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Research Article

Compensation Incentive of Executives under the Situation of Synergy or Mutual Exclusion of Corporate Profit and Innovation Tasks: Based on Incentive Game Model between Principal and Agent

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Based on the synergistic or mutually exclusive relationship between corporate profits and innovation tasks, such that shareholders can predict these two scenarios, this study constructed a multitask principal-agent mode considering “the degree of synergy or mutual exclusion between profit and innovation,” “salary reduction penalty,” and other factors. Based on mathematical logic, we determined the correlation and influence of synergistic or mutually exclusive degrees on executive profitability compensation and salary reduction penalties. Based on the 2016–2022 annual reports of A-share listed companies registered in Shanghai and Shenzhen, China, this research empirically verifies the effects of the aforementioned degree of synergy and mutual exclusion on managers’ compensation incentives. The research conclusions are stated as follows: (1) If shareholders can predict the synergy between profitability and innovation activities, then the salary reduction penalty (representing executive compensation stickiness) exhibits a significant negative correlation with the degree of synergy μ, whereas if the coefficient of executive profitability compensation β_i (compensation sensitivity) bears a moderately positive relationship with μ, the shareholders will, to a certain extent, improve the performance-sharing coefficient of senior executives and reduce the penalty coefficient of salary reduction to increase the overall income level of senior executives via the incentive effect. (2) If shareholders can predict the mutually exclusive effect of profitability and innovation activities, the salary reduction penalty (representing executive compensation stickiness) is significantly positively correlated with the degree of mutual exclusion μ, whereas the coefficient of executive profitability compensation β_i (compensation sensitivity) negatively affects the degree of synergy μ to a certain extent; however, this negative relationship is not prominent. This indicates that to avert the short-sighted behaviour of executives, shareholders will drive them toward investing in innovation by reducing the profitability compensation coefficient as well as increasing the innovative compensation coefficient. Simultaneously, the shareholders will increase the penalty coefficient of salary reduction to urge the executives to strengthen the operation and management of other profitable activities of the enterprise to maintain short-term performance at a reasonable level. (3) If shareholders cannot predict the synergy between profitability and innovation activities, they will attribute the source of excess earnings to the efforts of the senior executives. In particular, a greater degree of synergy is more likely to reduce the penalty for the senior executives. If the shareholders cannot predict the mutually exclusive effect of profitability and innovation tasks, the correlation between the penalty coefficient of salary reduction and the degree of mutual exclusion is related to the decline in performance. In such a scenario, the shareholders attribute the short-term deterioration in corporate performance to the negligence of the senior executives in corporate operations. Consequently, they urge senior executives to seriously operate the enterprise by increasing the penalty for senior executives. If the decline in performance exceeds the critical value, the shareholders will effectively motivate the senior executives by reducing the penalty coefficient of their salary reduction and moderately increasing their profit-making compensation sharing coefficient to avoid negative investment or their resignation.

1. Introduction

Innovation is a principal driving force of development, and a nation must rigorously promote its innovation level to improve its competitiveness. In this regard, the sole reliance on scientific research institutions is insufficient, as enterprises are key drivers of innovation. Moreover, continuous innovation is indispensable for the long-term development of an enterprise. Regardless of the enterprise's profit-making endeavours, it must innovate to achieve progress. Successful innovation by the enterprise will considerably increase its market share and leverage its competitive advantage in the same industry. Specifically, for enterprises with gloomy development prospects, innovation activities are highly preferred to improve the performance of the enterprise.

Owing to the separation of management rights and proprietary rights and the information asymmetry caused by the enterprise management system, differences arise in the interests pursued by shareholders and the salary expectations of managers. Therefore, certain differences will exist between shareholders and executives in terms of risk perception and long-term and short-term interest demands. To this end, Jensen and Meckling [1] proposed the concept of principal-agent, wherein managers and owners form a contractual relationship by signing an agreement, and agents follow the contents of the contract for performing activities such as operation and management. A comprehensive compensation contract should attempt to converge the interests of both the executives and shareholders, such that executives are encouraged to implement the management activities from the perspective of maximizing the value of the company. Under this agency-by-agreement relationship, the avenue of innovation enables shareholders and managers to employ different countermeasures. Shareholders preside with an attitude of guiding and supporting the innovation activities, whereas the high risk and high uncertainty involved in executing the innovation projects can degrade the short-term performance of the enterprise, which consequently poses a negative impact on the personal remuneration of senior executives. Therefore, managers tend to be cautious regarding the innovation requirements of shareholders. As observed in several instances, the key to resolving any problem is the convergence of the interests and goals of senior management and shareholders.

The incentive mechanism for managers is vital to alleviate the conflicts of interests between senior executives and shareholders, and its design and implementation have widely concerned scholars and practitioners. In case the salary incentive is not adequately effective, further incentives will motivate opportunistic behaviour among the senior management. To coordinate the conflict of interests between the operator and owner, the optimal compensation contract theory forms the basis for providing an optimal compensation incentive contract and minimising the agency cost. Compensation incentives can effectively alleviate the long-standing principal-agent conflict of the listed companies, reduce the risk aversion of managers, and effectively restrain the generation of opportunistic behaviour of managers. Therefore, to implement the enterprise innovation strategy considering the current economic background, how to improve and develop the innovation incentive mechanism for managers, adjust the incentive methods in a targeted manner, and guide senior executives to account for both personal interests and enterprise innovation goals constitute the core issues for leveraging innovation advantages at the enterprise level, which demands further research. Thus, this study aims to construct a multitask principal-agent mode that contains both profit and innovation tasks to analyse the most optimal management incentives under the mutually exclusive and cooperative state of enterprise innovation as well as profitable tasks. Furthermore, we propose a targeted incentive adjustment scheme to develop a theoretical basis as well as an empirical reference for improving the senior management incentive mechanism to act as a key driver of enterprise innovation.

The contributions of this research are stated as follows: (1) overcome the limitations of previous empirical research and construct a multitask principal-agent model considering both profit-making and innovation tasks; (2) deduce the optimal solution of managers' incentive under the guidance of innovation; and (3) mathematically express the logic between enterprise innovation goals and managers' compensation incentives. This study aims to provide theoretical support for subsequent related research and promote relevant theoretical research at a deeper level. (2) In the basic principal-agent model, factors such as "mutual exclusion or degree of synergy between innovation and profit" and "salary reduction penalty" are included. Thus, the innovation incentive mechanism of managers should be analysed from the perspective of the performance sharing coefficient and salary reduction penalty, which act as theoretical support for corporate managers' incentive mechanism to develop an adjustment plan and provide practical value along with theoretical significance.

2. Literature Review

2.1. Relationship between Innovation and Corporate Performance. Currently, the relationship between innovation and corporate performance has not achieved consensus among scholars. Certain scholars believe that the relationship between innovation input and firm performance is complementary, i.e., high performance is conducive towards promoting innovation input decision-making, and the performance of a firm will improve with a greater innovation input [2–4]. Camisón and Villar-López's [5] research results confirmed that organisational innovation is crucial for the development of technological innovation capability, and the adoption of organisational innovation improves the technological capability of enterprises to develop new products and processes, thereby enabling them to achieve higher performance. In addition, Lee et al. [6] inferred a similar research conclusion, reporting that for high-tech enterprises, the relationship between new products and corporate performance increases with market innovation. In low-tech enterprises, process innovation and organisational innovation pose a direct and positive impact on corporate performance. Boubakri et al. [7] investigated that risk-taking is a crucial driving force for promoting corporate performance. Interestingly, certain scholars have drawn contrasting research conclusions. They believe that enterprise innovation input requires a large amount of capital, is difficult to predict, and is often in conflict with enterprise performance. For instance, Tong and Zhang [8] demonstrated that high research and development expenditures will create an impact on the short-term financial performance of enterprises but will result in higher expected future cash flows. Markarian et al. [9] studied the relationship between innovation input and incremental return on assets, highlighting that enterprise management would consider changes in the current return on assets before implementing R&D investment decisions. If the return on assets diminishes, enterprise innovation input would be reduced as well. Other scholars state that the relationship between innovation input and corporate performance is not a simple linear relationship. For instance, Laursen and Salter [10] considered large industrial enterprises in their sample and identified that the relationship between the innovation input and corporate performance follows an inverted U-shaped trend. Upon examining the relationship between R&D input, innovation cost, and productivity of manufacturing enterprises, Trachuk and Linder [11] identified that innovation investment and enterprise performance growth are related nonlinearly, and these two factors develop a strong positive correlation only when innovation investment attains a critical quality. Thus, the relationship between innovation investment and enterprise performance cannot be easily summarised. Relevant innovation activities aid in improving the long-term performance of enterprises. Nonetheless, the high demand for funds for innovation investment will inevitably diminish the short-term performance of the enterprise and might promote myopic behaviour among managers. Thus, managers would continue to strive toward improving the performance of the enterprise, maximise current profits, and disregard innovation decisions that are discussed later in this paper. However, continuous innovation is conducive to the improvement of the core competitiveness of enterprises and will certainly yield positive economic benefits to enterprises in the long term.

2.2. Relationship between Management Incentives and Corporate Innovation. The essence of motivation is to enable managers to produce positive behavioural responses and achieve the goal through external stimulation. The research and development investment in enterprise innovation involves high risk and high uncertainty. The effective incentive for managers aids in improving their sense of responsibility, mobilising the enthusiasm of enterprise affairs participation, and focusing on the profitability of the enterprise. It can restrain the short-sighted behaviour influenced by the low rate of return on innovation in the short term. Prugsamatz [12] observed that with the correct incentive measures such as those rewarding long-term performance, dominant CEOs can be incentivized to pursue ventures such as innovative projects that are critical towards promoting the long-term growth of their company.

