

# From Incentives to Innovation: An Analysis of the Impact and Mechanisms of Long-Term Equity Incentives on Corporate Value

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**Abstract:** Against the backdrop of the global economy's transition toward an innovation-driven model, equity incentives have become a core institutional arrangement for listed companies to resolve agency conflicts and build a community of shared interests. Based on data from listed companies from 2006 to 2023, this study employs regression analysis and finds that: (1) Controlling for other influencing factors, the continuous implementation of equity incentive plans by Chinese listed companies has a significant positive impact on firm value. (2) Building on the conclusion that continuous equity incentive plans significantly impact firm value, this study analyzes the mechanism through which continuous equity incentives affect firm value via the firm's innovation capacity to gain a clearer understanding of this relationship. The mechanism analysis reveals that the implementation of continuous equity incentive plans by listed companies significantly enhances their innovation capacity, thereby improving firm value. (3) Heterogeneity analysis indicates that the impact of continuous equity incentives on corporate value varies across companies of different sizes and in different sectors. This study goes beyond the analysis of the short-term effects of one-time incentives, focusing instead on the long-term cumulative effects and lag patterns of multi-period rolling incentives, and examining how the continuous design of incentive plans dynamically guides capital market expectations. Research on this topic can expand the theoretical framework of incentive mechanisms in the temporal dimension, providing a basis for the design of long-term corporate incentives, investor decision-making, and policy optimization.

**Keywords:** Long-term equity incentives; Firm value; Corporate innovation; Heterogeneity analysis

## 1. Introduction

Against the backdrop of increasingly fierce competition in global capital markets, the institutional value of equity incentive plans—as a vital link between corporate governance and long-term development—is becoming increasingly evident. In 2024, the total number of equity incentive plan announcements by A-share listed companies was 610, a decrease of 8.41% compared to 2023. Among these, 376 announcements were for multi-phase equity incentive plans, accounting for 61.64% of the total—up from 53.90% in 2023, representing a year-over-year increase of 7.74 percentage points. This marks the entry of Chinese listed companies into the “era of normalized incentives”. This trend aligns closely with policy direction: the China Securities Regulatory Commission’s “Guideline No. 10 on the Supervision of Listed Companies — Market Capitalization Management” explicitly states that it “encourages the establishment of long-term incentive and constraint mechanisms through equity incentives.” The “New Nine-Point Policy” (Opinions on Further Promoting the Healthy Development of the Capital Market) incorporates equity incentives as a core tool for “enhancing the quality of listed companies,” while the preferential policy of “deferring individual income tax payments for 36 months” outlined in the Notice on Improving Income Tax Policies Related to Equity Incentives and Technology Equity Contributions issued by the Ministry of Finance and the State Taxation Administration creates a two-way driving force between policy and the market.

From a market structure perspective, equity incentive programs in the “Mass Entrepreneurship and Innovation” sector have performed exceptionally well. In 2024, equity incentive announcements on the ChiNext and STAR Market accounted for 62.78% of the total A-share market, with incentive coverage rates exceeding 70% for companies in these sectors—significantly higher than the overall A-share average of 58.76%. This differentiated practice raises a key question: when equity incentives shift from a “one-time tool” to a “continuous system,” their impact on capital market pricing and valuation

stability may differ fundamentally from that of single-phase plans. However, the market has yet to reach a consensus on the pricing logic for continuous equity incentives. Among A-share companies that implemented multiple incentive plans consecutively from 2021 to 2024, 38.2% exhibited annual stock price volatility higher than the industry average, and the Tobin's Q ratios of some companies did not rise steadily with the implementation of multiple plans, highlighting the practical necessity of researching their effects on the capital market.

Existing research has confirmed the corporate governance value of equity incentives, but there is a significant gap in the "sustainability" dimension. Based on agency theory, Jensen and Meckling(1976)[1] proposed the argument that "equity incentives reduce agency costs by aligning interests." Mehran (1995), using a sample of 153 manufacturing firms, empirically verified the positive correlation between management shareholding and return on total assets (ROA) as well as the Tobin's Q ratio. In domestic research, Hu Jingtao et al. (2020) noted in "Accounting Research" that the validity period of a single equity incentive plan is positively correlated with performance, but did not address the cumulative effects of multi-period plans. Most existing literature focuses on the impact of equity incentives on internal indicators such as ROE and R&D intensity. Morgan and Poulsen (2001) found that the average cumulative excess return during the [-1,1] window following the announcement of equity incentives was 2.3%, but research on the capital market's dynamic assessment of "multi-period consecutive incentives" is virtually nonexistent. Signaling theory provides a perspective for analyzing this issue, but existing studies have limitations. Zhang Zheng et al. (2015) noted that approximately 30% of A-share companies did not exhibit the expected positive stock price reaction following the announcement of equity incentives, with some even showing negative excess returns, stemming from market concerns regarding potential "earnings manipulation" associated with short-term incentives. In contrast, continuous incentives may convey management's confidence in long-term development; this difference in signaling has not been fully explored. Furthermore, conclusions regarding the relationship between equity incentives and performance are inconsistent: Core and Guay (1999) found a linear positive correlation, Hanlon et al. (2003) proposed an inverted "U"-shaped relationship (with an optimal range where the effect first increases and then decreases), while Lü Changjiang et al. (2011) found no significant correlation. The root of this controversy lies in the neglect of "incentive persistence" as a key moderating variable.

