | RID          | Early warning bankruptcy Z value |
|                 |                  | ASL            | Liquidity ratio |
|                 |                  | CSR            | Cash flow adequacy ratio |
| Resource Attribute | Resource Attribute | LAI           | Labor cost |
|                 |                  | TEI            | Technician divided by total employees |
|                 |                  | CAI            | Investment activities divided by operating activities in the net cash flow |

3.4. Descriptive Statistics

The descriptive statistics of sample size, minimum value, maximum value, mean value, and standard deviation of dependent variables, independent variables, moderator variables, and control variables are shown in Table 3. The mean and standard deviation of the market expectation gap are respectively 76.979 and 332.268, which indicates that there is a big difference among the market expectation gap of the listed companies in the manufacturing industry; different capital market institutions have made different predictions for listed companies from different perspectives. As a result, it is difficult for investors, the board of directors, and enterprise managers to make accurate judgments and decisions after receiving relevant information.

| Table 3. Variables’ descriptive statistical results. |
|-----------------------------------------------|
| **Variable** | **Size** | **Minimum** | **Maximum** | **Mean** | **Std.** |
| PRE          | 3706     | 0.010       | 125.910     | 4.293    | 4.424    |
| PRS          | 3706     | 0.010       | 84.660      | 15.226   | 10.994   |
| ALP          | 3706     | −18.843     | 48.593      | 0.107    | 1.810    |
| MEG          | 3706     | −1997.477   | 237.207     | −0.391   | 34.643   |
| MER          | 3706     | 1.000       | 3.000       | 1.649    | 0.356    |
| INC          | 3706     | 1.000       | 44.500      | 9.946    | 7.111    |
| GOS          | 3706     | 0.000       | 48.229      | 1.224    | 2.152    |
| ENS          | 3706     | 1.382       | 8.887       | 3.879    | 1.168    |
| ENA          | 3706     | 2.016       | 58.290      | 16.782   | 5.180    |
| RID          | 3706     | −0.580      | 205.178     | 8.709    | 12.888   |
| ASL          | 3706     | 0.169       | 51.133      | 2.690    | 3.121    |
| CSR          | 3706     | −121.508    | 218.602     | 0.927    | 7.612    |
| LAI          | 3706     | 0.009       | 1.492       | 0.117    | 0.069    |
| TAI          | 3706     | 0.193       | 84.663      | 18.378   | 12.499   |
| CAI          | 3706     | −1609.333   | 1972.500    | 2.340    | 220.515  |
4. Empirical Test and Result Analysis

The panel unit root test of the main variables is shown in Table 4. The variables such as PRE, PRS, ALP, MEG, MFI, MER, INC, and GOS, all pass the tests of LLC (Levin, Lin and Chu), IPS (Im, Pesaran and Shin), ADF (Augmented Dickey-Fuller), and PP (Phillips-Perron). They are stationary series at the 1% significance level. Therefore, they can be used for the regression analysis of unbalanced panel data. At the same time, in order to avoid the problems of heteroscedasticity and unit difference, all variables entering the unbalanced panel model are converted into Driscoll–Kraay standard deviation before the regression estimation. The way of variable-centralization can also reduce the correlation between the adjusting items and other independent variables to a certain extent and avoid multicollinearity problems.

Table 4. Panel unit root tests.

| Variables | LLC     | IPS     | ADF     | PP      |
|-----------|---------|---------|---------|---------|
| PRE       | -102.467| -82.992 | 1245.050| 1525.990|
| PRS       | -381.597| -133.915| 1340.030| 1599.750|
| ALP       | -72.235 | -25.614 | 977.283 | 1162.540|
| MEG       | -1299.050| -134.900| 1465.970| 1764.900|
| MFI       | -239.833 | -48.648 | 1283.220| 1567.600|
| MER       | -159.057 | -74.881 | 1185.380| 1472.660|
| INC       | -63.283 | -24.277 | 880.103 | 1102.540|
| GOS       | -7548.520| -474.823| 1014.670| 1137.460|

4.1. The Main Effect between Market Expectation Gap and Innovation Input

The regression results of unbalanced panel data between market expectation gap and enterprise innovation input are shown in Table 5. The PRE-M1 entering only control variables is the benchmark model, and the PRE-M2 adds the market expectation gap and its square term to test the non-linear effect of the market expectation gap on enterprise innovation input. The test results of PRE-M2 show that there is a significant U-shaped relationship between market expectation gap and enterprise innovation input (Beta = 0.005, p < 0.01). Hypothesis 1a is verified, which shows that as the gap between the expected performance of institutions and the actual operating performance of enterprises becomes larger and larger, enterprise innovation input first decreases and then increases.