External incentives include various management methods and influencing factors. Currently, scholars categorise management methods into explicit incentives (salary incentives and equity incentives) and implicit incentives (job promotion incentives, etc.). As the fundamental measure of alleviating the principal-agent problem, the compensation contract is dominated by explicit incentives and supplemented by implicit incentives [13]. Therefore, this literature review focuses on summarising the impact of salary incentives and equity incentives on innovation.

2.2.1. Impact of Salary Incentives on Corporate Innovation. Stakeholder management theory holds that the development of a company is closely related to the input or participation of various stakeholders, such that the enterprise pursues the interests of the stakeholders as a whole and not only the interests of certain subjects. Compared with corporate shareholders, senior executives are more risk-averse to innovation. Compensation incentives in listed companies can effectively restrain the long-term conflict between principal agents and risk-aversive managers, which can avoid unfavourable situations arising from risky, uncertain projects. Therefore, certain scholars have demonstrated that providing compensation incentive to managers can enhance the enthusiasm of innovation activities and positively affect the innovation input for innovation performance of enterprises [14–17]. Coles et al. [18] believed that increasing executive compensation can indemnify the losses caused when executives abandon short-term high-yielding projects to focus on innovative activities. Therefore, monetary compensation incentives are essential for promoting the innovation activities of enterprises. Cheng [19] argued that a reasonable compensation incentive mechanism can mitigate the risk-aversive attitude of senior executives and encourage them to engage in innovative investment activities. Xu et al. [20] concluded that compensation incentives pose a significantly positive impact on the relationship between innovation investment and financial sustainability, especially in technology-intensive enterprises. Haider et al. [21] demonstrated that management compensation is positively correlated with firm innovation (represented by R&D investment and intangible assets), and the total compensation provided to executives and specialists motivates them to invest more in R&D activities and innovative products. Similarly, Phung et al. [22] reported that the compensation level of top managers is directly related to the score of eco-innovation participation in the company. Furthermore, certain scholars believe that managers' compensation is directly linked to enterprise performance, and the conflict between innovation input and short-term performance can easily induce short-sighted behaviour among managers, which is not conducive to enterprises' innovation decision-making. For example, Tosi et al. [17] stipulated that corporate innovation is a risky long-term investment, whereas compensation incentive is a short-term incentive that urges corporate managers to attend more to projects with short duration of innovation and high returns and abandon innovative investments with longer duration and higher risks, i.e., compensation incentive will inhibit corporate innovation. The analysis conducted by Zeng et al. [23] reported that executives with a strong salary comparison mentality exhibit less risk-taking and more short-sighted behaviours, thereby reducing their motivation to innovate. Liang et al. [24] reported that salary incentives can motivate managers to strive for improving the short-term performance of enterprises. However, it negatively impacts enterprise innovation, and the salary incentive of managers bears a significant negative relationship with the efficiency of enterprise innovation as well as research and development.

2.2.2. Impact of Equity Incentives on Corporate Innovation. An equity incentive is a medium- and long-term incentive tool that combines incentives with constraints. Primarily, it aims to build a sense of ownership among the employees by providing them with certain shareholders' rights and interests, which forms a community of interests within the enterprise, helps the enterprise to achieve the long-term goal of stable development, and motivates investment in research and development. Stulz [25] used this model for the first time to prove that when the manager's shareholding ratio is excessively high, it will result in a lack of acquisition premium and reduce the value of the company. If managers' shareholding ratio is extremely low, investors are not willing to pay a higher acquisition premium to gain control of the company. Instead, the company should have a unique value of managerial ownership to maximise its value. Currently, several scholars have indicated that equity incentive is positively related to enterprise innovation and research, i.e., executive ownership and innovation benefits display a convergence effect. For instance, Smith and Stulz [26] considered that the incentive method involving the addition of stock options to the executive compensation portfolio can increase the convexity of executive compensation, thereby alleviating the agency problem caused by the inconsistent interests of shareholders and executives. Currim et al. [27] analysed the data of 842 listed companies from 1993 to 2005 and reported that an increase in managers' equity incentive is conducive to the improvement of R&D expenditure by enterprises, thereby promoting the enterprise innovation level. Liu et al. [28] empirical results demonstrated that correctly designed equity incentive plans can promote enterprise innovation activities; however, short-sighted managers will damage enterprise innovation. Only a few scholars such as Que and Ren [29] verified that the impact of equity incentives on corporate performance exhibits an inverted U-shaped relationship based on the sample data of A-share-listed companies from 2013 to 2016. Although compensation incentives positively impact the relationship between restricted stock incentives and corporate performance, they also have a negative impact on the relationship between stock-option incentives and corporate performance.

2.3. Literature Evaluation. There are abundant researches on enterprise innovation, enterprise performance, and manager incentives in the existing literature, and their theoretical achievements provide theoretical support for the follow-up research. However, it can be found that there are still some limitations in the existing theoretical achievements through reviewing the previous literature: (1) Few literature explore manager incentive from the dual perspectives of profit and innovation tasks. Most of the existing literature focuses on the impact of compensation incentives and equity incentives on enterprise innovation, but the literature research on manager incentives from the perspective of the synergistic or mutually exclusive relationship between enterprise profit and innovation is still shallow. (2) The synergistic or mutually exclusive relationship between profit and innovation tasks will have an important impact on incentive contracts, for example, by affecting the salary reduction penalty (executive compensation stickiness) and coefficient of executive profitability compensation (compensation sensitivity) in incentive contracts, resulting in differences in the incentive effect of managers. The research on this part is very weak, and relevant research literature has not been consulted so far, which needs further exploration.

3. Research Ideas and Model Building

The German physicist Hermann Haken first proposed the "synergy effect," which refers to the enterprises in a cluster because of mutual cooperation, sharing business and specific resources, and thus achieving higher profitability; in simple terms, the "$1 + 1 > 2$" effect. Considering this as a reference, the synergy or mutual exclusion between profit and innovation tasks proposed herein refers to whether the innovation activities can yield additional gain for profit-making activities in the short term or the same period, such that the enterprise's performance produces a synergistic effect of "$1 + 1 > 2$." On the contrary, if the augmentation of innovation activities requires a disposition of a large corpus of working capital, resulting in a significantly lower profit level than the expected target, then the profit and innovation tasks considered to be mutually exclusive. In event that an enterprise opts to perform innovation activities, the executive revenue function depends on whether the mutual exclusion or synergy between the innovation and profit tasks can be predicted by the shareholders. If the shareholders can predict the degree of synergy or mutual exclusion between these two types of activities, shareholders can identify that the significant increase or decrease in the corporate performance is related to innovation activities, but not to the executives' efforts. Therefore, the surplus benefits resulting from the innovation activities will not be shared among the senior executives, and the decline in performance caused by innovation will not be attributed to the senior executives. Thus, in both cases, the actual income of the senior executives is only the sum of the fixed remuneration, the remuneration for profit-making activities, and the normal remuneration for innovation activities, excluding the shares of excess or reduced benefits resulting from the synergy or mutual exclusion of profits and innovation tasks.

However, if the shareholders cannot predict the synergistic or mutually exclusive relationship between the activities of profitability and innovation, they cannot clearly distinguish whether the increase or decline in performance is caused by the innovation activities or is related to the efforts of the executives. Shareholders can distribute the overall earnings including the excess earnings or declining earnings owing to the synergy or mutual exclusion effect of innovation and profitability to senior executives based on the performance sharing coefficient. In addition to the aforementioned three rewards, the actual revenue of the senior executives shall be additionally provided with a reward based on the performance variations caused by the interaction between innovation and profit.

According to the aforementioned analysis and based on the conventional principal-agent mode, this study considers the synergy or mutual exclusion of corporate profitability tasks and innovative tasks and further subdivides into whether shareholders can predict the synergy and mutual exclusion of two kinds of tasks. The multitask principal-agent model is reconstructed by introducing factors such as “the degree of synergy or mutual exclusion between profit and innovation” and “salary reduction penalty.” Assuming that the level of senior executives’ profitability effort is a_i, the profitability output coefficient is k_i, the company’s profitability revenue π_i can be derived as a linear function of senior executives’ profitability effort, expressed as $\pi_i = k_i a_i + \varepsilon_i$, where ε_i denotes a random factor affecting the company’s output, $\varepsilon_i \sim N(0, \sigma_i^2)$. Similarly, assuming that the level of the top management’s innovative effort is a_j and the innovative output coefficient is k_j, the company’s innovative revenue π_j can be derived as a linear function of the top management’s innovative effort, the linear function expression of the innovative efforts of senior executives is $\pi_j = k_j a_j + \varepsilon_j$, $\varepsilon_j \sim N(0, \sigma_j^2)$. Assuming that the fixed salary of the company’s senior executives is C, the decline in performance is n, $n \in [0,1]$, β_i and β_j denote the profitability sharing coefficient and innovation sharing coefficient of the executives respectively, β_i and $\beta_j \in [0,1]$, λ denotes the salary reduction penalty coefficient, $\lambda \in [0,1]$, and μ represents the degree of synergy or mutual exclusion between profit and innovation, $\mu \in [0,1]$.