This study aims to construct a causal framework linking long-term equity incentives to firm value, reveal the synergistic mechanisms of reduced agency costs and signal transmission, examine the impact of multi-year plan characteristics on the Tobin's Q ratio and annualized stock price volatility, and analyze the heterogeneity of these effects across different market sectors, industries, and governance structures. The study follows a logical chain of "institutional characteristics—transmission mechanisms—market reactions." It defines quantitative criteria for continuity and constructs a balanced panel model using a sample of A-share companies with multi-period incentive plans from 2006 to 2023. The study identifies the transmission role of agency costs through mediation tests. The findings reveal that: (1) Controlling for other influencing factors, the continuous implementation of equity incentive plans by Chinese listed companies has a significant positive impact on firm value. (2) Building on the conclusion that continuous equity incentives significantly impact corporate value, this study analyzes the impact of continuous equity incentive plans on corporate value through the channel mechanism of corporate innovation capability. The mechanism analysis reveals that the implementation of continuous equity incentive plans by listed companies significantly enhances their innovation capability, thereby improving corporate value. (3) Heterogeneity analysis indicates that the impact of continuous equity incentives on corporate value varies across companies of different sizes and in different sectors.

The theoretical contributions of this study are as follows: First, it expands the temporal dimension of equity incentive research, fills the gap regarding the characteristic of continuity, and enriches the application of signaling theory in corporate governance. Second, it is the first study to treat "continuity" as a core explanatory variable, thereby breaking away from the single-plan paradigm; it constructs a multidimensional continuity index and examines changes in pricing logic within the context of the registration-based system. The quantitative framework established provides a methodological reference for future research. Third, it provides data support for the design of long-term incentive schemes for listed companies; "mass entrepreneurship and innovation" enterprises may adopt a strategy of "one phase every 2-3 years with intensity fluctuations  $\leq 15\%$ ." This can offer investors new governance evaluation metrics and provide empirical evidence for regulators to refine policies, thereby facilitating the implementation of the long-term mechanisms outlined in the "New Nine-Point Policy."

The structure of this paper is as follows: Part Two reviews the theoretical foundation and proposes research hypotheses; Section 3 explains sample selection, variable definitions, and model construction;

Section 4 analyzes the results of descriptive statistics, baseline regression, and robustness tests; it explores heterogeneity and mechanisms of action through group-specific regression and mediation tests; Section 5 summarizes the conclusions and offers policy recommendations from the perspectives of the three key stakeholders. Through this structure, the paper comprehensively reveals the capital market effects of continuous equity incentives, providing support for improving corporate governance and market pricing mechanisms.

## **2. Literature Review and Research Hypotheses**

### ***2.1 Research on the Motivations Behind Equity Incentives***

Regarding the motivations behind equity incentives, current research primarily examines both incentive-based and non-incentive-based motivations. Principal-agent theory serves as the core theoretical foundation for the motivations behind equity incentives. Jensen and Meckling(1976)[1] proposed that equity incentives can reduce agency costs between shareholders and management by aligning their interests, thereby enhancing corporate competitiveness. Mehran (1995) validated this view using data from 153 manufacturing firms, demonstrating a positive correlation between management stock ownership and return on total assets (ROA) as well as the Tobin's Q ratio. Domestic research has expanded the application scenarios of incentive motives. Chen Deqiu and Zhang Wenyu (2023) found that corporate digital transformation significantly increases the likelihood of implementing management equity and compensation incentives by alleviating financing constraints and enhancing information transparency; Wei Chunyan (2019), focusing on companies listed on the ChiNext board, confirmed that human resource needs are the primary driver for adopting equity incentives; firms with high executive turnover rates, high employee attrition rates, and labor-intensive operations are more inclined to implement equity incentives, while the influence of managerial power was not verified.

Some studies have revealed the self-interest motives behind equity incentives. Li Bowen and Lu Zhengfei(2023) [2] empirically found, from the perspective of executive directors' self-interest, that the higher the proportion of discretion granted to executive directors in equity incentive contracts, the more likely listed companies are to choose restricted stock as an incentive tool to maximize their own interests. The research by Chen Xiaodong, Zhou Jianan, and Huang Dengshi (2016) further corroborates this logic, noting that non-incentive-based equity incentives exacerbate inefficient corporate investments, reflecting that some equity incentive schemes may degenerate into tools for management to pursue personal gain.

### ***2.2 Research on the Economic Consequences of Equity Incentives***

Regarding the impact of equity incentives on firm performance, current research yields mixed results, with the core disagreement centered on the nature of the relationship and moderating factors. Core and Guay (1999) argue that the two are linearly positively correlated, while Hanlon et al. (2003) propose an inverted "U"-shaped relationship; Lü Changjiang et al. (2011), however, found no significant correlation. Domestic research has further clarified the moderating mechanisms: Liu Bai and Lu Jiarui (2019) noted that equity incentives have a positive effect on a company's actual performance, but that managerial overconfidence weakens this effect; Hu Jingtao (2020) added that the performance effects of executive equity incentives are uncertain, whereas employee equity incentives can serve as an effective remedy to boost performance. In the context of total factor productivity, the study by Wang Jingyu et al. (2023) is particularly targeted; it confirms that implementing equity incentives for core employees is more effective in enhancing a firm's total factor productivity than executive equity incentives.

Existing research generally acknowledges the role of equity incentives in promoting corporate innovation, but significant boundary conditions exist. Guo Lei et al. (2019), Hao Xiangchao and Liang Qi (2022) all found that equity incentives can significantly drive corporate innovation, but negative behaviors among non-incentivized employees resulting from perceived pay inequity can weaken this effect. Zhao Shifang et al. (2020) revealed a nonlinear relationship, suggesting that equity incentives for executives have an inverted "U"-shaped impact on corporate innovation output, with moderate incentives being most conducive to innovation; Lü Jun (2019) further pointed out that restricted stock with strict performance metrics and a long vesting period can fully leverage its "incentive" characteristics, significantly enhancing innovation-related performance, whereas restricted stock with

lenient performance metrics and a short vesting period exhibits “welfare” characteristics, which can reduce corporate performance.

The role of equity incentives in regulating corporate financial behavior has been extensively validated. Regarding investment behavior, Lü Changjiang and Zhang Haiping (2011), as well as Zhao Guoyu and Yu Wei (2019), have both confirmed that equity incentives can effectively curb excessive investment by listed companies, alleviate underinvestment, and bring investment levels toward a reasonable range, thereby enhancing corporate value. In the realm of cash management, Liu Jingjian, Zhao Gexin, and Wang Jian (2018) found that executive equity incentives can curb agency behavior in cash management and reduce excess cash holdings; furthermore, companies that set exercise constraints or implement secondary incentives experience a greater reduction in cash holdings.