On the one hand, if the market expected performance of institutions is slightly lower than the actual operating performance of enterprises, the decision-making behavior of managers will become inert, which inhibits the strategic change of enterprises, and innovation with high risk is difficult [13]. However, if the market expected performance of institutions is far lower than the actual operating performance of enterprises, the manager attitude towards risk will change from risk-averse to risk-pursuer, and influence the subsequent strategic decision-making behavior [15], because the continuous exceeding of institution market expectation will enhance manager confidence and risk preference, which leads managers to believe that they can control the impact of adverse events and pay more attention to the high benefits of successful high-risk strategies [16]. So, when the market expected performance of institutions is far lower than the actual operating performance of enterprises, the innovation strategy with high risk and high return will be the manager’s priority.
On the other hand, if the market expected performance of institutions is slightly higher than the actual operating performance of enterprises, facing the external expectation pressure, managers will reduce the innovation input with risk and uncertainty to maintain their reputations and realize the short-term performance of enterprises [17], because the increase of innovation input cannot make the operating performance grow well immediately, but will increase the operating cost, which makes the short-term performance of enterprise less able to achieve the market expectation performance.

Therefore, in order to achieve market expectations and avoid risks, reducing innovation input will be the best choice for enterprise managers to achieve the market expected performance of institutions [8]. However, if the institutions consistently raise the market valuations, resulting in the market expected performance far higher than the actual operating performance, with the increase of these external performance pressures, enterprise managers will search for solutions to reduce reputation loss, reshape corporate image, and are more inclined to adopt transformative strategies with certain risks, which will increase the probability of enterprises engaging in innovation activities [18].

**Table 5. Regression results of the relationship between MEG and PRE.**

| Variables | PRE-M1 | | PRE-M2 | | PRE-M3 | |
|-----------|--------|---|--------|---|--------|---|
| MEG       | −0.126 *** | 0.000 | −0.162 *** | 0.000 | |
| MEG²      | 0.005 *** | 0.000 | 0.016 *** | 0.000 | |
| INC       | −0.005 | 0.761 | 0.068 *** | 0.000 | |
| INC × MEG | 0.007 *** | 0.001 | 0.030 | 0.042 | |
| GOS       | 0.030 ** | 0.042 | 0.066 *** | 0.000 | |
| GOS × MEG | −0.005 *** | 0.000 | | |
| ENS       | 0.224 *** | 0.000 | 0.216 *** | 0.000 | 0.213 *** | 0.000 | |
| ENA       | −0.052 *** | 0.000 | −0.050 *** | 0.000 | −0.052 *** | 0.000 | |
| RID       | 0.061 *** | 0.002 | 0.084 *** | 0.000 | 0.080 *** | 0.000 | |
| ASL       | 0.017 | 0.407 | 0.005 | 0.805 | 0.005 | 0.803 | |
| CSR       | −0.015 | 0.227 | −0.013 | 0.302 | −0.013 | 0.300 | |
| LAI       | 0.442 *** | 0.000 | 0.426 *** | 0.000 | 0.423 *** | 0.000 | |
| TEI       | 0.198 *** | 0.000 | 0.201 *** | 0.000 | 0.203 *** | 0.000 | |
| CAI       | 0.008 | 0.514 | 0.004 | 0.719 | 0.002 | 0.871 | |
| Individual effect | Fixed | | Fixed | | Fixed | |
| Time effect | Fixed | | Fixed | | Fixed | |
| R² | 0.439 | | 0.447 | | 0.457 | |
| F-statistics | 192.617 | | 175.4079 | | 134.714 | |

Note: *, **, *** are significant at the level of 10%, 5%, and 1%, respectively.