3.1. Principal-Agent Mode in Which the Degree of Synergy or Mutual Exclusion between Profit and Innovation Can Be Predicted by Shareholders

3.1.1. Synergies Can Be Predicted by Shareholders. If the profit-making tasks are coordinated with innovation tasks, then the innovation activities will produce additional gains to the profit-making tasks. In case the shareholders can predict the synergy, they can identify the origin of such additional gains as the synergistic effect of the mutual promotion of the innovation and the profit-making tasks, which is unrelated to the individual efforts of the senior executives. Therefore, this portion of the additional gains will not be shared with the senior executives, and the degree of synergy will not impact executives’ actual income. As such, the executives’ actual income includes fixed remuneration, remuneration for profitable tasks, and remuneration for innovative tasks, expressed as follows:

$$S(\pi) = C + (\beta_i - \lambda n)\pi_i + \beta_j \pi_j. \tag{1}$$

Assuming that the executive effort cost is $C(a) = (1/2) b_i a_i^2 + (1/2) b_j a_j^2$, (where b denotes the executive effort cost factor), the actual executive benefit can be derived as follows:

$$S(\pi) = C + (\beta_i - \lambda n)\pi_i + \beta_j \pi_j - \left(\frac{1}{2} b_i a_i^2 + \frac{1}{2} b_j a_j^2\right). \tag{2}$$

Therefore, the executive expectation of earnings $E(C)$ can be expressed as follows:

$$E(C) = C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2} b_i a_i^2 + \frac{1}{2} b_j a_j^2\right). \tag{3}$$

Assuming that the executive is an absolute risk avoidant and ρ denotes the absolute risk aversion, the expected utility of the executive can be expressed as follows:

$$\begin{aligned} V(C) &= C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2} b_i a_i^2 + \frac{1}{2} b_j a_j^2\right) - \frac{1}{2}\rho \operatorname{Var}[S(C)] \\ &= C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2} b_i a_i^2 + \frac{1}{2} b_j a_j^2\right) - \frac{1}{2}\rho\left[(\beta_i - \lambda n)^2 \sigma_i^2 + \beta_j^2 \sigma_j^2\right]. \end{aligned} \tag{4}$$

According to the relations

$$\begin{aligned} \frac{\partial V(C)}{\partial a_i} &= (\beta_i - \lambda n)k_i - b_i a_i = 0, \\ \frac{\partial V(C)}{\partial a_j} &= \beta_j k_j - b_j a_j = 0. \end{aligned} \tag{5}$$

We can obtain

$$\begin{aligned} a_i &= \frac{(\beta_i - \lambda n)k_i}{b_i}, \\ a_j &= \frac{\beta_j k_j}{b_j}. \end{aligned} \tag{6}$$

Equation (6) expresses the executive incentive compatibility constraint (IC).

The actual income of the shareholders is the sum of the company’s profit income, innovation income, and the additional income of these two tasks subtracting the executive compensation expenses. As it is in a synergistic relationship, the sum of the additions is $\mu(\pi_i + \pi_j)$, i.e., the actual income of shareholders is expressed as follows:

$$V = (1-n)\pi_i + \pi_j + \mu\left(\pi_i + \pi_j\right) - \left[C + (\beta_i - \lambda n)\pi_i + \beta_j \pi_j\right]. \tag{7}$$

Expected benefits of shareholders is expressed as follows:

$$\begin{aligned} E(V) = (1-n)k_i a_i + k_j a_j + \mu\left(k_i a_i + k_j a_j\right) \\ - \left[C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j\right]. \end{aligned} \tag{8}$$

Assuming that the executive opportunity income is W, the optimal incentive model can be expressed as follows:

$$s.t.\begin{cases} \text{Max}E(V) = (1-n)k_i a_i + k_j a_j + \mu\left(k_i a_i + k_j a_j\right) - \lfloor C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j \rfloor, \\ (\text{IR})C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\dfrac{1}{2}b_i a_i^2 + \dfrac{1}{2}b_j a_j^2\right) - \dfrac{1}{2}\rho\left[(\beta_i - \lambda n)^2\sigma_i^2 + \beta_j^2\sigma_j^2\right] \geq W, \\ (\text{IC})a_i = \dfrac{(\beta_i - \lambda n)k_i}{b_i}, a_j = \dfrac{\beta_j k_j}{b_j}. \end{cases} \tag{9}$$

By solving the above equation, we can obtain

$$\begin{aligned} \lambda^* &= \frac{\beta_i}{n} - \frac{k_i^2(1-n+\mu)}{n\left(k_i^2 + b_i\rho\sigma_i^2\right)}, \\ \beta_i^* &= \lambda n + \frac{k_i^2(1-n+\mu)}{k_i^2 + b_i\rho\sigma_i^2}, \\ \beta_j^* &= \frac{(1+\mu)k_j^2}{k_j^2 + \rho b_j\sigma_j^2}. \end{aligned} \tag{10}$$

According to equation (10), the salary reduction penalty coefficient λ is negatively correlated with the degree of synergy between profit and innovation μ, the profitability sharing coefficient β_i is positively correlated with μ, and the innovation sharing coefficient β_j is positively correlated with μ, i.e., a smaller salary reduction penalty coefficient increases both the profit and innovation sharing coefficients.

The results revealed that if the shareholders can predict the synergy between the profit and innovation tasks, a higher degree of synergy that can be predicted by shareholders promotes the tendency of shareholders to enhance incentives by reducing the salary reduction penalty coefficient and improving the profitability sharing coefficient and innovation sharing coefficient of executives. Moreover, the shareholders can predict the economic benefits to the enterprise resulting from the investment in innovation. To motivate senior executives toward attending to innovation and actively enacting decisions on innovation projects, their profitability sharing coefficient will be increased to a certain extent, the salary reduction penalty coefficient will be decreased, and their overall revenue level will be improved. In principle, effective salary incentives will motivate executives to implement business decisions that converge with the shareholders' interests. Consequently, executives will adopt a more positive attitude towards the shareholders' innovative goals, which is beneficial for increasing the shareholders' earnings.

Based on the above model derivation results and analysis, hypotheses H1 and H2 are proposed.

H1: When the profit and innovation tasks are synergistic and can be predicted by shareholders, the salary reduction penalty λ is significantly negatively correlated with the degree of synergy μ.

H2: When the profit and innovation tasks are synergistic and can be predicted by shareholders, the coefficient of executive profitability compensation β_i is significantly positively correlated with the degree of synergy μ.

3.1.2. Mutually Exclusive Effects Can Be Predicted by Shareholders. The executive's actual income is the sum of the fixed salary, profit-making compensation, and innovation compensation. If the profit-making and innovation tasks are mutually exclusive and the shareholders can predict this exclusivity, they can identify that the decline in short-term profit-making income is caused by the innovation activities and is unrelated to the executive's behaviour. Therefore, the degree of mutual exclusion will not influence the composition of the executive's actual income, i.e., the executive's actual income can be expressed as follows:

$$S(\pi) = C + (\beta_i - \lambda n)\pi_i + \beta_j\pi_j. \tag{11}$$

Therefore, the executive's expected earnings $E(C)$ can be derived as follows:

$$E(C) = C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right). \quad (12)$$

Assuming that the executive is absolutely risked aversive and ρ denotes the absolute risk aversion coefficient, the expected utility of the executive can be derived as follows:

$$\begin{aligned} V(C) &= C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right) - \frac{1}{2}\rho \mathrm{Var}[S(C)] \\ &= C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right) - \frac{1}{2}\rho\left[(\beta_i - \lambda n)^2\sigma_i^2 + \beta_j^2\sigma_j^2\right]. \end{aligned} \quad (13)$$

According to the relationship,

$$\begin{aligned} \frac{\partial V(C)}{\partial a_i} &= (\beta_i - \lambda n)k_i - b_i a_i = 0, \\ \frac{\partial V(C)}{\partial a_j} &= \beta_j k_j - b_j a_j = 0. \end{aligned} \quad (14)$$

We can obtain

$$\begin{aligned} a_i &= \frac{(\beta_i - \lambda n)k_i}{b_i}, \\ a_j &= \frac{\beta_j k_j}{b_j}. \end{aligned} \quad (15)$$

Equation (15) formulates the executive incentive compatibility constraint (IC).

If the shareholders can predict the degree of mutual exclusion, the actual return of shareholders is the sum of the company's profit income, innovation income, and the additional income of profit and innovation task subtracting the executive compensation expenses. Moreover, if the profit and innovation tasks are mutually exclusive, the resultant of this sum is $\mu(-\pi_i + \pi_j)$, i.e., the actual income of the shareholder can be expressed as follows:

$$V = (1 - n)\pi_i + \pi_j + \mu\left(-\pi_i + \pi_j\right) - \left[C + (\beta_i - \lambda n)\pi_i + \beta_j \pi_j\right]. \quad (16)$$

The shareholders' expected earnings $E(V)$ is

$$\begin{aligned} E(V) = {} & (1 - n)k_i a_i + k_j a_j + \mu\left(-k_i a_i + k_j a_j\right) \\ & - \lfloor C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j \rfloor. \end{aligned} \quad (17)$$

Assuming executive opportunity returns as W, the optimal incentive model can be expressed as follows:

$$s.t.\begin{cases} \mathrm{Max}E(V) = (1 - n)k_i a_i + k_j a_j + \mu\left(-k_i a_i + k_j a_j\right) - \lfloor C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j \rfloor, \\ (\mathrm{IR})C + (\beta_i - \lambda n)k_i a_i + \beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right) - \frac{1}{2}\rho\left[(\beta_i - \lambda n)^2\sigma_i^2 + \beta_j^2\sigma_j^2\right] \geq W, \\ (IC)a_i = \frac{(\beta_i - \lambda n)k_i}{b_i}, a_j = \frac{\beta_j k_j}{b_j}. \end{cases} \quad (18)$$

By solving the above equation (18), we can obtain

$$\begin{aligned} \lambda^* &= \frac{\beta_i}{n} - \frac{k_i^2(1 - n - \mu)}{n\left(k_i^2 + b_i\rho\sigma_i^2\right)}, \\ \beta_i^* &= \lambda n + \frac{k_i^2(1 - n - \mu)}{k_i^2 + b_i\rho\sigma_i^2}, \\ \beta_j^* &= \frac{(1 + \mu)k_j^2}{k_j^2 + \rho b_j\sigma_j^2}. \end{aligned} \quad (19)$$

According to equation (19), the degree of mutual exclusion of the task μ is positively correlated with the salary reduction penalty coefficient λ as well as the innovation sharing coefficient β_j, whereas it is negatively correlated with the profitability sharing coefficient β_i.