Beyond core operational dimensions, equity incentives also influence behaviors related to capital market pricing. Research by Qiu Yangqian and Ye Zhan (2019) indicates that executive equity incentives have a significant positive impact on corporate bond issuance prices; Morgan and Poulsen (2001) found that the average cumulative excess return during the [-1,1] window following an equity incentive announcement was 2.3%. However, Zhang Zheng et al. (2015) also found that approximately 30% of A-share companies did not exhibit a positive stock price reaction following the announcement of equity incentives, with some even showing negative excess returns, reflecting heterogeneity in the market’s interpretation of equity incentive signals.

Overall, existing research on equity incentives has covered motivations and multidimensional economic consequences, but there is a significant gap in the key dimension of “sustainability”: In terms of research perspective, existing literature primarily focuses on single incentive plans; for example, Hu Jingtao et al. (2020) examined only the relationship between the duration of a single plan and performance, without addressing the cumulative effects and lag patterns of multi-period plans. Regarding the transmission of effects, the application of signaling theory is limited to short-term incentives, and unique signals conveyed by continuous incentives—such as “governance stability” and “confidence in long-term development”—have not yet been fully explored.

### **2.3 Research Hypotheses**

Through equity incentives, listed companies align the interests of incentive recipients with those of the company, thereby mitigating agency problems. Unlike one-time incentives, the implementation of ongoing equity incentives essentially reflects the company’s sustained recognition and deepening commitment to its incentive targets; this not only eliminates the improper motives associated with short-term “welfare-oriented” incentives but also demonstrates the company’s determination to pursue long-term development. Based on agency theory, Jensen and Meckling(1976)[1] proposed that equity incentives can align the interests of management with those of shareholders, while a continuous design further strengthens this alignment effect and continuously reduces agency costs. Studies by Song(1995)[3] and Xia Yongliang(2021)[4] have both confirmed that equity incentives are positively correlated with corporate performance by reducing agency costs and improving performance levels. Under long-term incentive models, the personal reputations of executives and core employees are deeply tied to the company’s long-term value, prompting them to abandon short-sighted behavior and focus on improving long-term operational efficiency. Under this dual constraint, the stability of corporate operations and the certainty of growth are enhanced, thereby positively boosting the company’s market capitalization performance and valuation levels.

Second, equity incentive plans have a positive impact on corporate innovation. The long-term nature and high risk of corporate innovation require incentive contracts to balance risk tolerance with long-term returns. The asymmetric payoff curve of equity incentives—which protects beneficiaries during stock price declines and provides substantial returns upon successful innovation—combined with their long-term validity, precisely meets this need and effectively incentivizes strategic-level and core technical employees to commit to long-term R&D (Zhou Wei et al., 2021). Chang et al.(2015)[5] view the implementation of equity incentives as an effective means of enhancing a company’s R&D and innovation capabilities. Sesil and Lin(2011)[6] found through empirical testing that stock options play a positive role in stimulating corporate innovation capabilities. Wang Jingyu et al. (2023) confirmed that, compared to equity incentives for executives, implementing equity incentives for core employees is more conducive to enhancing total factor productivity. Sengupta et al.(2007)[7] pointed out that employee stock options can retain and motivate employees, thereby improving the company’s management standards. Pendleton(2010)[8] noted that using equity as an incentive for employees promotes their work enthusiasm. Kornelakis (2017)[9] also noted that equity incentives can stimulate

executives' enthusiasm and efficiency; together, these factors drive improvements in corporate innovation output and operational performance, which in turn positively translate into market performance. Based on the above analysis, this paper proposes the following research hypothesis:

Hypothesis H1: Controlling for other influencing factors, the continuous implementation of equity incentive plans by listed companies can significantly enhance corporate value.

### 3. Research Design

#### 3.1 Data Sources and Description

This study selected listed companies on the Shanghai and Shenzhen Stock Exchanges (A-shares) from 2006 to 2023 as the initial sample. Based on this, the following adjustments were made to the sample: companies in the financial sector, ST and PT-listed companies, and companies with missing data were excluded. This resulted in 44,152 firm-year observations corresponding to 3,976 companies. To control for the impact of outliers, all continuous variables were subjected to a 1%–99% Winsorization process. Data sources used in this study include equity incentive plan data, listed company patent data, and listed company capital market transaction data from the WIND database and Juchao Information; other corporate financial data were obtained from the CSMAR database.

#### 3.2 Model Specification

This paper takes the “Measures for the Administration of Equity Incentive Plans for Listed Companies (Trial)” issued by the China Securities Regulatory Commission in 2006 as a starting point to analyze the impact of listed companies' implementation of equity incentive plans on firm value. Based on research hypothesis H1 presented earlier, this paper constructs the following regression model:

$$HBAR_{it} = a_0 + a_1 SOG\_C_{i,t-1} + \sum a_2 Control_{i,t-1} + ind_t + year_t + \varepsilon_{it} \quad (1)$$

In this context, the subscripts *i* and *t* denote the listed company and the year, respectively. *HBAR<sub>it</sub>* is a measure of corporate value, calculated as the ratio of Company *i*'s market capitalization growth in year *t* to its market capitalization at the beginning of the year. The explanatory variable *SOG\_C* is a discrete variable representing sustained equity incentives. *Control* denotes the set of control variables; this model simultaneously controls for firm-specific fixed effects (*idi*) and year-specific fixed effects (*year*). To mitigate endogeneity caused by reverse causality and other factors, all control variables in this study are lagged by one period. Following existing research, the selected control variables include: firm size (*SIZE*), debt-to-asset ratio (*LEV*), firm age (*AGE*), return on assets (*ROA*), investment opportunities (*TQ*), revenue growth rate (*SGR*), and capital expenditures (*CAPX*). In addition, this study further controls for corporate governance-related variables, including: the largest shareholder's ownership ratio (*BIGR*), administrative expenses (*Adminfee*), dual-role directors (*DUAL*), and whether the audit is conducted by a Big Four accounting firm (*Big4*). Detailed definitions and descriptions of the main variables are provided in Table 1.