4.2. The Moderating Effect between Market Expectation Gap and Innovation Input

The model of PRE-M3 tests the moderating effect of institutional coverage and government subsidies on the nonlinear relationship between market expectation gap and enterprise innovation input in Table 5. The results show that the moderating effect of institutional coverage is significant (Beta = −0.007, p < 0.01), which significantly weakens the U-shaped relationship between market expectation gap and enterprise innovation input, and Hypothesis 2a is verified; the moderating effect of government subsidies is significant (Beta = −0.005, p < 0.01), which significantly weakens the U-shaped relationship between market expectation gap and enterprise innovation input, and Hypothesis 3a is verified.
The test results of PRE-M3 only show that institutional coverage and government subsidies play a significant role in moderating the U-shaped relationship between market expectation gap and enterprise innovation input. In order to explore how they moderate the relationship, the mean of two moderating variables is respectively plus or minus a corresponding standard deviation to express the high and the low. The statistical values of Tables 3 and 5 are substituted into Formula (1) to calculate the test results, as shown in Table 6. The test results show more clearly that institutional coverage and government subsidies weaken the U-shaped relationship between market expectation gap and enterprise innovation input. Moreover, when one or two moderating variables increase, namely (INC-H, GOS-H), (INC-H, GOS-L) and (INC-L, GOS-H), this will weaken the U-shaped relationship between market expectation gap and enterprise innovation input, and the moderating intensity is \( MO_{INC-H,GOS-H} < MO_{INC-H,GOS-L} < MO_{INC-L,GOS-H} \) in turn, which changes the original U-shaped relationship into the inverted U-shaped relationship between market expectation gap and enterprise innovation input. With the market expectation gap increasing, enterprise innovation input has changed from the first decrease and then increase, into the first increase and then decrease. When (INC-L, GOS-L) occurs, the U-shaped relationship between market expectation gap and enterprise innovation input does not change, but the U-shaped mouth becomes larger and weakens the U-shaped relationship to some extent.

**Table 6.** Moderating effects of INC and GOS on the relationship between MEG and PRE.

| INC | GOS | Relation Function | Shape and Color | Effective Curves |
|-----|-----|-------------------|-----------------|-----------------|
| –   | –   | −0.126MEG+0.05MEG² | U, black        |                 |
| H   | H   | 1.22MEG−0.12MEG²  | Inverted U, red |                 |
| L   | L   | 0.030MEG+0.01MEG² | U, green        |                 |
| H   | L   | 0.936MEG−0.098MEG²| Inverted U, blue|                 |
| L   | H   | 0.254MEG−0.021MEG²| Inverted U, purple|               |

**4.3. The Main Effect between Market Expectation Rating and Innovation Input**

The mode of PRE-M4 adds the market expectation rating and its square term to test the non-linear effect of market expectation rating on enterprise innovation input in Table 7. The test results of PRE-M4 show that there is a significant inverted U-shaped relationship between market expectation rating and enterprise innovation input (\( Beta = −0.002, p < 0.1 \)). Hypothesis 1b is verified, which shows that if the institution gives the enterprise an increasing holding rating, the enterprise innovation input first increases and then decreases. Because the more institutions pay attention to the listed companies, the more the analysis of stock market will be reported, and the more information investors will receive, which will help investors choose enterprises with long-term prospects, to promote their managers to choose more long-term risk projects with positive net present value, and then promote enterprise innovation [11]. However, too much information disclosed will lead to excessive information, which may reduce the self-analysis of investors and enterprise managers when they face excessive information. Investors may no longer pay attention to the long-term development prospects of enterprises, pay more attention to the current income of investment, and lead enterprise managers to reduce risky innovation investment to improve the current performance. Investors may no longer pay attention to the long-term prospects of enterprises but pay more attention to the current return of investment. As a result, enterprise managers may reduce the risk of innovation input to improve their current performance.
Table 7. Regression results of the relationship between MER and PRE.