The results demonstrated that if the profit and innovation tasks are mutually exclusive and can be predicted by shareholders, a higher degree of mutual exclusion that can be predicted by shareholders increases the salary reduction penalty coefficient set for senior executives and decreases the profit sharing coefficient. Nonetheless, the innovative sharing coefficient will increase. In the short-term period, innovation activities may decrease profit if the innovation investments consume an extensive amount of funds that could otherwise be used for profitable activities. To maintain both performance and income levels, senior executives may be inclined to abandon projects with a more gradual return on innovation investments. Therefore, to effectively avoid myopic behaviour of senior executives, if the shareholders can accurately predict the mutually exclusive relationship between profit and innovation, they will motivate senior executives to invest in innovation by reducing the profitability sharing coefficient and promoting the innovation sharing coefficient. Simultaneously, they will urge senior executives to strengthen the operation and management of other profitable tasks of the enterprise by increasing the salary reduction penalty coefficient, which aims to maintain short-term performance at a reasonable level.

Based on the above model derivation results and analysis, hypotheses H3 and H4 are proposed:

H3: When the profitable tasks and the innovative tasks are mutually exclusive and can be predicted by shareholders, salary reduction penalty λ is significantly positively correlated with the degree of mutual exclusion μ.

H4: When the profitable tasks and the innovative tasks are mutually exclusive and can be predicted by shareholders, the coefficient of executive profitability compensation β_i is significantly negatively correlated with the degree of mutual exclusion μ.

3.2. Principal-Agent Mode in Which the Degree of Synergy or Mutual Exclusion between Profit and Innovation Cannot Be Predicted by Shareholders

3.2.1. Synergies Cannot Be Predicted by Shareholders. If the shareholders cannot predict the synergy and fail to identify the additional revenue generated by the synergistic effect of the innovation and profitability tasks on the company's overall revenue, they will share the overall income with senior executives according to a certain proportion and rules without distinction. In addition to the sum of fixed salary, profit-making compensation, and innovation compensation, the actual income of the senior executives should include the additional profitability and innovation compensation that is influenced by the degree of synergy. Therefore, the actual income of senior executive can be expressed as follows:

$$\begin{aligned} S &= C + (\beta_i - \lambda n)\pi_i + \beta_j\pi_j + \mu\beta_i\pi_i + \mu\beta_j\pi_j \\ &= C + (\beta_i - \lambda n + \mu\beta_i)\pi_i + (1+\mu)\beta_j\pi_j. \end{aligned} \tag{20}$$

The executive's expected earnings $E(C)$ can be expressed as follows:

$$\begin{aligned} E(C) &= C + (\beta_i - \lambda n + \mu\beta_i)k_i a_i \\ &\quad + (1+\mu)\beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right). \end{aligned} \tag{21}$$

Moreover, the executives expect utility as follows:

$$\begin{aligned} V(C) &= C + (\beta_i - \lambda n + \mu\beta_i)k_i a_i + (1+\mu)\beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right) \\ &\quad - \frac{1}{2}\rho\left[(\beta_i - \lambda n + \mu\beta_i)^2\sigma_i^2 + (1+\mu)^2\beta_j^2\sigma_j^2\right]. \end{aligned} \tag{22}$$

Upon partial derivation for a_i and a_j, we obtain

$$\begin{aligned} a_i &= \frac{(\beta_i - \lambda n + \mu\beta_i)k_i}{b_i}, \\ a_j &= \frac{(1+\mu)\beta_j k_j}{b_j}. \end{aligned} \tag{23}$$

The actual income of shareholders is the sum of the company's profit income, innovation income, and the additional income from profit and innovation task subtracting the executive compensation expenses. The sum of the bonuses in the synergistic relationship is $\mu(\pi_i + \pi_j)$. Thus, the expected income of the shareholders can be stated as follows:

$$\begin{aligned} E(V) &= (1-n)k_i a_i + k_j a_j + \mu\left(k_i a_i + k_j a_j\right) \\ &\quad - \left[C + (\beta_i - \lambda n + \mu\beta_i)k_i a_i + (1+\mu)\beta_j k_j a_j\right]. \end{aligned} \tag{24}$$

Assume that the executive opportunity return is W.

$$s.t.\begin{cases} \text{Max}E(V) = (1-n)k_ia_i + k_ja_j + \mu\left(k_ia_i + k_ja_j\right) - \left[C + (\beta_i - \lambda n + \mu\beta_i)k_ia_i + (1+\mu)\beta_jk_ja_j\right], \\ (\text{IR})C + (\beta_i - \lambda n + \mu\beta_i)k_ia_i + (1+\mu)\beta_jk_ja_j - \left(\frac{1}{2}b_ia_i^2 + \frac{1}{2}b_ja_j^2\right) \\ -\frac{1}{2}\rho\left[(\beta_i - \lambda n + \mu\beta_i)^2\sigma_i^2 + (1+\mu)^2\beta_j^2\sigma_j^2\right] \geq W, \\ (\text{IC})a_i = \frac{(\beta_i - \lambda n + \mu\beta_i)k_i}{b_i}, a_j = \frac{(1+\mu)\beta_jk_j}{b_j}. \end{cases} \tag{25}$$

Therefore,

$$\lambda^* = \frac{\beta_i}{n} - \frac{k_i^2(1-n+\mu)}{n\left(k_i^2 + \rho b_i\sigma_i^2\right)},$$
$$\beta_i^* = \frac{\lambda n}{1+\mu} + \frac{k_i^2(1-n+\mu)}{(1+\mu)\left(k_i^2 + \rho b_i\sigma_i^2\right)}, \tag{26}$$

β_j^* bears no relationship with μ and λ.

Analysis of derivation results (26): λ^* is derived from μ to obtain $(\partial\lambda^*/\partial\mu) = -(k_i^2/n(k_i^2 + \rho b_i\sigma_i^2))$; thus, if the profit-making and innovation tasks are coordinated and unpredictable, the salary reduction penalty coefficient λ is negatively correlated with the degree of synergism μ. Moreover β_i^* is derived from μ to obtain $(\partial\beta_i^*/\partial\mu) = (n(k_i^2 - \lambda k_i^2 - \lambda\rho b_i\sigma_i^2)/(1+\mu)^2(k_i^2 + \rho b_i\sigma_i^2))$, the relationship between β_i and μ at this instant cannot be derived owing to the loosely defined positive and negative conditions in the numerator $k_i^2 - \lambda k_i^2 - \lambda\rho b_i\sigma_i^2$.

If the shareholders cannot predict the synergy between the profit-making and innovation tasks, the relationship between the degree of synergy μ and the penalty factor λ is negatively correlated, i.e., the greater the degree of synergy, the less the shareholders will penalise the executives on salary. Shareholders do not predict that the reason for the significant improvement of the company's short-term performance corresponds to the excess returns generated by the synergy of innovation and profit tasks. Therefore, they may attribute this additional revenue to the efforts of the senior management. To maintain enthusiasm and reward the efforts of the senior executives in the operation process, the shareholders will reduce the salary reduction penalty of the senior executives. In addition, as shareholders are unaware of the additional gains resulting from the synergistic effect of innovation and profit tasks, they cannot assess the necessity of further motivating the senior executives to enact innovation decisions. Therefore, they may not continue to motivate the senior executives by adjusting the innovative sharing coefficient.