#### 3.3 Variable Definitions

##### 3.3.1 Dependent Variables

Current literature on corporate value research measures corporate value from multiple perspectives, including accounting performance and shareholders' long-term returns on stock holdings. For proxy variables of accounting performance, we select Return on Assets (*ROA*) and Return on Equity (*ROE*); these two metrics reflect a company's operating performance over a specific period and serve as important indicators for evaluating a company's profitability and reflecting its value (Ciftci et al., 2019). However, both of these metrics are based on a company's past performance and do not reflect investment expectations; furthermore, they are susceptible to manipulation (Tong Yan and Chen Shasha, 2010). In contrast, long-term stock holding returns incorporate investors' profit expectations and serve as a forward-looking indicator, making them widely adopted by researchers (Fauver et al., 2017; Li et al., 2018). From the perspective of investor expectations, these two metrics are superior to historical performance indicators such as return on assets (*ROA*); therefore, this study selects long-term holding excess returns as a measure of firm value.

The formula for calculating the long-term excess return is as follows:

$$HBAR_i(t, n) = \exp\left(\sum_{k=0}^{k=12n-1} \log(1 + R_{i,t+k}^*)\right) - \exp\left(\sum_{k=0}^{k=12n-1} \log(1 + R_{p,t+k}^*)\right) \quad (2)$$

Here, t represents the current month, and n represents the number of years; based on the actual holding periods of equity incentives in China, n is set to 2 in this paper.  $R_{i,t+k}^*$  denotes the monthly stock return that takes (or does not take) cash dividends reinvested into account, while  $R_{p,t+k}^*$  denotes the return of the benchmark portfolio. The long-term excess return calculated using Equation (2) is referred to as the buy-and-hold excess return (buy-and-hold abnormal HBARS). In the actual calculations, this paper selects sample stocks that outperform their corresponding market returns to measure the buy-and-hold excess return, abbreviated as BHAR.

**3.3.2 Explanatory Variables**

Equity incentive plans have four key dates: the “Board Proposal Date,” the “Shareholders’ Meeting Announcement Date,” the “Implementation Completion Date,” and the “Lock-up Expiration Date.” Given that this study examines the long-term effects of equity incentive plans, the year of the “Implementation Completion Date” is designated as the first year of the plan’s implementation. Subsequently, the current year and all subsequent years in which a listed company implements its second equity incentive plan are assigned a value of 1; otherwise, a value of 0 is assigned.

**3.3.3 Control Variables**

Based on existing research, the control variables selected for this study are shown in Table 1.

*Table 1: Table of Definitions for Key Variables*

Variable name	Symbol	Variable declaration
Corporate value	HBAR	Measured by subtracting the annual return of the market sector corresponding to Company i’s stock from the annual return calculated using Company i’s monthly data
Dummy variables for long-term equity incentives	Stock_C	If this is the second time a listed company has implemented an equity incentive plan, set the value to 1 for the current period and all subsequent periods; otherwise, set it to 0.
Company size	SIZE	The logarithm of the company's total assets
Debt-to-asset ratio	LEV	Total liabilities / Total assets
Company Age	Age	ln(1 + the number of years the company has been listed)
Return on total assets	ROA	Net income / Total assets
Investment opportunities	TQ	(Carrying value of corporate bonds + Market value of stocks) / Total assets
Revenue growth rate	SGR	Current period revenue / Previous period revenue
Capital expenditures	CAPX	Cash paid for the acquisition of property, plant, and equipment, intangible assets, and other long-term assets / Total assets
Shareholding percentage of the largest shareholder	BIGR	Number of shares held by the largest shareholder of the listed company / Total number of shares of the listed company
Ratio of administrative expenses	Adminfee	Administrative expenses / Operating revenue
Is it one of the Big Four accounting firms	Big4	If a listed company is audited by one of the Big Four accounting firms, enter 1; otherwise, enter 0.
Combining the two roles	DUAL	Are the positions of Chairman and General Manager combined? If so, enter 1; otherwise, enter 0.

**4. Empirical Results and Analysis**

**4.1 Descriptive Statistical Analysis**

Table 2 presents the descriptive statistics for the main variables in this study. As shown in Table 2,

the mean value of the dependent variable, listed company value (HBAR), is 0.0552, with a minimum of -0.8088 and a maximum of 2.1245. The median long-term holding excess return for listed companies is -0.0304, indicating that the capital market performance of most Chinese listed companies underperforms the broader market. Based on the mean of the equity incentive dummy variable (SOG\_C), the proportion of company-year observations where Chinese listed companies implemented equity incentives was 9.62%. Regarding corporate leverage, both the mean and median leverage ratios of Chinese listed companies exceeded 40%, suggesting that the debt ratios of Chinese listed companies are generally high. Regarding the largest shareholder's ownership ratio (BIGR), the mean is 34.65%, indicating that equity concentration remains high among Chinese listed companies, with the largest shareholder holding a significant portion of the company's shares. In terms of the dual role (DUAL), 27.5% of Chinese listed companies have the same individual serving as both chairman and general manager. The results for the remaining variables describing company characteristics are consistent with those of other studies and will not be elaborated upon here.