| Variables   | PRE-M4 |       | Beta     | P     |       | Beta     | P     |
|-------------|--------|-------|----------|-------|-------|----------|-------|
| MER         | 0.129  | *     | 0.050    |       | −0.067| 0.454    |      |
| MER²        | −0.002 | *     | 0.067    |       | 0.080 | 0.028    |      |
| INC         | −0.021 | *     | 0.088    |       | −0.067| 0.468    |      |
| INC × MER   | 0.003  |       | 0.968    |       | −0.032| 0.061    |      |
| INC × MER²  | −0.032 | *     | 0.061    |       | 0.111 | 0.426    |      |
| GOS         | 0.011  |       | 0.426    |       | −0.087| 0.428    |      |
| GOS × MER   | 0.130  | **    | 0.033    |       | 0.088 | 0.028    |      |
| GOS × MER²  | −0.032 | *     | 0.061    |       | 0.111 | 0.426    |      |
| ENS         | 0.223  | ***   | 0.000    |       | 0.103 | 0.000    |      |
| ENA         | −0.051 | ***   | −66.536  | ***   | 0.038 | 0.000    |      |
| RID         | 0.060  | ***   | 0.039    | **    | 0.083 | 0.000    |      |
| ASL         | 0.018  |       | 0.362    |       | −0.028| 0.083    |      |
| CSR         | −0.015 |       | 0.396    |       | 0.007 | 0.000    |      |
| LAI         | 0.443  | ***   | 0.000    |       | 0.412 | 0.000    |      |
| TEI         | 0.197  | ***   | 0.001    |       | 0.066 | 0.000    |      |
| CAI         | 0.008  |       | 0.475    |       | 0.005 | 0.000    |      |

Individual effect  Fixed
Time effect        Fixed
\( R^2 \)          0.440
\( F_{-statistics} \) 170.292

Note: *, **, *** are significant at the level of 10%, 5%, and 1%, respectively.

4.4. The Moderating Effect between Market Expectation Rating and Innovation Input

The model of PRE-M5 tests the moderating effect of institutional coverage and government subsidies on the nonlinear relationship between market expectation rating and innovation input in Table 7. The results show that the moderating effect of institutional coverage is significant (\( Beta = −0.032, p < 0.10 \)), which significantly reinforces the inverted U-shaped relationship between market expectation rating and enterprise innovation input, and Hypothesis 2b is verified; the moderating effect of government subsidies is significant (\( Beta = 0.130, p < 0.05 \)), which significantly weakens the inverted U-shaped relationship between market expectation rating and enterprise innovation input, and Hypothesis 3b is verified.

The test results of PRE-M5 only show that institutional coverage and government subsidies play a significant role in moderating the inverted U-shaped relationship between market expectation rating and enterprise innovation input. In order to explore how they moderate the relationship, the mean of two moderating variables is respectively plus or minus a corresponding standard deviation to express the high and the low. The statistical values of Tables 3 and 5 are substituted into Formula (1) to calculate the test results, as shown in Table 8. The test results show more clearly that institutional coverage and government subsidies significantly moderate the inverted U-shaped relationship between market expectation rating and enterprise innovation input. Moreover, when \(( INC-H, GOS-H )\), \(( INC-H, GOS-L )\) and \(( INC-L, GOS-L )\) occur, the U-shaped mouth of the inverted U-shaped relationship between market expectation rating and enterprise innovation input becomes narrower, which reinforces the relationship, and the moderating intensity is \( MO_{(INC-H, GOS-H)} < MO_{(INC-L, GOS-L)} < MO_{(INC-H, GOS-L)} \) in turn. With the institutions continuously enhancing the market expectation rating of listed companies’ stocks, enterprise managers will speed up innovation input, but when innovation input reaches the peak, it will decrease rapidly. When \(( INC-L, GOS-H )\) occurs, the inverted U-shaped relationship between market expectation rating and enterprise innovation input is significantly changed from inverted U-shaped to positive U-shaped. The above analysis shows that both institutional coverage and government subsidies cannot be increased all the time. Otherwise, it will be too much of a good thing.
4.5. Robustness Test

In order to ensure the robustness of the research results, this paper uses three methods to test robustness: (1) Dependent variable substitution, the total labor productivity (ALP) measuring the innovation output is used to replace the proportion of R&D expenses (PRE) measuring the innovation input; (2) Estimation method difference, the lag term of dependent variable is added to the independent variable, and individual fixed effect, time fixed effect, and GMM (Generalized Method of Moments) is used to estimate respectively; (3) Sample range difference, the years of 2013 and 2014 with only a small number of sample enterprises are deleted and then estimated. The results of the above three tests show that the coefficient value and the adjoint probability of the model have changed to some extent, but the main effect and the moderating effect are not significantly different from the above (see Table 9). (Due to space limitations, this paper only reports the results of the robustness test when ALP replaces the dependent variable PRE).