3.2.2. Mutually Exclusive Effects Cannot Be Predicted by the Shareholders.

If the mutual exclusion effect cannot be predicted by the shareholders, in the total calculation of fixed salary, profit-making compensation, and innovative compensation, the loss of profit-making compensation caused by the mutual exclusion shall be deducted, and the innovative compensation affected by the degree of mutual exclusion shall be included. Therefore, the actual income of senior executives can be expressed as follows:

$$\begin{aligned} S &= C + (\beta_i - \lambda n)\pi_i + \beta_j\pi_j - \mu\lambda\pi_i + \mu\beta_j\pi_j \\ &= C + (\beta_i - \lambda n - \mu\lambda)\pi_i + (1+\mu)\beta_j\pi_j. \end{aligned} \tag{27}$$

Executive expected revenue $E(C)$ can be expressed as follows:

$$\begin{aligned} E(C) = C &+ (\beta_i - \lambda n - \mu\lambda)k_ia_i \\ &+ (1+\mu)\beta_jk_ja_j - \left(\frac{1}{2}b_ia_i^2 + \frac{1}{2}b_ja_j^2\right). \end{aligned} \tag{28}$$

The expected utility of senior management is stated as follows:

$$\begin{aligned} V(C) = C &+ (\beta_i - \lambda n - \mu\lambda)k_ia_i + (1+\mu)\beta_jk_ja_j - \left(\frac{1}{2}b_ia_i^2 + \frac{1}{2}b_ja_j^2\right) \\ &- \frac{1}{2}\rho\left[(\beta_i - \lambda n - \mu\lambda)^2\sigma_i^2 + (1+\mu)^2\beta_j^2\sigma_j^2\right]. \end{aligned} \tag{29}$$

Upon the partial derivation of a_i and a_j, we obtain

$$a_i = \frac{(\beta_i - \lambda n - \mu\lambda)k_i}{b_i},$$
$$a_j = \frac{(1+\mu)\beta_j k_j}{b_j}. \tag{30}$$

The expected earnings of the shareholders can be calculated as follows:

$$E(V) = (1-n)k_i a_i + k_j a_j + \mu\left(-k_i a_i + k_j a_j\right) - \lfloor C + (\beta_i - \lambda n - \mu\lambda)k_i a_i + (1+\mu)\beta_j k_j a_j \rfloor. \tag{31}$$

Assuming that the executive opportunity income is W, the optimal incentive model can be expressed as follows:

$$s.t.\begin{cases} \text{Max}E(V) = (1-n)k_i a_i + k_j a_j + \mu\left(-k_i a_i + k_j a_j\right) - \lfloor C + (\beta_i - \lambda n - \mu\lambda)k_i a_i + (1+\mu)\beta_j k_j a_j \rfloor, \\ (\text{IR})C + (\beta_i - \lambda n - \mu\lambda)k_i a_i + (1+\mu)\beta_j k_j a_j - \left(\frac{1}{2}b_i a_i^2 + \frac{1}{2}b_j a_j^2\right) \\ -\frac{1}{2}\rho\left[(\beta_i - \lambda n - \mu\lambda)^2\sigma_i^2 + (1+\mu)^2\beta_j^2\sigma_j^2\right] \geq W, \\ (\text{IC})a_i = \frac{(\beta_i - \lambda n - \mu\lambda)k_i}{b_i}, a_j = \frac{(1+\mu)\beta_j k_j}{b_j}. \end{cases} \tag{32}$$

Therefore,

$$\lambda^* = \frac{1}{n+\mu}\left[\beta_i - \frac{k_i^2(1-n)}{k_i^2 + \rho b_i \sigma_i^2}\right],$$
$$\beta_i^* = (n+\mu)\lambda + \frac{k_i^2(1-n)}{k_i^2 + \rho b_i \sigma_i^2}, \tag{33}$$

β_j^* bears no relationship with μ and λ.

Analysis of derivative results (33): If the profit-making and innovation tasks are mutually exclusive and cannot be predicted by shareholders, the derivative of λ^* with respect to μ can be obtained as $(\partial\lambda^*/\partial\mu) = (k_i^2(1-n) - \beta_i(k_i^2 + \rho b_i\sigma_i^2)/(n+\mu)^2(k_i^2 + \rho b_i\sigma_i^2))$, which indicates that the derivative yields a critical value. For $(\partial\lambda^*/\partial\mu) \geq 0$, we obtain $0 \leq n \leq 1 - (\beta_i(k_i^2 + \rho b_i\sigma_i^2)/k_i^2)$. In case of $(\partial\lambda^*/\partial\mu) < 0$, we obtain $1 - (\beta_i(k_i^2 + \rho b_i\sigma_i^2)/k_i^2) < n \leq 1$. Upon assuming $(k_i^2/(k_i^2 + \rho b_i\sigma_i^2)) = A$, the threshold is derived as $n = 1 - (\beta_i/A)$. For $0 \leq n \leq 1 - (\beta_i/A)$, the salary reduction penalty coefficient λ is positively correlated with the degree of mutual exclusion μ, and for $1 - (\beta_i/A) < n \leq 1$, they are negatively correlated. Moreover, the profit sharing coefficient β_i of executives is positively correlated with the degree of mutual exclusion μ.

If the profit-making and innovation tasks are mutually exclusive and not predicted by the shareholders, the correlation between the salary reduction penalty coefficient and the degree of mutual exclusion depends on the critical value of the performance decline range. For a small range of performance decline such as $0 \leq n \leq 1 - (\beta_i/A)$, the salary reduction penalty coefficient is positively correlated with the degree of mutual exclusion. In contrast, for $1 - (\beta_i/A) < n \leq 1$, the salary reduction penalty coefficient exhibits a negative correlation with the degree of mutual exclusion, i.e., a greater degree of mutual exclusion reduces the penalty coefficient imposed by the shareholders on the remuneration of senior executives. Based on this analysis, if the shareholders cannot estimate the mutually exclusive effect and if the decline in corporate performance is greater than or equal to 0 but does not reach $1 - (\beta_i/A)$, they attribute the marginal decline in short-term corporate performance to the negligence of the senior executives in corporate operations. The salary reduction penalty coefficient will be increased to urge senior executives to seriously operate the enterprise reduction. In case the performance decline exceeds $1 - (\beta_i/A)$ and is less than or equal to 1, the shareholders may realize that the corporate performance declined primarily because of the extensive amount of capital investment in innovation activities. Concurrently, shareholders should reduce the penalty coefficient to avoid negative actions among the executives, e.g., avoiding investment in innovation tasks or resigning. Moreover, shareholders can moderately strengthen the profit-sharing coefficient of the executives to strengthen the incentive effect.

The aforementioned research results are summarised in Table 1.

Based on the results of model derivation and critical values, uncertain and irrelevant situations may arise in case the profitable and innovative tasks are synergistic or mutually exclusive, which cannot be predicted by the shareholders. Thus, this research did not propose research hypotheses for these two cases. In the following section, we empirically tested only two cases in which the profitable and innovative tasks are synergistic or mutually exclusive and can be predicted by shareholders. Accordingly, the empirical results are further analysed.

Table 1: Derivation results of principal-agent model.

Condition	μ and λ	μ and β_i	μ and β_j
Synergy between profit and innovation tasks is predictable	Negative correlation	Positive correlation	Positive correlation
Mutual exclusion between profit and innovation tasks is predictable	Positive correlation	Negative correlation	Positive correlation
Synergy between profit and innovation tasks is unpredictable	Negative correlation	Uncertain	Irrelevant
Mutual exclusion between profit and innovation tasks is unpredictable	Critical value	Positive correlation	Irrelevant

4. Empirical Test

4.1. Sample Selection and Data Source. The present research object comprises A-share listed companies operating in Shanghai and Shenzhen, China, and the research time window is selected from 2016 to 2022. To ensure the representativity and reliability of the samples, the data are screened as follows: ST listed companies, financial listed companies, and sample data with incomplete relevant variable information are excluded. After sifting and sorting, a total of 12,499 observed values were obtained from 4930 enterprises across 7 years.

The data were primarily acquired from the Guotai'an database. In certain cases, the wind database was used to supplement missing data. Initially, Microsoft Excel was used for simple data processing, and later, Stata17.0 was used for empirical analysis. We winsorised up or down 1% of each continuous variable to eliminate the influence of extreme values.

4.2. Variable Selection and Definition

4.2.1. Explained Variables and Explanatory Variables. The economic connotation and function of the salary reduction penalty λ, incorporated in the stated model, are extremely similar to the role of executive compensation stickiness, both of which refer to the incentive systems formulated for tolerating the short-term failure behaviors of senior executives. Therefore, in the empirical process, the executive compensation stickiness (ECS) was used as a proxy index for the salary reduction penalty λ. As such, the coefficient of executive profitability compensation is related to enterprise performance, and an increase in enterprise performance directly results in higher remuneration for senior executives and encourages them to focus on enterprise development, which is consistent with the definition and connotation of the sensitivity of executive compensation. Therefore, in the following empirical analysis, we employed compensation sensitivity as an alternative index of executive profitability compensation, and the calculation method is based on the practice of Li and Guo [30]. Furthermore, a regression model between executive compensation and the enterprise's performance is established, considering compensation sensitivity as the regression coefficient of the corporate performance index. The corporate performance is measured using return on equity (ROE).

(1) Explained variables in the empirical model

(a) Executive compensation stickiness (ECS). Executive compensation stickiness provides rewards to executives when performance increases, but it does not penalise the executives when performance declines [31]. Executive compensation stickiness refers to the phenomenon that executive compensation is not easily affected by external factors and variations in a short period of time. Numerous studies have explored executive compensation stickiness worldwide. Based on the practices of Lei and Guo [32] and Xu et al. [33], this study measures the executive compensation of the top-three executives and adopts the following steps to calculate executive compensation stickiness: first, we evaluated the annual growth rate of executive compensation and the growth rate of corporate net profit (2012–2022) relative to previous year; second, the annual growth rate of executive compensation was divided by the growth rate of net profit to obtain the sensitivity of the annual variation in executive compensation relative to that in net corporate profit. Third, the mean sensitivity of variations in executive compensation relative to those in corporate net profit was evaluated when the net profit increases and decreases across each year of the sample period (2016–2022) and the rolling five-year period of the first four years; fourth, the rolling five-year executive compensation stickiness (ECS) of executives of each company is obtained by subtracting the increase in rolling average of five-year sensitivity of net profit from the decrease in rolling average of five-year sensitivity of net profit. Stata 17.0 is used to perform the aforementioned calculation steps.