Table 2: Descriptive Statistics for Variables

Variable	N	Mean	SD	Min	p50	Max
HBAR	44,152	0.0552	0.4667	-0.8088	-0.0304	2.1245
SOG_C	44,152	0.0962	0.2949	0.0000	0.0000	1.0000
SIZE	44,152	22.0381	1.3017	19.4961	21.8565	26.0699
LEV	44,152	0.4346	0.2142	0.0511	0.4266	0.9776
Age	44,152	2.0261	0.9161	0.0000	2.1972	3.3322
ROA	44,152	0.0350	0.0700	-0.3210	0.0375	0.2020
TQ	44,152	2.0315	1.3494	0.8617	1.5928	8.9515
SGR	44,152	0.1943	0.3812	-0.3480	0.0961	2.3065
CAPX	44,152	0.0515	0.0498	0.0002	0.0363	0.2408
BIGR	44,152	34.6530	15.0114	8.7000	32.3600	74.3000
Adminfee	44,152	0.0929	0.0874	0.0083	0.0703	0.6039
Big4	44,152	0.0598	0.2371	0.0000	0.0000	1.0000
DUAL	44,152	0.2749	0.4465	0.0000	0.0000	1.0000

#### 4.2 The Impact of Implementing Ongoing Equity Incentive Plans on Firm Value

To test research hypothesis H1—that is, that listed companies that continuously implement equity incentive plans have higher firm value—this study uses listed companies that have implemented equity incentive plans two or more times as the treatment group, and those that have not implemented such plans or have implemented them only once as the control group. A regression analysis was then conducted using the least squares method, and the results are presented in columns (1) to (3) of Table 3.

According to the regression results in Column (1) of Table 3, the continuous equity incentive variable (SOG\_C) has a significant positive impact on the corporate value of Chinese listed companies, and this effect is significant at the 1% level, with an estimated coefficient of 0.028. This implies that, compared to listed companies that have not implemented equity incentive plans or have implemented them only once, those that have implemented such plans twice or more exhibit better excess returns in the capital market. Based on the regression results in columns (2) and (3) of Table 3, it is evident that, after controlling for other factors affecting the firm value of listed companies, firms that have implemented equity incentives two or more times still exhibit higher returns in the capital market compared to those that have not implemented equity incentives or have implemented them only once. This indicates that the research hypothesis H1 has been confirmed at the 1% significance level. Based on the regression coefficients in Table 3, column (3), it can be seen that, compared to listed companies that have not implemented equity incentives or have implemented them only once, those that have implemented continuous equity incentives (two or more times) can increase their market returns by 4.6% in the same year. The results of the economic impact analysis are also highly significant.

Furthermore, based on the coefficients and significance levels of the control variables in the regression results shown in Table 3, the coefficient for firm size (Size) is negative at the 1% significance level. This indicates that the larger the size of a Chinese listed company, the lower its excess return in the capital market, which is consistent with the predictions of the Fama-French three-factor pricing model. The coefficient for firm leverage (LEV) is positive at the 1% significance

level, indicating that the higher a listed company's leverage, the more willing it is to increase leveraged investment; the market's recognition of the company is stronger, and its excess returns in the capital market are also higher. The coefficient for firm age (Age) is significantly positive at the 1% confidence level, indicating that the longer a firm has been listed, the higher its excess return in the capital market. Additionally, the coefficient for return on assets (ROA) is positive, meaning that the higher the ROA of a Chinese listed firm, the better its financial performance, and the greater its market excess return.

Table 3: Results of the Benchmark Regression Analysis

	(1) HBAR	(2) HBAR	(3) HBAR
SOG_C	0.028*** (0.007)	0.042*** (0.007)	0.046*** (0.007)
Size		-0.040*** (0.002)	-0.042*** (0.002)
LEV		0.091*** (0.013)	0.099*** (0.013)
Age		0.019*** (0.003)	0.022*** (0.003)
ROA		0.374*** (0.036)	0.400*** (0.038)
TQ		-0.030*** (0.002)	-0.031*** (0.002)
SGR		-0.027*** (0.006)	-0.025*** (0.006)
CAPX		-0.124*** (0.045)	-0.123*** (0.045)
BIGR			0.001*** (0.000)
Adminfee			0.097*** (0.029)
Big4			0.015 (0.010)
DUAL			0.008* (0.005)
_cons	0.052*** (0.002)	0.909*** (0.047)	0.910*** (0.051)
Firm-FE	Yes	Yes	Yes
Year-FE	Yes	Yes	Yes
N	44152	44152	44152
r2	0.095	0.104	0.105

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

### 4.3 Heterogeneity Analysis of the Impact of Continuous Equity Incentives on Firm Value

Columns (1) through (4) of Table 4 present the results of tests examining the heterogeneous effects of continuous equity incentives on the market value of listed companies. This study employs group regression to examine the heterogeneous effects of firm size and sector structure. First, firms are divided into two groups—large and small—based on the median asset size of listed companies for group regression analysis. Additionally, firms are categorized into two groups—the Main Board and the ChiNext Board—based on their listed sector for group regression analysis. Columns (1) and (2) of Table 4 present the regression results for small-asset-size firms and large-asset-size firms, respectively. Columns (1) and (2) of Table 4 show that continuous equity incentives have a significant impact on the capital market performance of companies of different asset sizes. From an economic perspective, the coefficient for the continuous equity incentive variable (SOG\_C) is larger for small-asset-size companies, indicating that continuous equity incentives have a stronger motivational effect on smaller companies. Columns (3) and (4) of Table 4 present the results of the impact of continuous equity incentives on the market capitalization of listed companies in different market segments. Column (3) shows the regression results for the Main Board market, while Column (4) presents the results for the

“Mass Entrepreneurship and Innovation” segments (GEM and STAR Market). As shown in columns (3) and (4) of Table 4, the impact of continuous equity incentives on the excess returns of listed companies in different market segments is significant. Furthermore, in terms of economic significance, the coefficient of the continuous equity incentive variable (SOG\_C) is larger for listed companies in the “Mass Entrepreneurship and Innovation” segments, indicating that continuous equity incentives have a stronger motivational effect on these companies.