Table 8. Moderating effects of INC and GOS on the relationship between MER and PRE.

| INC | GOS | Relation Function | Shape and Color | Effective Curves |
|-----|-----|-------------------|-----------------|------------------|
| –   | –   | $0.129 \text{MER} - 0.002\text{MER}^2$ | Inverted U, black |                      |
| H   | H   | $-0.308\text{MER} - 0.027\text{MER}^2$ | Inverted U, red |                      |
| L   | L   | $0.023\text{MER} - 0.131\text{MER}^2$ | Inverted U, green |                      |
| H   | L   | $0.067\text{MER} - 0.365\text{MER}^2$ | Inverted U, blue |                      |
| L   | H   | $-0.352\text{MER} + 0.428\text{MER}^2$ | U, purple |                      |

Table 9. Regression results of the relationship between MEG, MER, and ALP.

| Variables     | M1         | M2         | M3         | M4         | M5         |
|---------------|------------|------------|------------|------------|------------|
| $\text{MEG}$  | $-0.011$   | $-0.028$   |            |            |            |
|               | (0.435)    | (0.194)    |            |            |            |
| $\text{MEG}^2$| $0.002^{**}$ | $0.003^*$  | (0.003)    |            |            |
| $\text{MER}$  |            |            | $0.127^{**}$ | $-0.107$  |            |
|               |            |            | (0.014)    | (0.196)    |            |
| $\text{MER}^2$|            |            | $-0.002^{**}$ | $0.015^*$  | $0.094$   |
|               |            |            | (0.022)    |            | (0.094)    |
| $\text{INC}$  | $-0.044^{***}$ |            | $-0.037^{***}$ |            |            |
|               | (0.001)    |            | (0.003)    |            |            |
| $\text{INC} \times \text{MEG}$ | $0.033^{**}$ |            |            |            |            |
|               | (0.020)    |            |            |            |            |
| $\text{INC} \times \text{MEG}^2$ |            | $-0.001^*$ |            |            |            |
|               | (0.072)    |            |            |            |            |
| $\text{INC} \times \text{MER}$ |            |            |            | $0.150^*$ | (0.081)    |
| $\text{INC} \times \text{MER}^2$ |            |            |            | $-0.010^*$ | (0.090)    |
| $\text{GOS}$  | $0.015$    | $0.006$    |            |            |            |
|               | (0.314)    | (0.619)    |            |            |            |
| $\text{GOS} \times \text{MEG}$ | $0.024^*$  |            |            |            |            |
|               | (0.052)    |            |            |            |            |
| $\text{GOS} \times \text{MEG}^2$ |            | $-0.001^*$ |            |            |            |
|               | (0.081)    |            |            |            |            |
| $\text{GOS} \times \text{MER}$ |            |            |            | $-0.024$ | (0.804)    |
5. Research Conclusions and Management Implications

5.1. Research Conclusions

Based on the unbalanced panel data of Listed Companies in Shanghai and Shenzhen A-share manufacturing industry from 2010 to 2017, this paper investigates the influence mechanism of the gap and rating of market expectation on enterprise innovation input, as well as the moderating mechanism of institutional coverage and government subsidies. The research findings are as follows through theoretical and empirical study.

Firstly, when the market expectation gap between the expected performance of institutions and the actual performance of enterprises is gradually increasing, enterprise innovation input will first decrease and then increase. If the gap is small, then enterprise managers may reduce innovation input to maintain organizational inertia or achieve short-term goals, which shows that the capital market performance stress is not significant, which will make enterprise managers care more about the achievement of capital market performance goals and reduce R&D expenditures that do not immediately have a positive impact on the current performance [13]. Nevertheless, the short-sighted behavior of enterprise managers will damage the long-term interests of shareholders. If the gap is significant, and the market expected performance is far lower than the actual operating performance, then the performance stress will increase, which will stimulate enterprise managers to engage in activities with certain risks but high returns, increase innovation input, and then achieve external expectations [20], which shows that the capital market performance stress is significant, which will stimulate enterprise managers to engage in solution search, form a specific performance driving force for their subsequent decision-making behaviors, and increase innovation input to achieve performance growth.