(b) Executive compensation (Lnpay). In the calculation method, the natural logarithm of the average compensation of the top-three executives of the listed company was obtained, and the top-three executives' compensation disclosed in the annual report of the company was used as the data source. In the process of examining the influence of the degree of synergy or mutual exclusion between profitable and innovative tasks on the compensation sensitivity, executive compensation was selected as the explained variable and measured by the natural logarithm of the average compensation of the top-three senior managers.

(2) Explanatory variables in the empirical model

(a) The degree of synergy between profit and innovation and the degree of mutual exclusion between profit and innovation (μ) were considered the explanatory variables in the empirical method. The synergy between the profitability and innovative tasks proposed herein indicates that conducting more innovation activities in the short term or the same period can yield additional gain from profitable activities. In contrast, if the augmentation in innovation activities produces a significantly lower profit of the enterprise than the expected target, the profit and innovation tasks are deemed as mutually exclusive. The performance growth rate is selected as the index to measure the variations in the enterprise's profitable tasks results, and the innovation input growth rate is selected as the primary index to reflect the changes in the enterprise's innovation task results. Prior to testing, the size of μ should be quantified. In this research, the relative value of the performance growth rate/innovation input growth rate was selected to measure the degree of synergy and mutual exclusion of enterprises.

(b) Return on equity (ROE). The return on equity reflects the level of return on the shareholders' equity and measures the efficiency of a company's utilization of its own capital. A higher index value of ROE corresponds to a higher return on investment. Herein, the ROE is used to measure the corporate performance, and the regression coefficient between ROE and Lnpay can reflect compensation sensitivity.

4.2.2. Control Variable. To improve the explanatory power of the empirical research results, the following control variables are selected in this paper: the impact of asset-liability ratio (LEV), corporate growth (GROWTH), shareholding ratio of the largest shareholder (GQP), proportion of independent directors (RATIO), board size (LNBOARD), and double duty (DUAL) on corporate performance. Concurrently, three dummy variables are set: province (PROVINCE), industry (IND), and year (YEAR). The specific definitions and measurement methods of each variable in this paper are listed in Table 2.

4.3. Model Construction

4.3.1. Construction of a Model of the Influence of the Degree of Synergy between Profit and Innovation Tasks on Managers' Compensation Incentive. To verify the above-mentioned hypothesis H1, when profit and innovation tasks are synergistic and can be predicted by shareholders, the salary reduction penalty λ (executive compensation stickiness, ECS) is significantly negatively correlated with the degree of synergy μ. The regression model is established as depicted in

$$\begin{aligned}\mathrm{ECS}_{i,t} &= \alpha_0 + \alpha_1\mu + \alpha_2\mathrm{LEV}_{i,t} + \alpha_3\mathrm{GQP}_{i,t} + \alpha_4\mathrm{LNBOARD}_{i,t} + \alpha_5\mathrm{DUAL}_{i,t} + \alpha_6\mathrm{GROWTH}_{i,t} + \alpha_7\mathrm{RATIO}_{i,t}\\ &\quad + \sum\mathrm{PROVINCE}_{i,t} + \sum\mathrm{YEAR}_{i,t} + \sum\mathrm{IND}_{i,t} + \varepsilon_{i,t}.\end{aligned} \tag{34}$$

In model (34), we emphasise on coefficient α_1, which should be significantly negative according to the proposed hypothesis. In particular, ε denotes a random item, whereas the remainder are control variables, as listed in Table 1.

To verify hypothesis H2, when profit and innovation tasks are synergistic and can be predicted by shareholders, the salary reduction penalty β_{i} (compensation sensitivity) is positively correlated with the degree of synergy μ. A regression model is established, as depicted in

$$\begin{aligned}\mathrm{Lnpay} &= \beta_0 + \beta_1\times\mu + \beta_2\times\mathrm{ROE} + \beta_3\times\mu\times\mathrm{ROE} + \beta_4\mathrm{LEV}_{i,t} + \beta_5\mathrm{GQP}_{i,t} + \beta_6\mathrm{LNBOARD}_{i,t} + \beta_7\mathrm{DUAL}_{i,t}\\ &\quad + \beta_8\mathrm{GROWTH}_{i,t} + \beta_9\mathrm{RATIO}_{i,t} + \sum\mathrm{PROVINCE}_{i,t} + \sum\mathrm{YAER}_{i,t} + \sum\mathrm{IND}_{i,t} + \varepsilon_{i,t}.\end{aligned} \tag{35}$$

In model (35), $\mu\times\mathrm{ROE}$, the cross-multiplication coefficient $\mu\times\mathrm{ROE}$ of μ and ROE, is used to reflect the relationship between the degree of synergy and compensation sensitivity. Therefore, we focus on the cross-multiplication coefficient β_3. If it is positive, the degree of synergy will promote the improvement of the compensation sensitivity, which is in line with hypothesis H2.

4.3.2. Construction of a Model of the Influence of the Degree of Mutual Exclusion between Profit and Innovation Tasks on Managers' Compensation Incentive. To verify the proposed hypothesis H3, when profit and innovation tasks are mutually exclusive and can be predicted by shareholders, the salary reduction penalty λ (ECS) is significantly positively correlated with the degree of mutual exclusion μ. The regression model is established as expressed in

$$\begin{aligned}\mathrm{ECS}_{i,t} &= \gamma_0 + \gamma_1\mu + \gamma_2\mathrm{LEV}_{i,t} + \gamma_3\mathrm{GQP}_{i,t} + \gamma_4\mathrm{LNBOARD}_{i,t}\\ &\quad + \gamma_5\mathrm{DUAL}_{i,t} + \gamma_6\mathrm{GROWTH}_{i,t} + \gamma_7\mathrm{RATIO}_{i,t}\\ &\quad + \sum\mathrm{PROVINCE}_{i,t} + \sum\mathrm{YEAR}_{i,t} + \sum\mathrm{Ind}_{i,t} + \varepsilon_{i,t}.\end{aligned} \tag{36}$$

Table 2: Names, symbols, and measurement methods of variables.

Type	Name	Symbol	Measurement method
Explained variable	Executive compensation	Lnpay	Total compensation of top-three executives is 1/3, considering the natural logarithm
	Executive compensation stickiness	ECS	Measurement method is described above
Explanatory variable	Return on equity	ROE	Net profit/Average net worth
	Degree of synergy or mutual exclusion	M	Performance growth rate/innovation input growth rate
Control variable	The impact of asset-liability ratio	LEV	Total liabilities/total assets
	Corporate growth	GROWTH	Revenue growth rate
	Shareholding ratio of the largest shareholder	GQP	Number of shares held by the largest shareholder/total number of shares in the company
	Proportion of independent directors	RATIO	Number of independent directors/Number of board members
	Board size	LNBOARD	Logarithmic number of board members
	Double duty	DUAL	When DUAL = 1, the chairman and the general manager are the same individual; when DUAL = 0, they are not the same person
	Province	PROVINCE	Virtual variable. If it belongs to the province of the sample, PROVINCE = 1; otherwise, it is 0
	Industry	IND	Virtual variable, which belongs to the industry of the sample, IND = 1; otherwise, IND = 0
	Year	YEAR	Virtual variable, which belongs to the year in which the sample resides, YEAR = 1; otherwise, YEAR = 0

In model (36), we focus on coefficient γ_1, which should be significantly negative according to the above hypothesis. ε denotes a random item.

To verify hypothesis H4, when profit and innovation tasks are mutually exclusive and can be predicted by shareholders, the salary reduction penalty λ (ECS) is significantly negatively correlated with the degree of mutual exclusion μ. The regression model is established as expressed in

$$\begin{aligned}\text{Lnpay} &= \theta_0 + \theta_1 \times \mu + \theta_2 \times \text{ROE} + \theta_3 \times \mu \times \text{ROE} + \theta_4 \text{LEV}_{i,t} + \theta_5 \text{GQP}_{i,t} + \theta_6 \text{LNBOARD}_{i,t} + \theta_7 \text{DUAL}_{i,t} \\ &\quad + \theta_8 \text{GROWTH}_{i,t} + \theta_9 \text{RATIO}_{i,t} + \sum \text{PROVINCE}_{i,t} + \sum \text{YEAR}_{i,t} + \sum \text{IND}_{i,t} + \varepsilon_{i,t}.\end{aligned} \tag{37}$$

In model (37), $\mu \times \text{ROE}$, the cross-multiplication coefficient $\mu \times \text{ROE}$ of μ and ROE, reflects the relationship between the degree of mutual exclusion and compensation sensitivity. Therefore, focusing on the cross-multiplication coefficient θ_3, if it is negative, the model conforms to hypothesis H4.

4.4. Empirical Process and Result Analysis

4.4.1. Descriptive Statistical Analysis. In this study, the ratio of performance growth rate to innovation input growth rate (i.e., μ) was used to segment the synergistic and mutually exclusive research samples of enterprises. Samples with $\mu > 0$ were categorized into the synergistic group of profit and innovation tasks, and those with $\mu < 0$ were classified into the mutually exclusive group of profit and innovation tasks. Among them, the synergistic group contained 5238 observations, whereas the mutually exclusive group comprised 1968 observations. The descriptive statistical analysis results of the two groups of sample data are listed in Tables 3 and 4.