*Table 4: Heterogeneity Analysis of the Impact of Long-Term Equity Incentives on the Market Capitalization of Listed Companies*

	(1) HBAR	(2) HBAR	(3) HBAR	(4) HBAR
SOG_C	0.039*** (0.011)	0.025** (0.010)	0.041*** (0.010)	0.059*** (0.013)
Size			-0.051*** (0.004)	-0.069*** (0.007)
LEV	0.158*** (0.027)	0.136*** (0.019)	0.097*** (0.019)	0.030 (0.033)
Age	0.026*** (0.006)	0.068*** (0.005)	0.033*** (0.005)	0.040*** (0.009)
ROA	0.549*** (0.071)	0.146*** (0.049)	0.380*** (0.051)	0.407*** (0.080)
TQ	-0.044*** (0.003)	-0.074*** (0.004)	-0.031*** (0.003)	-0.039*** (0.004)
SGR	-0.011 (0.010)	-0.025*** (0.008)	-0.014 (0.009)	-0.009 (0.011)
CAPX	-0.064 (0.085)	-0.108 (0.071)	-0.051 (0.068)	0.094 (0.103)
BIGR	0.000 (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000 (0.000)
Adminfee	0.018 (0.056)	0.013 (0.037)	0.048 (0.038)	0.174** (0.071)
Big4	0.038** (0.017)	0.004 (0.026)	0.013 (0.016)	0.042 (0.032)
DUAL	0.024*** (0.009)	-0.003 (0.007)	0.007 (0.007)	0.013 (0.010)
_cons	2.255*** (0.124)	3.216*** (0.137)	1.095*** (0.087)	1.460*** (0.155)
Firm-FE	Yes	Yes	Yes	Yes
Year-FE	Yes	Yes	Yes	Yes
N	13931	13890	19587	8043
r2	0.102	0.219	0.134	0.086

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

#### **4.4 Analysis of the Mechanism Linking Equity Incentives to Innovation Capability**

Equity incentives help improve the distribution mechanism and foster a community of shared interests between capital owners and employees, encouraging core employees to take a more proactive and owner-like approach. Equity incentive plans feature an asymmetric return curve: they protect participants when stock prices decline, while delivering substantial returns when innovations succeed and stock prices rise. Since equity incentive plans typically have a long validity period, they can effectively motivate the company’s strategic leadership and core technical staff to engage in long-term innovation and R&D, thereby having a significant positive impact on the company’s innovation capabilities. Chang et al. (2015) view the implementation of equity incentives as an effective means of enhancing a company’s R&D and innovation capabilities. Sesil and Lin (2011) found through empirical testing that stock options play a positive role in stimulating corporate innovation capabilities. Research by Zhou Wei et al. (2021) indicates that, given the long-term nature and high risk of corporate innovation, the most effective incentive contracts must both tolerate the risk of innovation failure in the

short term and provide substantial returns to beneficiaries in the long term. From the perspective of innovation-driven value, since high profitability is typically accompanied by high market valuation and returns, innovation-driven enterprises exhibit strong growth potential, and companies with high levels of innovation generally have favorable prospects for future profit growth.

This paper employs a mediation model to analyze whether continuous equity incentives for listed companies enhance corporate value by increasing corporate innovation capabilities. Columns (2) and (3) in Table 5 report the empirical test results regarding the mechanism by which continuous equity incentives for listed companies influence corporate value through their impact on the number of patents held by listed companies (a measure of corporate innovation capability). Columns (2) and (3) in Table 6 present the empirical test results regarding the mechanism by which continuous equity incentives for listed companies enhance corporate value by influencing the proportion of R&D investment (a measure of corporate innovation capability).

Table 5: Regression Results of the Analysis of the Mechanism Linking Innovation Capacity to Patent Volume

	(1) HBAR	(2) LnPatents	(3) HBAR
SOG_C	0.046*** (0.007)	0.226*** (0.025)	0.045*** (0.007)
LnPatents			0.003** (0.001)
Size	-0.042*** (0.002)	0.219*** (0.009)	-0.043*** (0.002)
LEV	0.099*** (0.013)	-0.223*** (0.047)	0.100*** (0.013)
Age	0.022*** (0.003)	-0.252*** (0.011)	0.023*** (0.003)
ROA	0.398*** (0.038)	0.464*** (0.134)	0.396*** (0.038)
TQ	-0.032*** (0.002)	0.028*** (0.007)	-0.032*** (0.002)
SGR	-0.024*** (0.006)	-0.012 (0.023)	-0.024*** (0.006)
CAPX	-0.123*** (0.046)	-0.492*** (0.162)	-0.121*** (0.046)
BIGR	0.001*** (0.000)	-0.002*** (0.001)	0.001*** (0.000)
Adminfee	0.096*** (0.029)	0.575*** (0.102)	0.094*** (0.029)
Big4	0.016* (0.010)	0.037 (0.034)	0.016* (0.010)
DUAL	0.008* (0.005)	-0.023 (0.018)	0.008* (0.005)
_cons	0.919***	-3.456***	0.930***
Firm-FE	(0.051)	(0.183)	(0.052)
Year-FE	Yes	Yes	Yes
Size	Yes	Yes	Yes
N	44013	44013	44013
r2	0.106	0.100	0.106

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

As shown in Table 5, the dependent variable in Column (2) is the logarithm of the number of patents held by listed companies (LnPatents). The regression results indicate that the coefficient for the continuous equity incentive plan (SOG\_C) is 0.226, which is significant at the 1% level. This suggests that continuous equity incentive programs implemented by listed companies can significantly increase the number of patent applications filed by the company. In Column (3), the dependent variable is the listed company's capital market excess return (HBAR). The coefficients for the independent variables (SOG\_C) and the number of patents held by the listed company (Patents) are 0.045 and 0.003,

respectively, and both are significant at the 5% level; Compared to the coefficient (0.046) for the continuous equity incentive plan (SOG\_C) in Column (1) of Table 5, the coefficient for this variable has decreased. According to the research conclusions of Wen Zhonglin (2014), this indicates that continuous equity incentive plans for listed companies can indeed influence corporate market value performance, at least in part, through corporate innovation capabilities.