Table 9. Cont.

| Variables | M1 | M2 | M3 | M4 | M5 |
|-----------|----|----|----|----|----|
| GOS × MER² | 0.046 *** | 0.046 *** | 0.003 | 0.045 *** | 0.045 *** |
| ENS | (0.000) | (0.000) | (0.788) | (0.000) | (0.000) |
| ENS | −0.043 *** | −0.044 *** | −56.084 | −0.043 *** | −0.043 *** |
| ENS | (0.000) | (0.000) | (0.346) | (0.000) | (0.000) |
| RID | 0.044 *** | 0.045 *** | 0.012 | 0.043 *** | 0.041 ** |
| RID | (0.006) | (0.005) | (0.552) | (0.007) | (0.010) |
| ASL | 0.011 | 0.011 | −0.032 * | 0.013 | 0.014 |
| ASL | (0.484) | (0.495) | (0.081) | (0.422) | (0.374) |
| CSR | −0.006 | −0.006 | −0.002 | −0.006 | −0.006 |
| CSR | (0.517) | (0.522) | (0.856) | (0.534) | (0.534) |
| LAI | 0.024 ** | 0.024 ** | 0.033 | 0.025 ** | 0.026 ** |
| LAI | (0.022) | (0.023) | (0.163) | (0.017) | (0.013) |
| TEI | 0.776 *** | 0.773 *** | 0.652 *** | 0.775 *** | 0.773 *** |
| TEI | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CAI | 0.004 | 0.003 | 0.004 | 0.003 | 0.003 |
| CAI | (0.709) | (0.738) | (0.658) | (0.724) | (0.724) |
| Individual effect | Fixed | Fixed | Fixed | Fixed | Fixed |
| Time effect | Fixed | Fixed | Fixed | Fixed | Fixed |
| R² | 0.654 | 0.655 | 0.656 | 0.655 | 0.656 |
| F-statistics | 465.582 | 412.553 | 305.929 | 411.697 | 305.334 |

Note: *, **, *** are significant at the level of 10%, 5%, and 1%, respectively.
Secondly, when the market expectation rating given by the institution is gradually increasing, enterprise innovation input will first increase and then decrease, because the rating can drive enterprise managers to innovate for achieving the capital market rating. The market expectation rating will affect investors’ behavior at first. With the increase of it, the investors who buy and hold the company’s shares will increase. Then the enterprise will get resources not only from the enterprise internally, but also from the external relationship network that is built with stakeholders to optimize the enterprise’s internal and external environments [27]. Enterprise managers will have more capital and resources to invest in innovation activities, and improve enterprise ability of sustainable development to get a more positive evaluation from external institutions. As the rating continues to rise, the opportunity investors will increase significantly. In order to control risk, enterprise managers will gradually slow down risk investment and reduce innovation input.

Thirdly, institutional coverage plays a significant role in moderating the relationship between market expectation and innovation input. On the one hand, as institutional coverage increases, the relationship between market expectation gap and enterprise innovation input will change from positive U-shaped to inverted U-shaped, which shows that with the increase of institutional coverage, the capital market environment will be improved continuously, and the investors and the board of directors will learn more internal and external information, which can effectively reduce the information asymmetry between managers and investors. So, enterprise managers will quickly allocate more resources to innovation projects that can realize investors’ long-term returns to avoid their short-sighted behavior of reducing innovation investment being discovered by investors. On the other hand, as institutional coverage increases, the inverted U-shaped relationship between market expectation rating and enterprise innovation input will be significantly enhanced, and the U-shaped mouth becomes narrower, which shows that the managers will speed up enterprise innovation input, but when the input reaches the peak, it will decrease rapidly with the institutions continuously enhancing the market expectation rating of listed companies’ stocks.

Finally, government subsidies play a significant role in moderating the relationship between market expectation and innovation input. On the one hand, as the government subsidies increase, the relationship between market expectation gap and enterprise innovation input will change from positive U-shaped to inverted U-shaped, which shows that with the increase of government subsidies, the good signal will promote institutions to raise the expected performance of listed companies, and enterprise managers will also respond quickly and increase innovation input continuously. Nevertheless, in order to control risks, they will gradually reduce innovation input after the investment amount reaches a specific limit. On the other hand, When (INC-L, GOS-H) occurs, the inverted U-shaped relationship between market expectation rating and enterprise innovation input has been significantly changed from inverted U-shaped to positive U-shaped; When (INC-H, GOS-H), (INC-H, GOS-L) and (INC-L, GOS-L) occur, the inverted U-shaped relationship between market expectation rating and enterprise innovation input is obviously reinforced, which indicates that the government subsidies can effectively encourage enterprises to accelerate innovation input, and prompt institutions to continuously give corresponding positive evaluation and upgrade comprehensive rating. However, the gradual increase of government subsidies will bring a crowding out effect, which makes enterprises gradually reduce innovation input.