The descriptive statistical results of the fundamental variables when the enterprise profit and innovation tasks are in synergy are listed in Table 3. As observed, the average value of executive compensation (Lnpay) among the listed companies in China was 13.660 from 2016 to 2022, the minimum value was 10.310, and the maximum value was 17.100, indicating a large difference in executive compensation among the listed companies in China. The average value of ECS is 0.000, indicating almost no difference between the increase in executive compensation when the performance increases and the decrease in executive compensation when performance declines to the same degree. The minimum and maximum values were 6.904 and 5.583, respectively. Note that a larger value in this regard indicates a weaker tendency to "penalise bad," or even "rewarding bad." The mean value of ROE is −0.032, indicating that the performance of the selected sample companies is relatively normal, whereas the minimum and maximum values are −186.600 and 1.598, respectively, indicating a large gap in profitability among listed companies in China.

The descriptive statistical results of the fundamental variables when profit and innovation tasks are mutually exclusive are listed in Table 4. As observed, certain differences existed in executive compensation (Lnpay) among the listed companies in China from 2016 to 2022. The average value of executive compensation stickiness (ECS) is −0.029, indicating that the increase in the rate of executive pay in cases of improved performance is 0.028% lower on average than the decrease in the rate when performance declines to an equivalent degree. The minimum and maximum values are −7.222 and 3.874, respectively, and the overall value of the ECS is lower than that when the enterprise profit and innovation tasks are in synergy. Therefore, under the condition of mutual exclusion of profit and innovation tasks, the shareholders will constrain the executive's compensation, and the higher stickiness of compensation will not prevail under the synergistic condition. The average return on equity (ROE) is −0.078, implying that the performance of the selected sample companies is relatively normal, whereas the minimum and maximum values are −176.400 and 64.060, respectively, suggesting a large gap between the profitability of listed companies in the state of mutual exclusion.

As evident from Tables 3 and 4, whether the profitable tasks and the innovative tasks are in the synergistic state or the mutually exclusive state, the absolute value of μ (after processing) is ~0.2, indicating a marginal difference between the level of synergy and mutual exclusion. Overall, the sample data selected by the two are reasonable.

4.4.2. Correlation Analysis. Correlation analysis was conducted on the sample data of the synergy group and the mutual exclusion group, and the results are summarised in Tables 5 and 6.

As observed from the correlation analysis results in Table 5, when the profit and innovation tasks are in cooperation, μ is significantly negatively correlated with ECS, with a correlation coefficient of −0.076, which passes the Pearson test with a significance level of 1%. In addition, a significant positive correlation was detected between ROE and Lnpay, with a correlation coefficient of 0.232, which passed the Spearman test with a significance level of 1%. Moreover, in the Spearman test, μ is significantly negatively correlated with ECS, with a 1% significance level.

As observed from the correlation analysis results stated in Table 6, when profit and innovation tasks are mutually exclusive, μ is significantly positively correlated with ECS, with a correlation coefficient of 0.039, which passes the Pearson test with a significance level of 10%. In particular, a significant positive correlation exists between ROE and Lnpay, and the correlation coefficient is 0.190, which passes the Pearson test with a significance level of 1%. Furthermore,

Table 3: Descriptive statistical results of major variables (synergistic).

Variable	*N*	Mean	p50	SD	Min	Max
Lnpay	5238	13.660	13.610	0.691	10.310	17.100
ECS	5238	0.000	0.000	1.606	−6.904	5.583
ROE	5238	−0.032	0.066	2.736	−186.600	1.598
μ	5238	−0.232	−0.146	1.314	−4.400	3.400
LEV	5238	0.442	0.435	0.231	0.017	4.995
GQP	5238	31.250	29.340	13.960	2.790	87.460
LNBOARD	5238	2.111	2.197	0.198	1.386	2.833
DUAL	5238	0.312	0.000	0.463	0.000	1.000
GROWTH	5238	0.331	0.190	0.799	−1.000	9.931
RATIO	5238	0.377	0.364	0.056	0.167	0.800

Table 4: Descriptive statistical results of major variables (exclusive).

Variable	*N*	Mean	p50	SD	Min	Max
Lnpay	1968	13.610	13.560	0.671	11.550	16.830
ECS	1968	−0.029	−0.037	1.645	−7.222	3.874
ROE	1968	−0.078	0.045	4.262	−176.400	64.060
M	1968	0.195	0.144	1.868	−4.297	5.568
LEV	1968	0.446	0.428	0.317	0.033	10.490
GQP	1968	31.430	29.630	14.370	3.000	86.010
LNBOARD	1968	2.108	2.197	0.195	1.386	2.833
DUAL	1968	0.289	0.000	0.453	0.000	1.000
GROWTH	1968	5.110	0.001	205.700	−1.000	9100.000
RATIO	1968	0.378	0.364	0.0570	0.200	0.800

Table 5: Correlation analysis between profit and innovation tasks (synergistic).

	Lnpay	ECS	ROE	μ	LEV	GQP	LNBOARD	DUAL	GROWTH	RATIO
Lnpay	1	0.195***	0.232***	−0.019	0.135***	−0.028**	0.109***	−0.022	0.066***	0.010
ECS	0.195***	1	0.094***	−0.074***	0.002	0.066***	−0.012	−0.020	0.033**	0.026*
ROE	0.016	0.016	1	−0.008	−0.066***	0.160***	0.073***	0.010	0.291***	−0.034**
μ	−0.021	−0.076***	−0.004	1	−0.013	−0.051***	−0.016	0.041***	−0.368***	−0.022
LEV	0.075***	0.008	−0.075***	−0.009	1	0.040***	0.110***	−0.087***	0.018	−0.014
GQP	−0.011	0.074***	0.003	−0.045***	0.030**	1	−0.010	−0.027*	0.049***	0.047***
LNBOARD	0.137***	−0.014	0.010	−0.028**	0.075***	0.012	1	−0.175***	0.053***	−0.637***
DUAL	−0.011	−0.022	0.018	0.038***	−0.069***	−0.030**	−0.158***	1	0.007	0.105***
GROWTH	0.017	0.013	0.035**	−0.302***	0.018	0.046***	0.070***	−0.017	1	−0.016
RATIO	0.015	0.038***	−0.028**	−0.022	0.010	0.052***	−0.556***	0.093***	−0.026*	1

Note. ***significant at 1% level, **significant at 5% level, *significant at 10% level. The lower-left corner presents the result from Pearson correlation analysis, and the upper-right corner represents the results from Spearman correlation analysis.

Table 6: Correlation analysis between profit and innovation tasks (exclusive).

	Lnpay	ECS	ROE	μ	LEV	GQP	LNBOARD	DUAL	GROWTH	RATIO
Lnpay	1	0.234***	0.190***	0.031	0.107***	0.022	0.071***	−0.034	−0.019	0.021
ECS	0.244***	1	0.163***	0.039*	−0.041*	0.084***	0.004	−0.025	0.019	0.019
ROE	0.028	0.021	1	−0.016	−0.115***	0.203***	0.052**	−0.048**	−0.169***	−0.010
μ	0.031	0.039*	−0.001	1	0.029	0.033	0.073***	−0.050**	0.246***	−0.031
LEV	0.038*	−0.068***	−0.040*	0.036	1	0.025	0.153***	−0.138***	−0.028	−0.023
GQP	0.045**	0.084***	0.031	0.042*	0.020	1	0.030	−0.070***	0.015	0.017
LNBOARD	0.077***	0.022	−0.021	0.080***	0.051**	0.046**	1	−0.229***	0.003	−0.656***
DUAL	−0.021	−0.028	0.021	−0.041*	−0.091***	−0.078***	−0.220***	1	0.030	0.108***
GROWTH	0.004	−0.011	0.001	0.071***	0.000	0.086***	0.052**	−0.015	1	−0.015
RATIO	0.027	0.018	0.016	−0.034	0.011	0.036	−0.567***	0.105***	−0.027	1

Note. ***: significant at 1% level; **: significant at 5% level; *: means significant at 10% level. The lower left corner is the Pearson correlation analysis result, and the upper right corner is the Spearman correlation analysis result.

Table 7: Model regression result (synergistic).

Variable	Model (34) ECS Regression coefficient	T-value	Model (35) Lnpay Regression coefficient	T-value
μ	−0.041***	(−2.693)	0.002	(0.442)
ROE			0.003	(1.301)
$\mu \times$ ROE			0.004	(1.005)
LEV	−0.065	(−0.456)	−0.197***	(−6.808)
GQP	0.000	(0.049)	−0.000	(−0.136)
LNBOARD	0.682**	(2.405)	0.225***	(3.411)
DUAL	−0.022	(−0.325)	0.015	(0.940)
GROWTH	0.008	(0.307)	0.007	(1.028)
RATIO	−0.195	(−0.256)	−0.198	(−1.118)
Ind	Control variable			
Year	Control variable			
Province	Control variable			
_Cons	−2.177	(−1.564)	13.075***	(43.560)
N	5243		6631	
Adj. R^2	−0.501		−0.003	
F-value	2.260		27.900	
P value	0.000		0.000	

Note. ***means significant at 1% level, **means significant at 5% level, *means significant at 10% level.

in the Spearman test, μ is significantly positively correlated with ECS, with significance at the 10% level.

Upon analyzing the overall control variables, the following conclusions can be inferred: when the profitable tasks and the innovative tasks are synergistic, μ is negatively correlated with LEV, GQP, LNBOARD, GROWTH, and RATIO, and positively correlated with DUAL. If the profitable tasks and the innovative tasks are mutually exclusive, μ is positively correlated with LEV, GQP, LNBOARD, and GROWTH. In particular, it is significant between LNBOARD, DUAL, and GROWTH, attaining the significance level of 1% and 10%. There is a negative correlation between DUAL and RATIO. As the coefficients among the explanatory variables, explained variables, and control variables are relatively small, no multicollinearity problem between the variables is selected in this paper.