Table 6: Regression Results Based on an Analysis of the Mechanism Linking R&D Expenditures to Innovation Capacity

	(1) HBAR	(2) RDSpend	(3) HBAR
SOG_C	0.046*** (0.007)	1.982*** (0.088)	0.042*** (0.007)
RDSpend			0.002*** (0.000)
Size	-0.042*** (0.002)	0.923*** (0.031)	-0.044*** (0.002)
LEV	0.099*** (0.013)	-2.361*** (0.165)	0.104*** (0.013)
Age	0.022*** (0.003)	-1.717*** (0.039)	0.025*** (0.003)
ROA	0.398*** (0.038)	-0.827* (0.476)	0.399*** (0.038)
TQ	-0.032*** (0.002)	0.054** (0.024)	-0.032*** (0.002)
SGR	-0.024*** (0.006)	0.105 (0.081)	-0.025*** (0.006)
CAPX	-0.123*** (0.046)	-2.909*** (0.575)	-0.118*** (0.046)
BIGR	0.001*** (0.000)	-0.022*** (0.002)	0.001*** (0.000)
Adminfee	0.096*** (0.029)	-0.779** (0.363)	0.097*** (0.029)
Big4	0.016* (0.010)	-0.660*** (0.122)	0.018* (0.010)
DUAL	0.008* (0.005)	0.318*** (0.063)	0.008 (0.005)
_cons	0.919*** (0.051)	-3.557*** (0.648)	0.926*** (0.051)
Firm-FE	(0.051)	(0.648)	(0.051)
Year-FE	Yes	Yes	Yes
Size	Yes	Yes	Yes
N	44013	44013	44013
r2	0.106	0.572	0.106

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

Similarly, as shown in Table 6, the dependent variable in Column (2) is the proportion of R&D investment (RDSpend) for listed companies; a higher value for this variable indicates that the company places greater emphasis on R&D and innovation capabilities. The regression results show that the coefficient for the continuous equity incentive plan (SOG\_C) is 1.982 and is significant at the 1% level, indicating that the implementation of continuous equity incentive plans by listed companies can significantly increase the proportion of R&D investment and enhance innovation capabilities. In Column (3), the dependent variable is the listed company's capital market performance (HBAR). The coefficients for the independent variables—SOG\_C and RDSpend—are 0.042 and 0.002, respectively, and both are significant at the 1% level; A comparison with the coefficient (0.046) for the continuous equity incentive plan (SOG\_C) in Column (1) of Table 6 reveals that the coefficient for this variable has decreased. Based on the research conclusions of Wen Zhonglin (2014), this further confirms that continuous equity incentive plans for listed companies can indeed exert a positive impact on corporate market value performance, in part by influencing corporate innovation capabilities as represented by R&D investment.

#### 4.5 Robustness Analysis of the Impact of Long-Term Equity Incentives on Firm Value

##### 4.5.1 Removal of Outlier Samples

Given the significant impact of the COVID-19 pandemic on people's lives, this study considers removing samples affected by the pandemic from 2021 to 2023 and conducting a new regression analysis. The results are shown in Table 7. According to the regression results in Column (1) of Table 7, the continuous equity incentive variable (SOG\_C) has a significant positive impact on the value of Chinese listed companies, and this effect is significant at the 1% level. This implies that, compared to listed companies that do not implement equity incentives or implement them only once, those that implement them twice or more exhibit better market capitalization performance in the capital market. Based on the regression results in columns (2) and (3) of Table 7, it is evident that, even after controlling for other factors affecting the capital market performance of listed companies, firms that implement equity incentives twice or more still have higher value compared to those that do not implement them or implement them only once. In summary, Table 7 demonstrates that when Chinese listed companies continuously implement equity incentive plans, their capital market performance is better than when they implement such plans only once. Therefore, the research hypothesis H1 in this paper remains robust.

Table 7: Robustness Test of the Impact of Long-Term Equity Incentives on the Value of Listed Companies (After Removing Outliers)

	(1) HBAR	(2) HBAR	(3) HBAR
SOG_C	0.056*** (0.010)	0.062*** (0.010)	0.064*** (0.010)
Size		-0.030*** (0.003)	-0.033*** (0.003)
LEV		0.108*** (0.016)	0.117*** (0.016)
Age		0.013*** (0.004)	0.016*** (0.004)
ROA		0.519*** (0.044)	0.547*** (0.046)
TQ		-0.018*** (0.002)	-0.020*** (0.002)
SGR		-0.013* (0.007)	-0.011 (0.007)
CAPX		-0.135** (0.054)	-0.134** (0.054)
BIGR			0.001*** (0.000)
Adminfee			0.098*** (0.033)
Big4			0.024** (0.012)
DUAL			0.011* (0.006)
_cons	0.032*** (0.003)	0.650*** (0.058)	0.666*** (0.064)
Firm-FE	Yes	Yes	Yes
Year-FE	Yes	Yes	Yes
N	32500	32500	32500
r2	0.110	0.116	0.117

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

##### 4.5.2 Method of Measuring the Replacement Variable

This paper redefines the explanatory variable "continuous equity incentives." The variable is assigned a value of 1 for the period in which a listed company implements equity incentives for the

second time or later, and 0 otherwise; the newly defined explanatory variable is denoted as SOG\_C2. Subsequently, the main regression results of this paper are re-tested. Columns (1) through (3) of Table 8 report the test results following the modification of the explanatory variable. Column (1) of Table 8 presents the robustness test results obtained after changing the indicator of the explanatory variable while controlling only for firm-specific and year-specific fixed effects; columns (2) and (3) present the regression results after adding other control variables.

According to the regression results in Column (1) of Table 8, the coefficient preceding the continuous equity incentive variable (SOG\_C2) is significantly positive and is significant at the 1% level. This implies that, compared to listed companies that do not implement equity incentives or implement them only once, those that implement them twice or more achieve higher excess returns in the capital market. As shown by the regression results in columns (2) and (3) of Table 8, even after controlling for other factors affecting the capital market performance of listed companies, firms that implement equity incentives twice or more still exhibit higher excess returns in the capital market compared to those that do not implement them or implement them only once. This also implies that when Chinese listed companies continuously implement equity incentive plans, their corporate value is higher than when they implement such plans only once. Therefore, after adjusting the measurement method of the explanatory variables, research hypothesis H1 in this study remains valid.