### 5.2. Management Implications

The research expanded the understanding of previous literatures on enterprise innovation from the perspectives of external capital market and government support, investigated the non-linear effects of institutional coverage and government subsidies on the relationship between market expectation and innovation input, and discussed how enterprise managers balance short-term performance pressure and resource incentives from external supervision and management institutions in the process of innovation decision-making. The implications for practice management are as follows:
Firstly, the enterprise’s actual performance does not meet or exceed the institution’s expectation performance, which will drive enterprise managers to weigh the gap between them. If the gap is small, they will pay more attention to risk control when choosing innovation strategy and strive to achieve the short-term expected performance of the capital market; if the gap is large, they are more inclined to take the initiative to bear the risk, stimulate innovation activities, and increase innovation input in order to change the current situation when choosing innovation strategies, to produce long-term prospect incentive effect. Therefore, the investors and managers should not pay too much attention to the short-term market expectation of institutions but should pay more attention to the prospects of enterprises, which encourages managers to take the initiative to bear the risks in order to achieve the long-term market expectation of institutions and increase the investment and development of innovation projects. And then, in order to stimulate the innovation of manufacturers, it is necessary to strengthen further the market-leading logic and deepen the market reform [43], which is also the institutional guarantee to achieve the Made-in-China 2025.

Secondly, the enterprise fails to achieve the expected performance of the capital market, which will drive enterprise managers to implement the problem search. In this process, if investors and shareholders pay too much attention to whether the expected performance of the capital market is achieved and take it as the standard to judge the ability of managers, then it will inevitably lead to enterprise managers striving to achieve the expected performance of the capital market in the strategic choice and damaging the long-term interests of shareholders. Therefore, achieving the expected performance of the capital market cannot be regarded as the standard to judge the ability of managers, which can liberate managers from the process of continually chasing external expectations, reduce the short-sighted behavior of managers to achieve the external expected performance, and decrease the agency cost between managers and shareholders. Simultaneously, the institutional coverage can effectively reduce the information asymmetry between investors and managers, which has a specific indirect constraint and incentive effect on enterprise managers. Therefore, the government should further strengthen the construction of the capital markets and give full play to the external governance and supervision effect of institutions. The improvement of the external market environment is conducive to reducing the systematic risk of the market and stimulating enterprises to innovate to the greatest extent.

Finally, policies must help to encourage and support innovation and development of enterprises, and the government should reasonably control the support degree. The government should give some financial subsidies to encourage enterprises to innovate, pay more attention to the construction and improvement of system environment and market environment, and then guide investors to change from short-term interests to value investment for the long-term development of enterprises, which encourages them to innovate continuously, improves the their competitiveness, promotes the vigorous development of mass entrepreneurship and innovation, and boosts the steady growth of China’s economy.

5.3. Shortcomings and Prospects

Of course, the remaining need further exploration and much improvement. Firstly, this paper mainly has analyzed how the expected gap and rating of the external capital market, as well as the institutional coverage and government subsidies, affect enterprise innovation input, but has not taken into account how the design and behavior of institutions can benefit or not the implementation of innovations. Future research should combine the variables of institutions, for example, the rule of law, bureaucracy, tax policy, and monetary policy, to explore the role that institutions play on both innovations and entrepreneurs. Secondly, the variables are objectively measured by the unbalanced panel data of micro-enterprises in this paper, which have not measured managers’ subjective risk preference, and have not explored managers’ psychological behavior in the decision-making process of innovation. Future research should combine subjective and objective variables to more comprehensively analyze enterprise innovation behavior. Finally, this paper mainly measures the impact of external
market expectation on enterprise innovation and sets eight control variables from the attributes of enterprise, finance, and resources. However, the influences of other internal resources such as marketing and operation management, and the market competition in the external environment have not been considered. So, future research should integrate the internal and external factors of the enterprise more closely to explore how their typical roles affect the decision-making process of innovation.

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