4.4.3. Regression Analysis

(1) Effect of the Degree of Synergy on the Incentive of Managers' Compensation. Based on the previous mathematical logic reasoning, regression analysis is conducted on hypotheses H1 and H2, and the year, industry, and province are respectively controlled. The regression results are listed in Table 7.

Model (34) derives the regression between the salary reduction penalty λ (ECS) and the degree of synergy μ when the profit and innovation tasks are synergistic and can be predicted by shareholders. As observed from Table 5, μ is significantly negatively correlated with ECS, the correlation coefficient is −0.041, and the significance level attained 1%. Therefore, a higher degree of synergy predicted by shareholders indicates a stronger inclination among shareholders to motivate executives by reducing the salary reduction penalty, which is consistent with hypothesis H1.

Model (35) tested the regression of the relationship between compensation sensitivity (coefficient of executive profitability compensation β_i) and degree of synergy μ. According to the empirical test results, the coefficient of cross multiplication term $\mu \times$ ROE was evaluated to be 0.004, but failed the significance test. In case of regression considering multiple factors, although μ was positively correlated with the compensation sensitivity, it was not significant. Thus, Hypothesis H2 is only partially verified. However, the cross-multiplication coefficient is positive, which explains the positive relationship between β_i and μ to a certain extent. Section 4.4.4 will conduct a supplementary test of the correlation between the two without considering other factors.

(2) Effect of the Degree of Mutual Exclusion on the Incentive of Managers' Compensation. Thereafter, regression analysis was performed on hypotheses H3 and H4, and the regression results are listed in Table 8.

Model (36) expresses the regression between the salary reduction penalty λ (ECS) and the degree of mutual exclusion μ when the profit and innovation tasks are mutually exclusive and can be predicted by shareholders. Table 8 reports that μ is significantly positively correlated with ECS, the correlation coefficient is 0.037, and the significance level attains 10%. Therefore, a higher degree of mutual exclusion that can be predicted by shareholders corresponds to a stronger inclination among shareholders to encourage executives to invest by increasing the penalty coefficient of salary reduction, which is consistent with hypothesis H3 above.

Model (37) is a regression to test the relationship between compensation sensitivity (coefficient of executive profitability compensation β_i) and degree of mutual exclusion μ. According to the results shown in the table, the coefficient of the cross multiplication term $\mu \times$ ROE is

Table 8: Model regression result (exclusive).

Variable	Model (36) ECS Regression coefficient	T-value	Model (37) Lnpay Regression coefficient	T-value
μ	0.037*	(1.706)	−0.001	(−0.112)
ROE			0.003	(0.580)
$\mu \times$ ROE			−0.002	(−0.568)
LEV	−0.356**	(−2.195)	−0.124***	(−3.197)
GQP	0.007	(0.681)	0.004**	(2.079)
LNBOARD	0.879	(1.629)	0.319***	(3.176)
DUAL	0.056	(0.367)	−0.001	(−0.023)
GROWTH	−0.000	(−0.190)	−0.000	(−1.376)
RATIO	0.369	(0.239)	−0.108	(−0.377)
Ind	Control variable			
Year	Control variable			
Province	Control variable			
_Cons	−2.728	(−1.458)	12.691***	(25.035)
N	1971		3077	
Adj. R^2	−1.510		−0.661	
F-value	1.490		8.030	
P value	0.027		0.000	

Note. ***means significant at 1% level, **means significant at 5% level, *means significant at 10% level.

Table 9: Supplementary correlation analysis (synergistic).

	ΔLSalary/ΔTotalAsset	ECS	μ
ΔLSalary/ΔTotalAsset	1	0.05***	0.03
ECS		1	−0.07***
μ			1

Note. ***: significant at 1% level; **: significant at 5% level; *: significant at 10% level.

Table 10: Supplementary correlation analysis (exclusive).

	ΔLSalary/ΔTotalAsset	ECS	μ
ΔLSalary/ΔTotalAsset	1	0.02	−0.08*
ECS		1	0.07
μ			1

Note. ***: significant at 1% level; **: significant at 5% level; *: significant at 10% level.

−0.002, but it is not significant, similar to the situation of hypothesis H2, and hypothesis H4 is only partially verified. Section 4.4.4 will conduct a supplementary test of the correlation between the two without considering other factors.

4.4.4. Supplementary Correlation Test. Tables 9 and 10 denote the supplementary test results of correlation analysis. The ratio of the growth rate of total compensation of the top-three executives with a lag period to the growth rate of total assets is selected as the index to measure the compensation sensitivity, expressed by ΔLSalary/ΔTotalAsset. Without considering other factors, when the profitable and innovative tasks are mutually exclusive, μ is significantly negatively correlated with ΔLSalary/ΔTotalAsset at the 10% significance level, and the correlation coefficient is −0.08. Hypothesis H4 is further verified. When the profitable tasks are synergistic with the innovative tasks, μ is positively correlated with ΔLSalary/ΔTotalAsset, but not to a significant level. Therefore, H2 is only partially verified.

5. Research Conclusions

Based on the development goals of the shareholders' innovation activities and the current interests of shareholders and executives, this research proposes the coefficient of executive profitability compensation, considering the degree of synergy or mutual exclusion between profit and innovation tasks. Based on the classical principal-agent model and the results from the derived mathematical model, we discussed the incentive mechanism of managers under the guidance of innovation. Based on the 2016–2022 annual reports of A-share listed companies registered in Shanghai and Shenzhen, China, this research explores the impact of the degree of synergy and mutual exclusion on managers' incentives. The conclusions are stated as follows: (1) When the profitable and innovative tasks are synergistic and can be predicted by shareholders, salary reduction penalty λ (executive compensation stickiness ECS) is significantly negatively correlated with the degree of synergy μ; (2) When the profit and innovation tasks are synergistic and can be predicted by shareholders, the coefficient of executive profitability compensation β_i (compensation sensitivity) exhibits a positive relationship with the degree of synergy μ to a certain extent; (3) When the profitable and innovative tasks are mutually exclusive and can be predicted by shareholders, the salary reduction penalty λ (salary reduction penalty ECS) is positively correlated with a mutual exclusion degree μ; (4) If the profit and innovation tasks are mutually exclusive and can be predicted by shareholders, the coefficient of executive profitability compensation β_i (compensation sensitivity) and the mutual exclusion degree

μ are engaged in an inverse relationship to a certain extent; however, this negative relationship is not prominent. The research results will provide a reference for shareholders to improve the innovation management system, strengthen the manager's innovation incentive scheme, and provide a theoretical basis for the design, optimization, and adjustment of the compensation incentive contracts of enterprises' managers.

6. Management Implications

As enterprise owners, shareholders consider the long-term benefits of innovation activities to the enterprise. Simultaneously, considering that innovation decision-making is conducive to promoting the enterprise's strategic position, shareholders are more expected to participate in the decision-making of innovation tasks compared to senior executives. In particular, executive compensation is linked to the short-term performance of the enterprise, which will prioritise self-interest in handling innovation tasks with high risk and possible long payback periods, and the executives may act cautiously toward innovation decision-making, which conflicts with the long-term profit target pursued by shareholders. To converge the interests of shareholders and senior executives, shareholders should adjust the remuneration contracts of senior executives according to various situations. On the premise of predicting the relationship between profit and innovation tasks, the selection of reasonable salary incentives such as adjusting the profitability and innovation sharing coefficients for senior executives can motivate senior executives towards the innovation decisions of the enterprise or urge senior executives to strengthen operation management by varying the salary reduction penalty. The aforementioned incentives can effectively improve the consistency of interests and goals between the shareholders and senior executives, which is beneficial for the long-term development of the enterprise.

In addition, the shareholders should completely grasp the relevant information about the innovation activities, strengthen the comprehensive assessment of the innovation projects, accurately assess whether the innovation activities can yield additional profitability gains or diminish the profitability gains in the short term, adjust the synergy or mutual exclusivity between profitability and innovation tasks from unpredictable to predictable, and timely select the appropriate means to adjust the senior executives' incentive model in a targeted manner. Thus, enhancing the enthusiasm of senior executives toward enacting innovative decisions can achieve win-win results between shareholders and senior executives.

Based on the development goal of shareholders' innovative activities and the present situation of shareholders and senior executives' interests, this study contributes certain key factors such as the performance sharing coefficient of innovative tasks, the degree of mutual exclusion between profitability and innovative tasks, and the salary reduction penalty coefficient based on the classical principal-agent model to discuss the incentive mechanism of managers under the guidance of innovation according to the results derived from the mathematical model. The research results will be insightful for shareholders to improve the innovation management system, enhance the innovative incentive scheme of managers, and provide a theoretical basis for designing, optimizing, and adjusting the compensation incentive contract of enterprise managers.

Data Availability

All data reported in this study are available upon request from the corresponding author.

Additional Points

Research Limitation. This research is limited in the following aspects: (1) The degree of synergy or mutual exclusion μ and coefficient of executive profitability compensation β_i do not attain the ideal significant level in the regression analysis of empirical test and (2) the degree of synergy or mutual exclusion cannot be verified by empirical tests under the circumstance that shareholders are unpredictable. It is hoped that the follow-up research can effectively solve the above problems.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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