*Table 8: Robustness Tests of the Impact of Long-Term Equity Incentives on the Value of Listed Companies (Alternative Measurement Methods)*

	(1)	(2)	(3)
	HBAR	HBAR	HBAR
SOG_C2	0.076*** (0.010)	0.095*** (0.010)	0.098*** (0.010)
Size		-0.040*** (0.002)	-0.042*** (0.002)
LEV		0.091*** (0.013)	0.099*** (0.013)
Age		0.021*** (0.003)	0.023*** (0.003)
ROA		0.369*** (0.036)	0.396*** (0.038)
TQ		-0.030*** (0.002)	-0.032*** (0.002)
SGR		-0.027*** (0.006)	-0.025*** (0.006)
CAPX		-0.127*** (0.046)	-0.126*** (0.046)
BIGR			0.001*** (0.000)
Adminfee			0.096*** (0.029)
Big4			0.016 (0.010)
DUAL			0.008* (0.005)
_cons	0.052*** (0.002)	0.912*** (0.047)	0.913*** (0.051)
Firm-FE	Yes	Yes	Yes
Year-FE	Yes	Yes	Yes
N	44013	44013	44013
r2	0.096	0.106	0.107

Note: The figures in parentheses represent regression standard errors; \*\*\*, \*\*, and \* indicate that the estimates are significant at the 1%, 5%, and 10% levels, respectively. This study employs robust standard errors based on individual clustering.

## 5. Conclusions and Policy Recommendations

### 5.1 Research Conclusions

As an incentive mechanism for attracting and retaining core talent and senior executives, equity-based compensation primarily aligns the interests of incentive recipients (typically senior executives and core talent) with those of company shareholders by granting them equity interests such as restricted stock or stock options, thereby helping enterprises achieve long-term, stable development. This study utilizes equity incentive data and relevant financial data from Chinese listed companies from 2006 to 2023 to analyze, via panel regression, the impact of continuously implementing equity incentive plans on firm value. The results indicate that: (1) Controlling for other influencing factors, the continuous implementation of equity incentive plans by Chinese listed companies has a significant positive impact on firm value. (2) Building on the conclusion that continuous equity incentive plans significantly impact corporate value, this study analyzes the mechanism through which corporate innovation capacity influences the relationship between continuous equity incentives and corporate value to gain a clearer understanding of this effect. The mechanism analysis reveals that the implementation of continuous equity incentive plans by listed companies significantly enhances their innovation capacity, thereby leading to improvements in corporate value. (3) Heterogeneity analysis indicates that the impact of continuous equity incentive plans on corporate value varies across companies of different sizes and in different sectors.

### 5.2 Policy Recommendations

Based on the above findings, this study offers the following policy recommendations:

(1) For listed companies, the first step is to establish a regular, multi-phase equity incentive system. Companies should transform equity incentives from a “one-time tool” into a long-term institutional arrangement. Management can adopt a schedule of “launching one phase every 2–3 years” to design rolling, continuous incentive plans. This will help align the interests of key talent with the company’s long-term goals and convey a strong commitment to growth to the market. Second, optimize the incentive structure and target groups. Research confirms that incentivizing core employees is particularly crucial for enhancing innovation capabilities. Therefore, when designing incentive schemes, companies should expand coverage to include core technical personnel and R&D staff, rather than limiting it to senior management. Finally, smaller companies and high-growth firms listed on the ChiNext or STAR Market should more actively utilize continuous equity incentives to maximize their impact on corporate innovation and market capitalization.

(2) For investors, incorporate “incentive continuity” into corporate governance evaluation frameworks. When conducting investment analysis and valuation, investors should not only focus on individual incentive plans but also assess whether a company has a stable and continuous history of equity incentives. Companies that implement multi-phase incentive programs often demonstrate stronger internal governance stability and a commitment to long-term development, which can serve as a positive signal.

(3) For regulatory authorities: First, encourage and guide the adoption of long-term incentive mechanisms. Regulators should continue to implement and refine preferential policies such as “individual income tax deferral” to reduce the tax costs associated with implementing long-term incentives for enterprises. They should actively guide listed companies to establish an incentive culture of shared benefits and shared risks, which aligns with the spirit of the “New Nine Measures” to “enhance the quality of listed companies.” Second, improve information disclosure and guidance. Listed companies could be further required to disclose in greater detail in their announcements the continuity design of multi-phase incentive plans, their alignment with the company’s long-term strategy, and the specific details of incentives for core employees. This would reduce information asymmetry in the market and help investors price stocks more accurately. Finally, implement differentiated regulation. Given the sectoral heterogeneity effects identified in this study, regulatory policies could provide more inclusive and efficient support—particularly in terms of equity incentive approval and filing—for enterprises in sectors such as the “Mass Entrepreneurship and Innovation” sector that are highly dependent on innovation and talent.

Although this study provides new evidence for understanding the value effects of continuous equity incentives, the following limitations remain, pointing the way for future research: (1) Sample Timeliness and Exogenous Shocks: The sample period of this study ends in 2023, failing to fully

capture the latest policy changes in the capital market after 2024 (such as stricter share disposal regulations) and the impact of macroeconomic cycles. Future research could extend the sample period to examine the stability of the effects of continuous incentives under different macroeconomic conditions. (2) Measurement of innovation capacity could be refined: This study primarily uses the number of patents (LnPatents) and R&D expenditure intensity (RDSpend) to measure corporate innovation capacity. Although these two indicators are widely used, they do not fully capture the “quality” and economic value of innovation. Future research could introduce more detailed indicators, such as patent citation counts, innovation efficiency indices, or the proportion of revenue from new products, to conduct mechanism tests.

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